



THE INTERNATIONAL
HANDBOOK OF
Political Ecology

Edited by
Raymond L. Bryant



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ECOLOGY

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Raymond L. Bryant

King's College London, UK

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Abbreviations

AAG	Association of American Geographers
ADB	Asian Development Bank
ALBA	Bolivarian Alliance for the Peoples of Our America
ANT	actor network theory
ASEAN	Association of Southeast Asian Nations
AUB	Autonomous University of Barcelona
BENGOs	big environmental non-governmental organizations
CAP	Common Agricultural Policy (EU)
CBC	community-based conservation
CBD	Convention on Biological Diversity
CCS	carbon capture and storage
CEO	chief executive officer
CEPAL	Comisión Económica para América Latina y el Caribe [see ECLAC]
CFGs	community forestry groups
CIDA	Canadian International Development Agency
CIFOR	Center for International Forestry Research
CLACSO	El Consejo Latinoamericano de Ciencias Sociales [Latin American Council of Social Sciences]
CONAIE	Confederation of Indigenous Nationalities of Ecuador
COP	Conference of the Parties (UNFCCC)
COSATU	Congress of South African Trade Unions
CRSRU	Cross River State REDD+ Unit
CSE	Centre for Science and Environment (Delhi)
DAWN	Development Alternatives with Women for a New Era
DPP	Democratic Progressive Party
EC	executive committee
ECLAC	Economic Commission for Latin America and the Caribbean
EDP	Energias de Portugal [Portugal Energy Company]
EIA	environmental impact assessment
EJ	environmental justice
EJOs	environmental justice organizations
ENDA	Environment and Development of the Third World
ENGOS	environmental non-governmental organizations
ENTITLE	European Network of Political Ecology

EPB	Environmental Protection Bureau
ESG	Earth System Governance
EU	European Union
FAO	Food and Agriculture Organization (UN)
FAO-FD	Food and Agriculture Organization – Forestry Division
FCPF	Forest Carbon Partnership Facility
FSC	Forestry Stewardship Council
FUGs	forest user groups
GB	general body (state organizations in India and Nepal)
GCAs	game-controlled areas
GDP	gross domestic product
GHGs	greenhouse gases
GIS	geographic information system
GJC	Green Jobs Coalition
GLOGOV	Global Governance Project
GMS	Greater Mekong Subregion
GND	Green New Deal
GOELRO	State Commission for the Electrification of Russia
HKH	Hindu Kush Himalaya
ICIMOD	International Centre for Integrated Mountain Development
ICRP	International Commission on Radiological Protection
IEP	Islamic ecological paradigm
ILO	International Labour Organization
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change
IRCA	Immigration Reform and Control Act
ITUC	International Trade Unions Confederation
IUCN	International Union for Conservation of Nature
JFM	joint forest management
JPE	<i>Journal of Political Ecology</i>
JT	just transition
KP	Kyoto Protocol
LED	light-emitting diode
LSE	London School of Economics and Political Science
MEAs	multilateral environmental agreements
MEP	Ministry of Environmental Protection
MST	Movimento dos Trabalhadores Rurais Sem Terra [Landless Rural Workers' Movement, Brazil]
NAFTA	North American Free Trade Agreement

NASA	National Aeronautics and Space Administration
NGO	non-governmental organization
NGOCE	NGO Coalition for the Environment
NIEO	New International Economic Order
NIMBY	not in my back yard
NPD	National Program Document
NSC	Nuclear Safety Commission
NTFPs	non-timber forest products
OECD	Organisation for Economic Co-operation and Development
OIC	Organisation of Islamic Cooperation
OMCJ	One Million Climate Jobs
ORSTOM	Office de la Recherche Scientifique et Technique Outre-Mer [Office for Scientific Research in Overseas Territories]
PANE	Patrimonio de Áreas Naturales del Estado [Natural Heritage Areas of the State]
PAS	Pan Malaysian Islamic Party
PCSD	Presidential Commission of Sustainable Development
PEB	political ecology of the body
PES	payment for environmental services
PPR	pressure of population on resources
PRVs	provisional regulatory values
PV	photovoltaic
REASA	Rede de Acompanhamento Socioambiental [Social and Environmental Monitoring Network]
REDD	Reducing Emissions from Deforestation and Forest Degradation (UN programme)
RFD	Royal Forest Department
R-PP	readiness preparation proposal
SARS	Severe Acute Respiratory Syndrome
SBP	Socio Bosque Program
SEN	Sistema Eléctrico Nacional [Cuban National Electricity System]
SOAS	School of Oriental and African Studies (London)
SSTE	Sino-Singapore Tianjin Eco-city
STS	Science and Technology Studies
TAC	Termo de Ajustametro de Conduta [Term of Adjustment of Conduct]
TEPCO	Tokyo Electric Company
TERI	Tata Energy Research Institute
TFCAs	transfrontier conservation areas
TNCs	transnational corporations
TVA	Tennessee Valley Authority

UMNO	United Malays National Organisation
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNHCR	United Nations High Commissioner for Refugees
UNREDD	United Nations Reducing Emissions from Deforestation and Forest Degradation
UP	Uttar Pradesh
UPE	urban political ecology
USAID	United States Agency for International Development
VOC	Vereenigde Oost-Indische Compagnie [United East India Company]
WCED	World Commission on Environment and Development
WMAs	wildlife management areas
WMO	World Meteorological Organization
WSF	World Social Forum
WTO	World Trade Organization
Y2K	Year 2000

PART I

INTRODUCTION

1. Political ecology: handbook topics and themes

*Raymond L. Bryant**

This *International Handbook* unites many of the world's leading scholars of political ecology, while also introducing new and less heard voices from that community. While its international lineage is a long one, the field's present form notably dates from the 1970s through the 1990s, when debates over politics, power, class, the state, gender and North–South relations helped to crystallize thinking in political ecology. As the size of the political ecology community as well as its global reach (both what is studied and who does the studying) have continued to expand, those debates have persisted and been joined by new ones. The often fierce nature of the debates reflects both the intellectual allegiances of individuals and their fervent commitment to research, teaching and engagement that will somehow help to promote a better world. In all of this, collegiality remains the norm insofar as it unites rather than divides us as political ecologists. And such collegiality was much in evidence in the preparation of this book, as its 66 contributors helped me to pull together a variegated collection of topics and approaches that goes some distance toward capturing the energetic diversity that is political ecology today. I thank them for this.*

The handbook is divided into six parts: an introductory overview; issues and approaches; governance and power; knowledge and discourse; method and scale; and connections and transformations. Part I provides an overview of the topics and themes examined in this book. These chapters underscore the international character of political ecology both in terms of topics addressed and membership in this scholarly community, the interdisciplinary and multi-scalar dimensions, as well as its flexible and expansive understanding of what constitutes the field itself. They emphasize certain trends, notably greater transnational integration of scholarship, a more equitable community profile in terms of gender and ethnicity (but seemingly not class), attention to knowledge and discourse in conjunction with a renewed interest in material flows and dynamics, and the seemingly never-ending expansion in the array of topics and approaches interrogated under the political ecology rubric. Yet the chapters also stress continuity, especially in terms of a strong commitment to the promotion of social and ecological justice around the world. While individual writers may disagree over what exactly such justice entails, as well as how best to promote it, there is a broad consensus that the current political, economic, cultural and ecological trajectory under global capitalism is a disastrously wrong one.

Part II builds on this discussion by assessing some of the broad key approaches and issues that have animated the research field of political ecology. Given the *international* orientation and ethos of this book, that assessment is notably concerned with how the field has come to be defined over the years in relation to sometimes quite distinctive academic cultures shaped by different intellectual and language contexts. Chapters 3 to

4 *International handbook of political ecology*

5 thus explore selected themes, people and institutional dynamics across Anglo-American, Latin American and French contributions to political ecology. In Chapter 3, Simon Batterbury provides an international survey of political ecology, with special attention to the Anglo-American contribution, in relation to scholarship, teaching and wider engagement. He explores how a radical and critical field such as political ecology continues to thrive despite the deepening neoliberal context in which it operates – a process that occurs because of student demand for a bracing critique of the social and ecological status quo, as well as scholarly engagement with assorted state and non-state actors beyond academia. In contrast, Enrique Leff argues in Chapter 4 that Latin American writing has played a particularly central role in the international formulation of political ecology, singling out the region's contributions regarding epistemology and emancipation. This pivotal role encompasses everything from dependency theory to decolonial and environmental rationality writing, and from ontology of diversity through the politics of difference to culturally and territorially based resistance. Denis Gautier and Baptiste Hautdidier in Chapter 5 then examine the French contribution to political ecology, suggesting that French geography in particular has produced internationally significant, if often overlooked, scholarship. Traced back to the early twentieth century, that scholarship is fragmented and even contradictory but contains a wealth of insight about tropicality, fieldwork and radical politics that has affinities with some work in Anglo-American political ecology. While covering different academic cultures, these three chapters simultaneously point to the accelerating integration of research concerns and interests, as often hitherto disparate agendas become more connected today.

In Chapter 6, Dianne Rocheleau focuses precisely on such integration when she explores the transnational and transcultural school of thought that frames political ecology in terms of the analysis of roots, rhizomes, networks and territories, notably with regard to social movements and allied actors fighting for social and ecological justice. Drawing on extensive fieldwork experience in the Dominican Republic, Kenya and Mexico, she demonstrates how such thinking informs understanding of place-based struggles generating new ways of seeing and being.

Chapters 7 to 10 thereafter shift attention to specific issues that unite and divide political ecologists, and that, in their own ways, also frame how scholars approach the research endeavour. Alex Loftus in Chapter 7 thus calls for a return to class analysis, albeit one framed within a philosophy of praxis based on the work of Italian theorist Antonio Gramsci. This Gramscian approach is gaining favour in political ecology, he argues, precisely because it grounds the study of politicized environments to a non-reductionist historical materialism that is keenly needed at the current juncture. In contrast, Tim Forsyth argues in Chapter 8 that political ecology needs to understand how politics and ecological science co-evolve, thereby invoking a longstanding debate in the field. The point is not to deny either the explanatory power of science or the urgent need for political action, but rather to show how environmental policy is more effective when connections between science and politics are acknowledged. For Shangrila Joshi in Chapter 9, what is at stake is the promotion of more complex post-colonial understandings of North–South difference, including how actors in the South may use to their own advantage Northern essentialism about the South. Examining India's participation in global climate negotiations, she argues that political

ecology must accommodate an appreciation of such participation, even as Northern political ecologists need to reflect on their own positionality and power in rejecting binary thinking. Rounding out Part II, Erik Swyngedouw in Chapter 10 asserts that greater attention is needed to what constitutes the ‘political’ in political ecology today. This call reflects both widespread depoliticization of environmental matters and deeper understanding of the co-shaping of socio-political and ecological-geological processes, and requires serious engagement by political ecologists with new theoretical tools and philosophical debates to aid in grasping these epoch-making changes in the Anthropocene.

Part III focuses on how governance and power inform political ecology dynamics. That focus has been a key thematic referent over the years as different generations of scholars, hailing from different disciplines and often academic cultures, with different geographical and topical foci, as well as different theoretical influences and concerns, have nonetheless shared an abiding interest in how human–environmental relations are governed and how often quite unequal power relations affect those relations. The present section of the handbook amply demonstrates this situation, as an array of ‘traditional’ and new topics is informed by that interest.

Chapters 11 to 14 examine a more traditional set of natural-resource-related concerns that have long been a central preoccupation for many political ecologists. Here, governance and power are bound up in the ‘discovery’, appropriation and movement of commercially prized matter – a centuries-long dynamic that prompted a radically new politics (colonialism, and then neo-colonialism under a globally elaborated nation-state system centred on the functionally defined state) as well as enabling a radically new economics (from mercantilism to a worldwide elaboration of industrial capitalist relations). In Chapter 11, Héctor Alimonda argues that we need to understand this vast transformation as a project of coloniality, that is, a complex set of deeply historical processes encompassing politics, economics, culture and ecology that profoundly shaped both the colonized and colonizer’s worlds. The focus is on Latin America, where he argues that the activity of mining is at the heart of that region’s coloniality, and hence key to appreciating shifts in how society and nature are governed there (even as it helped to define processes of ‘modernity’ around the world). Peter Vandergeest and Nancy Lee Peluso turn their gaze in Chapter 12 to the practice of forestry, exploring how the quest for prized timber in Southeast Asia led to the articulation of a modern and ‘scientific’ forestry that found territorial expression in what they call ‘political forests’. Their chapter examines how the creation of such forests as a governance vehicle spans colonial and post-colonial times while encompassing a widening array of local and non-local actors, as well as cementing highly unequal power relations, evinced notably by diverse forms of coercion and violence. Philippe Le Billon in Chapter 13 complements these region-specific analyses with a wide-ranging critical reflection on how ‘resource wars’ have been understood in relation to centuries of human–environmental interaction, finding modern expression in ‘securitization’ debates, even as such understanding must be rejected in favour of the kinds of site-specific, historically contingent and culturally nuanced accounts of power relations and struggle that are standard in political ecology. He argues that the latter affords more reflexive and holistic perspectives that not only deepen our appreciation of the many forms of violence occurring in relation to resources, but also opens the way for new

understandings, ontologies and solidarities to come to the fore through 'worldization'. For Seungho Lee, writing in Chapter 14, the harnessing of natural resources to development is not necessarily all bad inasmuch as benefits may circulate more widely than some political ecologists believe, even as this distribution process is mediated by unequal power relations. Deploying a benefit-sharing analytical framework, he offers us a regional political ecology study focused on inter-state relations over hydropower development in the Mekong River Basin, and suggests that, however unequally, some benefits accrue to all riparian states as well as to their populations.

As these chapters also demonstrate, exploiting natural resources is inevitably a matter of governing people as well as the 'right disposition' of prized biophysical matter. These can be quite violent environments, yet, as political ecologists also highlight, much effort is devoted by state and non-state elites to promoting the 'peaceful' regulation of human behaviour in natural-resource-rich areas. This process of disciplining in turn must grapple with wider power dynamics and governance issues shaping life in local 'communities'. In Chapter 15, Bina Agarwal explores some of these complexities by considering how unequal gendered relations inform group behaviour and community forestry in South Asia. She explores how such relations serve to restrict women's effective participation in these schemes, with what implications in terms of equity of outcomes and institutional efficiency, as well as how such constraints might be overcome and outcomes improved.

Beyond the question of natural resources, political ecologists probe more generally how governance and power relate to the movement of people, to their presence or absence, and with what political, economic, cultural and ecological effects. In quite different ways, Chapters 16 to 18 illuminate some of the complex dynamics at stake here. Shanti Nair in Chapter 16 explores political ecologies of religious pilgrimage, gauging how the temporary migration of people reflects, reinforces and sometimes challenges unequal power relations. While political ecologists write about indigenous peoples' 'cosmovisions', they scarcely address the role and impact of world religions, but the latter are significant as a case study of the *hajj* (performed by millions of Muslims annually and notably centred on Saudi Arabia) demonstrates with politically charged and ecologically resonant governance embracing colonial and post-colonial state action, wealth and consumption-linked practices, health concerns and the rise of civil society activism. In Chapter 17, Raymond L. Bryant, Ángel Paniagua and Thanasis Kizos focus instead on out-migration as attention shifts to relatively depopulated areas with reference to southern Europe. Perhaps because political ecology in Anglo-America developed partly as a critique of neo-Malthusian thinking, scholars have not addressed human population dynamics sufficiently, yet exploration of how 'shadow landscapes' in such areas are governed underlines how power relations are reflected too in situations marked by the relative absence of population. In contrast, Lei Xie explores in Chapter 18 some of the political ecological implications of one of the most densely populated places on the planet, and one deeply marked by the largest mass movement of people in human history: China. Her main concern is to assess how intensifying environmental degradation, carefully regulated political participation and the spread of environmental movements in civil society complicate contemporary

environmental governance in China, finding that multiple scenarios of political participation point to greater behavioural complexity than is often credited in Western accounts.

The final two chapters in Part III assess how far environmental governance and power relations are transformed by new dynamics in global development. Aya H. Kimura examines civil nuclear power in Chapter 19, utilizing a feminist political ecology perspective to explore the ways in which nuclear impacts, risk perceptions and organic farming combined in the context of Japan's Fukushima disaster. She finds that governance reflected complicated gender dynamics, with a hegemonic masculinity reflected nationally in a downplaying of food safety risks (with fears dismissed as 'irrational' and 'feminine'), whereas organic farmers' responses often reflected gender-based intra-family tensions as to whether to stay or leave the farms. In Chapter 20, Adeniyi Asiyambi explores the marketization of green initiatives to promote environmental governance in globally significant conservation areas through a study of a Nigerian carbon scheme. Infusing the terrain of political ecology with insights from policy implementation studies, he finds messy local realities as multi-actor governance as well as unequal power relations between and among state and non-state actors divert and subvert globally articulated projects.

Part IV examines the role of knowledge and discourse in the articulation of political ecology relations. Often associated with the post-structural turn in the research field, notably since the 1990s, attention to the world of ideas, narratives, stories and discourses opened up a new thematic array of topics, attracting in turn a fresh wave of adherents. Theoretically linked insights followed as scholars found new ways in which to critically understand trends and battles in environment and development around the world.

Chapters 21 to 23 engage with core concerns in political ecology, shedding new light on them by framing them through specific knowledge claims and discourses. Thus C. Anne Claus, Sarah Osterhoudt, Lauren Baker, Luisa Cortesi, Chris Hebdon, Amy Zhang and Michael R. Dove consider in Chapter 21 the issue of disasters using ethnographic examples (drawn from India, Peru, Japan and China) to situate epistemologies of disasters within broader analyses that notably encompass social and political constructions of nature-culture, disaster classification, social identity formation and constructions of the self. At the interface of political ecology and disaster studies, these authors argue for culturally based and nuanced appreciations of disaster that reject simplistic 'objective' analyses of a complex phenomenon. In Chapter 22, Lucy Jarosz explores the hunger discourses that circulate in national and international policy circles, showing how the research field critiques them. This occurs through a challenge to mainstream knowledge claims about 'world hunger', a profile of how global food systems increase poverty and degradation, an assessment of social inequality and racism in urban food dynamics, and the discursive interrelationship of food, hunger, consumption and embodiment, even as political ecology simultaneously promotes counter-narratives of food sovereignty and justice. Meanwhile, in Chapter 23 Ting-jieh Wang discusses the contribution of French theorist Michel Foucault to critical work on the construction of knowledge and practice surrounding environment and development, especially his notion of governmentality. That contribution is then related to the question of indigeneity in nature conservation (a recurrent empirical focus in the

field) via a Taiwanese case study in order to demonstrate the utility of and need for closer engagement between political ecology and Foucauldian studies, while shedding new light on a relatively less studied East Asian context.

By paying close attention to elite knowledge claims and discourses, political ecologists have armed themselves with a powerful new ‘hatchet’ (as Paul Robbins would put it) to attack the arguments and promoters of social and ecological injustice. A notable target is the discourses and associated practices of the ‘green’ state much debated in the literature. Chapters 24 and 25 provide complementary critical analyses in this regard. Elizabeth Bravo and Melissa Moreano in Chapter 24 challenge the widespread view of Ecuador as being run by a green state supportive of alternative development. Instead, they draw on examples of state practice relating to protected areas and forest management to show how a green international image goes hand-in-hand with expanded natural resource extraction conducted in cahoots with transnational capital. In contrast, Sanghun Lee examines the ‘Green Growth Strategy’ of the South Korean state in Chapter 25 – a country of rapidly growing international importance that has formally embraced ecological modernization thinking yet which is rarely considered in English-language political ecology. Drawing theoretical insight from work on environmental fixes, decoupling growth and neo-developmentalism, he argues that the South Korean strategy reflects at best very shallow greening and at worst business-as-usual in a construction-oriented state. While both of these chapters make for gloomy reading, they nonetheless serve an important function in political ecology in that they resist official efforts by both developing and developed states to discursively colonize and thereby subvert the terrain of green thought.

Chapters 26 to 29 meanwhile explore other areas in which knowledge claims and discourse articulation are seen to profoundly shape how elemental aspects of human–environment interaction are understood, including water, labour, the city and ‘nature’. In Chapter 26, Robert Fletcher, Wolfram Dressler and Bram Büscher examine how environmental conservation has become increasingly conjoined with capitalism through a powerful neoliberal imaginary that they label ‘Nature™ Inc.’. Drawing on an expanding political ecology literature, they argue that this dynamic prompts the need to develop critical analyses on the articulation of neoliberal principles with pre-existing conservation strategies, the abstraction and circulation of ‘natural capital’ in the global economy, and the effects of these trends on social perceptions and representations of human–nonhuman relations, while promoting new thinking and practice centred on post-capitalist alternatives. The question of the cultural politics of ‘waterscapes’ is then considered in Chapter 27 by Amitangshu Acharya, who uses Indian examples to extend and deepen our understanding of the political ecology of water. He asserts that attention to such culturally based and mediated factors as symbolism, consumption, belonging and landscape helps to clarify how water and its use are framed as an issue, and with what effects. In Chapter 28, Stefania Barca turns attention to current discussions of the green economy, focusing on the little-studied role of organized labour therein. Referring to internationally circulating discourses on ‘climate jobs’ and ‘just transition’ with reference to UK and South African campaigns, she critically assesses these mainstream views and argues that there is notably need for greater input from an eco/feminist economics perspective to ensure a more socially and ecologically just approach. The final chapter of Part IV is by Harvey Neo and C.P. Pow, who address the

discursive and material struggles over the emergent urban form of the ‘eco-city’ (Chapter 29). Noting the radical Berkeley roots of the eco-city idea, they consider how this promising notion has been co-opted by international capital with examples from rapidly urbanizing China involving a ‘green’ Singaporean state–business alliance that in turn raises important questions for urban political ecologists keen to promote socio-environmental justice in the city.

Part V helps us to understand political ecology from a different angle in that it explores how issues of method and scale inform praxis in the research field. In general, the elaboration of political ecology as an interdisciplinary and international enterprise has meant that the flexibility encountered in the articulation of research approaches, themes and topics discussed above is mirrored in the array of understandings and uses made of both method and scale in the pursuit of specific research projects. True, there are certain tendencies that can be identified in how scholars approach method and scale – a greater emphasis given to qualitative methods on the one hand, and a growing stress on the social construction of scale on the other. Both trends form part of a larger dynamic centred on the shift by many political ecologists from structural to post-structural thinking even as room is made for new materialist approaches that explore human–nonhuman dynamics. But trends here must not be exaggerated inasmuch as political ecologists criss-cross methodological and scalar boundaries while reflecting different understandings of both.

In Chapter 30, Piers Blaikie and Joshua Muldavin pinpoint a key debate in political ecology: how far scholarship is and ought to be about policy advice and input. Their view is that political ecologists can be ‘useful outsiders’, making important contributions to environmental policy-making in a development context, and they elaborate a method based on what they call the ‘policy reform dossier’ to do precisely that, in which multi-scale partnerships are central. There is explicit political purpose here too, insofar as the aim is to promote positive change in keeping with social and environmental justice. There are serious challenges to this sort of policy engagement, as the authors are well aware. The extent of those challenges is suggested in Chapters 31 and 32, where neoliberal and ecological modernization thinking is seen to inform the articulation of multi-scale dynamics that promote unjust outcomes. Ariel Salleh in Chapter 31 critically analyses Earth System Governance, a neoliberal policy based on a new multi-scalar architecture and ideology of scientism that responds to global socio-ecological crises by perversely accelerating human dissociation from essential life-worlds. By translating thermodynamic flows into disentangled ad hoc stochastic units, she argues that methodological forcing occurs that is at odds with the sensuous material ecologies they purport to manage. In Chapter 32, Andréa Zhouri confronts the ecological modernization thinking at the heart of environmental conflict resolution policies in Brazil, charting how abstract global ideas about ‘participation’ and ‘negotiation’ are deployed to help construct local-scale politics in which dissent and alterity are sidelined and environmental inequalities are perpetuated.

Unlike the statistically linked generalizations, systems thinking and quantitative methods beloved by the sorts of national and international environmental policy-makers discussed in these two chapters, most political ecologists are instead usually keen to develop detailed site-specific understandings of the socio-natural relations they study. Such ‘rich thick description’ is especially felt to be necessary when scholars work with

disadvantaged groups, as is often the case. Guillermina Gina Núñez explores this terrain in Chapter 33 where she examines selected issues in the conduct of ethnographic fieldwork in hidden and hard-to-reach communities. She uses a case study of *colonias* – informal rural settlements populated by poor migrants along the US–Mexico border – to explore the challenges and opportunities surrounding such matters as specifying the research site, building trust with vulnerable residents, understanding the multi-scale causal forces shaping local political ecologies, and appreciating how residents construct self and community identities.

Chapters 34 to 36 provide in-depth assessments of how scale can be deployed to sharpen our appreciation of political ecological dynamics. In Chapter 34, Roderick P. Neumann reviews the voluminous literature in human geography on scale, highlighting how political ecologists have deployed the concept in the past as well as how recent theorizations promote a more rigorous understanding of it. Insights from the ‘politics of scale’ debate are integrated with political ecology’s longstanding interest in multi-scalar spatio-temporal methodology to produce a political ecology of scale approach that combines ideas on the social construction of scale with an appreciation of nature–society relations mediated by power relations. Christian A. Kull and Haripriya Rangan elaborate on some of this thinking in Chapter 35, where they conceptualize three scalar moments, which they label operational, observational and interpretative scale, based on a Lefebvrian understanding of the production of space. They then use this conceptualization to explore the political ecology of landscape transformation, specifically focusing on how and where certain plants become ‘weeds’, and with what implications for both humans and weeds. In Chapter 36, Maano Ramutsindela and Christine Noe connect the scale literature with conceptualizing about bordering processes to better appreciate how the latter inform conservation spaces and the production of scale. Indeed, through attention to notions of scalar thickening and ecological scaling, they show how scalar and border narratives combine to promote powerful conservation logics in wildlife management and trans-frontier conservation areas in southern Africa.

Chapters 37 and 38 complete Part V by providing contrasting accounts of the role of methodological pluralism in political ecology. For Amity Doolittle in Chapter 37, such pluralism is integral to what political ecology is all about, enabling scholars not only to match methods to the nature of their research questions, but also allowing them to embrace complexity and uncertainty in their analyses. The value of methodological pluralism is demonstrated through a case study of environmental history and contemporary environmental conflict in the city of New Haven in the US northeast in which she interweaves data derived from census assessment, observation, newspaper analysis, semi-structured interviews and archival research to thereby promote rich place-based understanding. If Doolittle is preoccupied with harnessing methodological pluralism to promote critical insights for political ecology analysis based mainly in the social sciences and humanities, Matthew D. Turner explores in Chapter 38 how the choice of a mixed methods approach might aid in the integration of politics and ecology. Drawing on examples from sub-Saharan Africa, he examines the promise and pitfalls of incorporating biophysical measurement from the geospatial and environmental sciences into standard social scientific methodological packages that political ecologists habitually use, and argues that such integration works best if such measurement is done in a deliberate, targeted and piecemeal manner to answer key questions.

Part VI lastly considers some of the connections and transformations that are shaping or are likely to shape how political ecology develops in the years ahead. Standing back from the proliferation of specific topics that seem set to colonize just about every element of the human–environment relationship imaginable, what are some of the broader areas for growth as well as issues to be confronted in terms of a political ecology understood both as an international community of scholars and as a set of flexibly linked research agendas?

One issue to confront is the question of community politics in political ecology and the positioning of scholars within it. If, as Chapter 2 suggests, the field is becoming more integrated, and hence more of a *community*, then the matter of how to ensure that all members of the community are heard becomes more complex and pressing. Political ecology is influenced by hierarchical pressures, like many other scholarly communities – universities are in the business, after all, of differentiating and ranking individuals. With international integration has come another pressure, though – proficiency in English increasingly used as *the* international language. Yet political ecology likes to see itself as a radical enterprise in which equality is a common refrain. How this deep-seated ethos is squared with what appear to be proliferating inequalities *within* the community remains to be seen. In Chapter 39, Denis Chartier and Estienne Rodary critically engage with this issue from the vantage-point of French *écologie politique*, in many ways a kindred field to political ecology, but one increasingly under pressure as an Anglo-American style ‘political ecology’ expands in France (see Gautier and Hautdidier, ch. 5 this volume). They argue that *écologie politique* itself needs to go global if it is to survive, but that both it and political ecology need to be more reflexive politically about themselves as practising communities, a process that encompasses greater personal research situatedness as well as sensitivity about language. Beth Rose Middleton then takes this sort of analysis to the next level in Chapter 40, where she argues for a radical overhaul of the field through elaboration of an indigenous political ecology. Drawing mainly on US-based examples, this new approach foregrounds indigenous epistemologies while asserting decolonial frameworks rooted in indigenous experiences, even as it thereby decentres ‘conventional’ political ecology based on Marxist or post-structural thinking.

At the same time, as Chapters 41 and 42 demonstrate, the research field is constantly being shaped in other ways by connections made to cognate fields, as new ideas, concepts, theories and approaches circulate through the porous borders that flexibly frame political ecology. Such an intellectual nutrient flow has always been important (even as it is a two-way process insofar as political ecology influences other research fields). As Hali Healy, Joan Martinez-Alier and Giorgos Kallis argue in Chapter 41, one crucial connection relates political ecology to ecological economics and through it to the global environmental justice and de-growth movements. They examine some of the more ‘political’ work in ecological economics that addresses intra- and inter-generational distribution, conflicting languages of valuation, and the eco-egalitarian imaginary of ‘de-growth’ by way of illustrating how political ecology, with its abiding concern to promote a more equitable and sustainable future, might benefit from cross-fertilization. In contrast, Anna Zimmer is concerned with urban political ecology in Chapter 42 where she asserts that it has paid not nearly enough attention to non-Western cities, where, after all, most of the world’s urban population now lives.

Here, political ecology needs to go ‘beyond the West’, a process that is demonstrated with regard to the possible insights to be learned from South Asian urban scholarship about such things as the ‘everyday’ state and the heterogeneity of urban society.

These sorts of connections help to transform political ecology, as does the geographical extension of the field itself, into new areas both in terms of geographically linked research topics and membership in the community of scholars. Chapters 43 and 44 examine two contrasting experiences here. In Chapter 43, Tiago Ávila Martins Freitas and Augusto Cesar Salomão Mazine explore the less studied case of Lusophone political ecology, that is, work broadly conducted in the research field drawn from a disparate set of countries united by the (colonial) Portuguese language. Drawing on scholarship written in and about countries such as Guinea-Bissau, Mozambique, Portugal and Brazil, they identify an internationally distinctive way in which to conceive environment–society relations crystallized in the phrase ‘*para inglês ver*’ [literally ‘for the Englishman to see’] that gains analytical purchase as a metaphor of external influences as well as a sense of action undertaken ‘merely for show’. Emily T. Yeh provides a detailed analysis of the case of China in Chapter 44, where she argues that the expansion of political ecology is more about outsiders offering a powerful alternative framework to understandings of human–environment relations than it is a matter of assimilating an already vibrant critical *in situ* scholarship (as in the Lusophone world). Her detailed review of the political ecology literature pinpoints an array of novel topics linked to processes such as mass decollectivization and market reform, even as it underscores possible constraints on the expansion of the international political ecology community as state-led repression limits the critical possibilities of Chinese language scholarship in the country. These two chapters thus raise the issue of disconnect between the reach of political ecology as an international research *endeavour* and its reach as an internationally representative research *community*. While political ecology today is moving on from the days when most researchers addressing political ecologies of the South hailed from Europe or North America, this current disconnect speaks to continuing tensions in the mapping of political ecology as praxis on to the world.

Perhaps less divisive is the ongoing transformation of political ecology in terms of its subject-matter. While some topics will prove more enduring than others, changes in the object of the research gaze bespeak an intellectual curiosity and vibrancy that is appealing: everything is up for analysis! Complementing many other chapters in this book, the final three chapters of Part VI address topics set to further shake up the research field. In Chapter 45, Farhana Sultana firmly pushes political ecology into the realm of emotions, as the intersection of feminist political ecology, resources management and emotional geographies is explored. Through a case study of water crises in Bangladesh, she demonstrates that emotions matter deeply in resource struggles, even as she emphatically rejects the idea that ‘real’ scholarship is only about ‘rational’ social interactions over resources. Gustav Cederlöf focuses our attention in Chapter 46 on the surprisingly still under-researched area of the political ecology of energy systems, noting that while important work has been published in recent years by the likes of Gavin Bridge and Jane Bennett, much more needs to be done to appreciate how a focus on energy involves new ways of seeing political ecology. Through a comparative historical analysis of electrification in the USA, the Soviet Union and the former Third

World, he argues that such systems are fundamentally historical products based on extant political and economic rationales such that current proposals to shift to a low-carbon future must above all confront the interests embodied in these proposed systems, let alone any other energy system. Finally, Chapter 47 finds Allison and Jessica Hayes-Conroy inviting us to embrace a political ecology of the human body itself as a visceral approach blending the material and discursive domains is outlined, notably with reference to examples drawn from US, Japanese and Colombian field-work. Here, the upsurge of interest of late in material issues and dynamics finds expression in bodily materiality, as old and new concerns in political ecology about structural inequity, social and environmental discourses, health, as well as relational thinking are brought together to understand how we are transformed both inside and out. In this way, and perhaps fittingly, the history of political ecology becomes embodied in understanding the very frame of our existence.

This overview of the ideas, topics, debates, themes and approaches covered in the chapters of this *International Handbook* is inevitably selective (as is the list of personnel that could have been invited to join in this project) but underscores one central point that, I think, we can all agree on: political ecology is an intellectually exciting and vibrant field to be in. The next chapter builds on this discussion by offering some brief reflections on the changing nature of the political ecology community as well as the research done by that community.

NOTE

- * I would like to thank Soyeun Kim and Melissa Moreano for essential help in the preparation of this handbook, my PhD students who provided inspiration and encouragement for this project, the editorial team at Edward Elgar for their patience with my many questions about the publication process, and my family for enduring what must have seemed to be a never-ending endeavour.

2. Reflecting on political ecology

Raymond L. Bryant

It was with some apprehension that I agreed to become editor of an international handbook of political ecology for Edward Elgar in February 2011. In a scholarly context where edited books apparently ‘count’ for less, assuming such a responsibility seemed to go against the grain of the academic direction of travel in the brave new UK university world of the early twenty-first century. Then there was the daunting size of the endeavour: a large number of chapters from scholars based around the world with differing first languages, academic cultures of knowledge production, work timetables and expectations about what the field of political ecology is. All this needed to be squeezed into pre-existing work commitments being churned by a seemingly permanent revolution in the academy (as I write this in December 2014, UK academics are involved in strike action over cuts to their pensions, having only ended their last strike in the spring of 2014).

Still, I am glad that I took on this editorship. While it has been a source of long hours and occasional angst, the trials and tribulations have been worth it. I have learned much about the research field that has been my intellectual home since 1989. Over that period I had thought that I had a good sense of the field, yet in researching this handbook I have come to appreciate it in new ways. At the same time, some things stayed constant: as Chapter 1 noted, political ecology has always been an exciting intellectual space in which to conduct research, teaching and social engagement. It invokes genuine passion of a sort that shapes careers and life-worlds. It makes those involved feel that they are doing something ‘useful’, especially in these dark times. It is in this context that the present chapter conveys my brief reflections about political ecology precipitated by preparing this *International Handbook* while being set against the backdrop of more than two decades’ involvement in this field.

WRITING THE INTERNATIONAL HISTORY OF POLITICAL ECOLOGY: AN ENDLESS CONVERSATION

It is not my aim in this chapter to write the international history of political ecology – that is indeed a mammoth task that has yet to be accomplished! What I wish to emphasize here is that this task is already under way, as political ecologists working both individually and collectively around the world seek to make sense of their research field. In the process, they are constructing understanding of what political ecology has been, is now and may be in the future.

Indeed, various authors in this handbook contribute to such an endeavour in that they provide overviews of selected academic cultures – simultaneously divided and united by language – that have helped to nurture this international and intercultural project.

Thus, Leff (ch. 4 this volume) assesses the Latin American role, Batterbury (ch. 3 this volume) mainly considers the Anglo-American contribution while pointing to wider international involvement, Gautier and Hautdidier (ch. 5 this volume) explore the French political ecology connection, Freitas and Mozine (ch. 43 this volume) introduce us to an expanding Lusophone literature, and Yeh (ch. 44 this volume) probes the complex if not contradictory dynamics of a China political ecology, even as Chartier and Rodary (ch. 39 this volume) as well as Healy, Martinez-Alier and Kallis (ch. 41 this volume) make connections to the counterpart research fields of *écologie politique* (based in France) and ecological economics (notably centred on Spain) respectively. This sort of focus, which is a hybrid of geography, language, politics, culture and history, can be extended further to encompass other broadly defined academic cultures, including vibrant political ecology research in South Asia (Vandana Shiva, Anil Agarwal, Sunita Narain, Ramachandra Guha, Bina Agarwal, Mahesh Rangarajan, Madhav Gadgil, Amitangshu Acharya), East Asia (Jin Sato, Shuhei Shimada, Ken-ichi Abe, Kazunobu Ikeya, Sanghun Lee, Soonhong Moon, Ting-jieh Wang, Seung-ho Lee), continental Europe (Thomas Krings, Helmut Geist, Bram Büscher, Stefania Barca, Thanasis Kizos, Ángel Paniagua, Joan Martinez-Alier, Alf Hornborg) and Africa (Wangari Maathai, Cyril Obi, Godwin Ojo, Maano Ramutsindela, Christine Noe, Patrick Bond). From the ongoing study of academic cultures of political ecology, a picture is emerging of a heterogeneous project with multiple historical and contemporary academic cultural manifestations that sometimes overlap but at other times remain separate.

The international history of political ecology is also being written through attention to specific theoretical issues and intellectual debates that produce fault-lines and rallying-points in the field. There is tension here, but it is usually productive. Contributors to this *International Handbook* point to some of these: notably, the role of networks (Rocheleau, ch. 6 this volume); ecology and science (Forsyth, ch. 8; Turner, ch. 38, both in this volume); epistemology and emancipation (Leff, ch. 4 this volume); gender (Sultana, ch. 45 this volume); politics (Swyngedouw, ch. 10 this volume); scale (Neumann, ch. 34 this volume); post-colonialism (Joshi, ch. 9 this volume); policy and engagement (Blaikie and Muldavin, ch. 30; Batterbury, ch. 3, both in this volume); governmentality (Wang, ch. 23 this volume); coloniality (Alimonda, ch. 11 this volume); and class (Loftus, ch. 7 this volume).

Sometimes the result is even the creation of a new sub-field. Notable examples here include feminist political ecology in the late 1980s and 1990s (Rocheleau et al., 1996; Sultana, ch. 45 this volume) followed by urban political ecology in the 2000s (Zimmer, 2010 and ch. 42 this volume; Neo and Pow, ch. 29 this volume), and perhaps an emerging materialist political ecology (Cederlöf, ch. 46; Hayes-Conroy, ch. 47, both in this volume) as well as an indigenous decolonial political ecology (Mignolo and Escobar, 2010; Middleton, ch. 40 this volume) today.

Finally, that international history is emerging through a growing accumulation of textbooks (as well as review articles and overview chapters that are too many to mention here) that seek to explain facets of this story. These works are consciously or unconsciously embedded in specific academic cultures and debates animating those cultures. Thus, in Anglo-American literature, contributions include foundational texts that explored issues in political economy and ecology (Blaikie, 1985; Blaikie and

Brookfield, 1987; Hecht and Cockburn, 1989), followed by works that assimilated the post-structural turn (Rocheleau et al., 1996; Escobar, 1995; Peet and Watts, 1996; Bryant and Bailey, 1997), in turn succeeded by texts that either consolidated and synthesized state-of-the-art knowledge (Peet and Watts, 2004; Robbins, 2004; Neumann, 2005; Biersack and Greenberg, 2006) or proposed new approaches (Zimmerer and Bassett, 2003; Forsyth, 2003; Agrawal, 2005; Heynen et al., 2006) that have been joined more recently by ‘re-boots’ of classic texts (Adams, 2009; Peet et al., 2011; Robbins, 2012), fresh takes on the field (Goldman et al., 2011; Brannstrom and Vadjunec, 2013; Harcourt and Nelsen, 2015; Batterbury and Horowitz, forthcoming), and now handbooks (this volume; Perreault et al., 2015). The Latin American literature has developed separately with occasional overlap in the form of ‘bridging’ scholars such as Arturo Escobar (2008), Enrique Leff (2004) and Joan Martinez-Alier (2003), whose texts are pivotal in that literature, notably concerning the politics and territories of difference, alternative environmental rationality and ecological redistribution conflicts, even as other scholars map dynamics of coloniality as well as ecologically and culturally based resistance (Alimonda, 2002, 2006; Boff, 1997; Porto-Gonçalves, 2001; Svampa and Viale, 2014). Key texts from continental Europe have notably centred on France, with recent work by Gautier and Benjaminsen (2012) and Arnould de Sartre et al. (2014) bridging to Anglo-American scholarship even as other work is more embedded in longer-standing French themes and debates in *écologie politique* (Jacob, 1995; Whiteside, 2002; Flipo, 2013), while elsewhere texts connect political ecology in novel ways to ecological economics, global trade and environmental justice (Healy et al., 2013; Hornborg and Jorgensen, 2013). Meanwhile, work has connected Europe to South Asia (Guha and Martinez-Alier, 1997) where in the latter internationally acclaimed texts have related political ecology to environmental history and gender studies (Shiva, 1988; Guha, 1989; Gadgil and Guha, 1992; Agarwal, 2010). Undoubtedly, there are other books that are not included here, spread across academic cultures, languages and disciplines, which are also involved in the essential business of political ecology making.

All this affirms that the passions that bring people to political ecology in the first place thereafter animate their conversations, prompting an ongoing series of debates about what political ecology was, is and ought to be. A certain anarchic splendour is characteristic here. And that is only right. For if, to quote one book title on American social movements, ‘freedom is an endless meeting’ (Polletta, 2002), then political ecology is an endless conversation.

Two things in particular strike me when I think about that endless conversation against the backdrop of preparing this book (as well as my longer involvement in political ecology): (1) the changing nature of the political ecology community; and (2) the changing nature of the research done by that community. The former is a matter of *gaining* voice and the latter is one of *giving* voice. Both affect that endless conversation in different if connected ways. I consider each next.

GAINING VOICE IN A CHANGING COMMUNITY

Political ecology has always been an *international* community, albeit one with diffuse connections and trajectories over time and space. Today it is becoming more of an international *community* as a fissiparous past gradually gives way to a more interconnected future. Concurrently, the face of the community itself is changing, as hitherto less prominent groups including women and non-Anglo-American scholars increasingly come to the fore: the result is growing intersectional complexity in terms of the field's identity. That community is a somewhat elastic phenomenon insofar as it also encompasses a shifting array of scholars, ranging from those whose career path is wholly or mostly within the field to those whose involvement is partial or occasional. Finally, it has retained and perhaps even strengthened its interdisciplinary character.

Political ecology is seen to derive from an international and heterogeneous cast of writers, scholars and would-be revolutionaries: people like Euclides da Cuna, José Martí or Élisée Reclus. While proto-political ecologists going back as far as the late nineteenth and early twentieth centuries may not have used the words 'political ecology' (or *écologie politique* in French or *ecología política* in Spanish), they are nonetheless seen to broadly share an ethos about how politics, political economy and ecology interweave under capitalism to degrade peoples and environments, and how this provokes a backlash among those who are oppressed. True, not every proto-political ecologist was 'radical' in the sense of calling for Marxist- or anarchist-style revolution; as today, some of them shrank from the possible implications of their own analyses – for example, France's Pierre Gourou (who is discussed in Gautier and Hautdidier, ch. 5 this volume).

'Modern' political ecology begins after the Second World War, gaining momentum in the 1970s and on through the 1990s as neo-Marxism, dependency theory, environmentalism and post-structuralism combined to lay the basis for the contested institutionalization of the field and its embodiment in a pioneering group of modern political ecologists notably in/from Latin America (Eduardo Galeano, Enrique Leff, Leonardo Boff, Carlos Walter Porto-Gonçalves, Arturo Escobar), Anglo-America (Piers Blaikie, Michael Watts, Thomas Bassett, Richard Peet, Billie Lee Turner II, Susanna Hecht, Dianne Rocheleau), continental Europe (Joan Martínez-Alier, Wolfgang Sachs, André Gorz, Alain Lipietz, Jean-Paul Deléage) and South Asia (Vandana Shiva, Ramachandra Guha, Madhav Gadgil, Anil Agarwal, Sunita Narain). As Simon Batterbury (ch. 3 this volume) notably shows, the contemporary geographical spread of political ecology is uneven, even as this process remains impressive in the face of strong neoliberal institutional headwinds. Further, the spread of academic political ecology has been mirrored by the elaboration of a non-academic political ecology that has encompassed the applied work and activism of investigative journalists (Alexander Cockburn, Marites Dañguilan Vitug, Ann Danaiya-Usher), radical think-tanks (Centre for Science and Environment, Corner House, Third World Network), NGOs (Global Witness, Earth First!, Environmental Rights Action/Friends of the Earth Nigeria) and social movements (Movimento dos Trabalhadores Rurais Sem Terra MST [Rural Landless Workers' Movement], Zapatista Army of National Liberation) that, from time to time, connects to its academic counterpart (Healy et al., 2013; Rocheleau, ch. 6 this volume; Bravo and Moreano, ch. 24 this volume). These processes are linked in complicated

ways to neoliberalizing tendencies, providing an important intellectual and activist space for alternative thinking and action.

In current times the globalization of political ecology has prompted more interconnectedness among academic cultures often long divided by language and/or culture. In many ways this is a good thing, as concepts circulate more widely than before, criss-crossing disciplinary, cultural and North–South lines (de-growth or coloniality, for instance). There is, too, a greater exchange of people as a result of personal migrations linked to such things as postgraduate study, academic conferences, workshops and invited talks. All of this is facilitated and amplified through new social media. Less positive is the prospect that such interconnectedness may increasingly only take place in an English-language context – where it is OK to be ‘other’ political ecologists provided that individuals speak or write in English. The danger is not only the (unintended) exclusion of non-English-speakers from international debates in political ecology, but also that the terms of those debates will be shaped by patterns of logic, intellectual traditions and writing styles pre-eminent in Anglo-America (but not necessarily elsewhere). This *International Handbook* reflects positive aspects of interconnectedness even as it must be said that it also reflects less positive aspects in its sole reliance on the English language (at this stage at least) as the main form of communication.

Change in the political ecology community also relates to shifts in how individuals are recruited into it. One trend is the growing number and prominence of women in that community. While non-academic political ecology may have always had a prominent role for women, perhaps linked to ample representation of women in social movements and struggles, such prominence now extends to women in academic political ecology too. Building on a diverse set of pioneers such as Vandana Shiva, Bina Agarwal, Susanna Hecht, Lucy Jarosz, Nancy Lee Peluso, Ariel Salleh, Judith Carney and Dianne Rocheleau, new generations of female scholars have joined the academy – thereby promoting a more gender-equitable working environment (as well as promoting new voices and topics – some featured in this book, including Haripriya Rangan, Christine Noe, Shangrila Joshi, Aya H. Kimura, Andréa Zhouri, Guillermina Gina Núñez, Stefania Barca, C. Anne Claus, Sarah Osterhoudt, Amity Doolittle, Beth Rose Middleton, Lei Xie, Anna Zimmer, Emily T. Yeh, Farhana Sultana, and Allison and Jessica Hayes-Conroy, among others). At the same time, the promotion of positive change can be seen in greater inclusivity in terms of scholars who are of non-European (or in some cases partly non-European) heritage, writing and teaching in political ecology – once again opening the field to new voices and perspectives (and here too reflected in this book’s line-up of authors: for example, Farhana Sultana, Seungho Lee, Beth Rose Middleton, Lei Xie, Adeniyi Asiyambi, Shanti Nair, Emily T. Yeh, Amitangshu Acharya, Guillermina Gina Núñez, Harvey Neo, Haripriya Rangan, Ting-jieh Wang, Christine Noe, Shangrila Joshi, Sanghun Lee, Aya H. Kimura, Bina Agarwal and Maano Ramutsindela, among others). Gains must not be exaggerated: there is still far to go in liberating political ecology as a research community, and thereby confronting at least *some* of the unequal power relations informing that community. But as this *International Handbook* attests, such gains must not be underplayed either.

These changes reflect wider patterns of societal transformation (not the least, policies of affirmative action in university hiring practices in some countries). Yet such

transformation can be a problem too – for example, in the political ecology community’s possible mirroring of wider class-based trends that, in parts of Europe and North America at least, mark a hardening of divisions as social mobility declines (perhaps partly ‘offset’ by increased social mobility elsewhere in the world). Given the middle-class nature of much of academia, the question that hence needs to be asked is: how can political ecology as a community ensure that individuals from poorer backgrounds continue to enter the academy as both students and faculty? This sort of question underscores how far the liberating of political ecology as a research community still has to go – and indeed how this process necessarily involves struggling with another head-wind of neoliberal times: social immobility and the role that universities play in affirming that undesirable process. At the same time, the community needs to confront other perhaps uncomfortable questions about the very nature of *whose* voice counts. Here, the gaining of voice is extended to embrace other political ecologists, including those who are habitually the object of the political ecology research gaze – indigenous groups for instance (Middleton, ch. 40 this volume).

More positive, and perhaps an aid in addressing such problems of exclusion, is the way in which the political ecology community has tended to be a somewhat elastic affair that accommodates diverse sorts of interventions by scholars ranging from those individuals who are wholly dedicated to building a research profile and reputation within the field to those academics who may only briefly engage with the field before moving on to other research interests. Clearly personal choice looms large here. Yet just as the role of ‘full-time’ political ecologists is rightly celebrated, so too the significance of ‘part-time’ political ecologists is to be acknowledged, as the latter (all too easily overlooked in accounts of the field) often bring novel insights to political ecology from research done in other areas. Over time, as the field has gained stature, the community has been characterized by an increasing number of full-time and part-time contributors; indeed, growing stature is partly an outcome of both sorts of contributions.

Finally, political ecology has retained if not strengthened its interdisciplinary character, something that has also enriched the field. Inasmuch as it is regularly seen to be more of a flexible analytical perspective than a tightly defined theory or method, political ecology has been able to maintain a base in a variety of (inter)disciplinary fields, notably geography and anthropology, but also sociology, development studies, political science, gender studies, law, environmental studies, history, international studies, economics, science studies and indigenous studies. True, it has not tended to expand much into other disciplines in the social and natural sciences over the past four decades or so. Yet this must surely be explained in part by the emergence of counterpart research fields such as (global) environmental politics, environmental justice, ecological economics or environmental sociology that have also enjoyed rapid growth, and that hence have shaped in complex ways how far and in what ways political ecology has developed, as scholarly affiliations and allegiances are pulled in this direction or that.

This *International Handbook* is shaped by and has also sought to reflect the diversity of voices noted above. Hence it includes scholars from many parts of the world, who reflect the changing face of the community, contribute a greater or lesser amount of their time to political ecology, and who come from and/or are based in different disciplines. While no book can ever encompass all such diversity, this volume, it is

hoped, provides at least some sense of a remarkable but rarely told story about the gaining of voice *inside* the research field. This positive trend (albeit with the role of class and that of the ‘researched’ still needing greater attention) helps to clarify why political ecology is likely to continue to attract a wide variety of people to it in the years to come, perhaps even irrespective of broader (and often hostile) political and economic trajectories.

GIVING VOICE TO A WIDER SET OF RESEARCH CONCERNS

The gaining of voice connects to the giving of voice (to a wider set of research concerns) in complicated ways. New speakers lead to new conversations; but they also prompt new directions in existing conversations. In the process the boundaries between ‘old’ and ‘new’ conversations tend to become blurred.

What is clear is that political ecology is attractive to people because of the nature of the research that is done and/or that can be imagined to be done in this field. Here again, its flexible analytical perspective has meant that there is a good degree of elasticity in terms of what topics are researched, which theories, concepts and methods are deployed, where the research occurs (and with whom), and with what hoped-for impacts. While a lack of theoretical coherence may trouble some writers, I feel that theoretical, conceptual, empirical and methodological eclecticism is more often than not a virtue – not the least in widening the appeal of political ecology as an ecumenical home for those interested in and concerned about how politics, economics, culture and ecology come together often in unjust ways as well as how best to fight such perceived injustice. A basic attitude of indiscipline and transgression is seemingly inevitable in a field based on an endless conversation.

In terms of research, such eclecticism, indiscipline and transgression mean that scholars have continually been involved in the business of expanding the boundaries of what is seen in the community to constitute political ecology. Stretching across space, scale, place and time, the field now encompasses a vast array of topics and approaches that all but defy ready classification, as scholars freely go where their imaginations (and consciences) lead them – from human bodies to organizational bodies, from class to gender and race, from violence to cooperation, from energy to natural resources, from coloniality to post/decoloniality, from NGOs to TNCs, from organic food to nuclear politics, from materiality to discourse, from networks to rhizomes, from celebrity humans to ‘charismatic’ nature, from politics to ecological science, from oppression to emancipation, from urban to rural, from hunger to disasters, from West to non-West, from quantitative to qualitative, from past to present, from plants to weeds, from water to climate change, from capital to labour, from resilience to revolution, from scale to flat ontology, from neoliberalism to alternative development, from parks to territories of difference, from ecological modernization to de-growth, from reason to emotion, from carbon to microchip, from policy to activism, from humanism to post-humanism, from migration to depopulation, from cosmovisions to world religions, from ancestral domain to global governance, from nature to socionature, and so on, seemingly *ad infinitum*. Freedom here is an endless research agenda in which interests, concerns, approaches and imaginaries combine to generate a political economy of

knowledge production that is remarkable in its breadth and depth. In the past, it may have been possible to keep up with most if not all research conducted in political ecology: today that is no longer realistically the case.

Theories and methods have coursed through political ecology research agendas, helping to frame what topics are examined and how they are addressed. The choices made here reflect wider trends in academia and beyond as the giving of voice encounters intellectual as well as political preferences and biases, some incubated during postgraduate training; others acquired thereafter. In a context where academic livelihoods and reputations are at stake, while also being prompted by publication and institutional gate-keeping, political ecologists have enthusiastically devoted themselves to the tasks of theoretical application and refinement as well as methodological choice and reflection in relation to their chosen empirical and analytical topics. In the process they have stretched theories this way and that like a canvas stretched over an artist's frame; they have also resorted to multiple methods in order to generate the 'rich thick descriptions' habitually preferred and expected in political ecology (Núñez, ch. 33 this volume). This movement between theory and empirical practice, method and data collection, epistemology and ontology, and theory and method is the very stuff of a political ecologist's research life. It also serves to internally (as well as externally) differentiate the field – compare for example Turner (ch. 38) and Doolittle (ch. 37) on mixed methods, as well as Forsyth (ch. 8) and Swyngedouw (ch. 10) on core issues, all in this volume. It can be seen here, then, how the giving of voice gains amplitude, focus and individual character through the theories and methods chosen. And of course the list of theories and methods deployed over time has grown: on the theoretical front, theories and/or thinkers deployed have included Marx, dependency, Weber, feminist, Foucault, critical realist, Latour, actor network, Deleuze, post/decoloniality, Gramsci, post-humanism, Žižek, Rancière, Lefebvre and so on; on the methods front, resort has been made to ethnography, environmental science, observation, semi-structured interviews, archival research, remote sensing and GIS, survey questionnaires, participatory research, discourse analysis, oral histories and focus groups, among others. While different theories and methods have been essayed in different places and times, reflecting institutional histories, funding trends and personal preferences, the overall picture that emerges is, to borrow from Doolittle's chapter title (ch. 37 this volume), 'the best of many worlds'.

That 'best of many worlds' is of course applied to the study of real-world situations that can hardly ever be described as 'best'. Here the world of theory, method and university learning collides with the messy realities of worlds shaped by complex political, economic, cultural and ecological practices. Political ecologists tackle this challenge of study and engagement notably by trying to make sense of how governance, power, knowledge, discourse and scale interconnect to inform or challenge those practices. At the same time, as chapters in this *International Handbook* attest, how these ideas and concepts are themselves understood can vary greatly (and is in part linked to the theoretical choices that are made). Thus governance may revolve around or centre on what states do (or do not do), but may equally embrace, for instance, multiple other actors, quite different scenarios of human–environment interaction, and divergent scalar dynamics. Meanwhile power, which has also long been a main staple of political ecology analysis, encompasses everything from 'traditional' structural

thinking (Marxist and non-Marxist), through feminist readings and on to Foucauldian and Deleuzian appreciations (among others). Political ecologists address the question of knowledge in an equally variegated manner, with some stressing radical epistemologies of critique and deconstruction, while others assert the need to critically engage with ‘conventional’ science, notably in the quest for policy impact. One fruitful aspect entails scholars critically interrogating the ‘ways of seeing’ or discourses that dominant groups promote to naturalize their power, with some focused on specific state and non-state projects while others tackle broader socio-natural processes or imaginaries. Then there is the matter of scale, which has particularly preoccupied geographers and which entails the complicated combination of social constructivism, politics, spatio-temporality and biophysical production. For many political ecologists, scale understood as some variant on that combination suffices to inform their analyses, even as for some other writers scale is to be eschewed altogether in favour of rival understandings of flat ontology.

Yet, however thrilling, this freedom to explore and debate topics, theories, methods and concepts would not amount to much for most political ecologists if it were not joined to an almost primordial research instinct to promote a more socially and environmentally just world. Here, engagement in the world of ideas is combined with engagement in the world of material practices to promote positive social and ecological change through ‘useful’ research, teaching and other action. But what is useful in this regard? *How* should political ecologists give voice? Once again, scholars hold a variety of views – for example, with some feeling that it is appropriate to engage in policy advice to state agencies or international organizations while others believe it is better to directly promote alternative pathways through work with ‘radical’ social movements or organizations. As decades of research and practice in political ecology as well as the diverse contributions in this *International Handbook* attest, there is no single path to promoting a better world. This is hardly surprising. On the one hand, there is the complex and shifting nature of political ecological dynamics around the world, while on the other there is the heterogeneous nature of the political ecology community itself. Political ecologists are also influenced to a greater or lesser degree by wider intellectual and institutional trends both inside and beyond academia (Batterbury, ch. 3 this volume). Despite such fissiparous tendencies, though, the instinct to be useful provides a unifying thread of sorts: that endless research agenda is ultimately widely seen to be in the service of some sort of positive change. Whether a change of minds or practices (or both) is sought, let alone *whose* minds and practices, scholars hope that such change will contribute to a more socially and ecologically just world (and here, issues of diversity in voice and representation in the political ecology community alluded to earlier are important). Hence, while freedom in political ecology might involve endless conversation, it is also often felt in the community that some conversations are more worth having than others. For some, the filter is ‘policy relevance’, while for others it is ‘engagement in social struggle’; in still other cases the filter is ‘intellectual curiosity’ allied to the promotion of a stimulating teaching environment. All these filtered conversations collide in often uneasy ways with the need to earn a living: political ecologists too have personal livelihoods to think about and strategically consider, after all.

There is of course a paradox in the success of political ecology. The incredible growth in the 'market' for political ecology has coincided with the global spread of a neoliberal doctrine that has generated misery for many (but by no means all) of the world's population while seriously degrading environments almost everywhere. While it would be harsh to suggest that political ecology thrives only in conditions of socio-ecological oppression, it would be fair to say that it has become a lightning rod for the disaffected – and disaffection has certainly grown over the life-span of the research field. That disaffection is addressed precisely through the advancement of a research, teaching and engagement agenda focused on positive socio-ecological change.

The array of topics and approaches covered in this *International Handbook* is certainly not comprehensive but nonetheless gives a glimpse of the sorts of research concerns that scholars give voice to in the field. As Chapter 1 summarized, those concerns embrace multifaceted issues and approaches, delve into myriad governance and power dynamics, acknowledge and critique heterogeneous claims about knowledge and discourse, enquire into diverse issues about method and scale, while mapping possible connections and transformations liable to influence the field for years to come.

CONCLUSION

I see this *International Handbook* as being partly a celebration marking how far political ecology, understood both as a research (as well as teaching and engagement) endeavour and as a community of scholars, has come and partly a challenge noting some of the ways that the field has yet to advance sufficiently. The time is indeed ripe for a handbook of this sort, building on decades of international scholarship, teaching and engagement. That record is one to be proud of, with multiple generations of scholars making signal contributions to it, as this volume attests.

Yet this is no time for complacency – a sense of urgency, anger and focus is called for in a context of declining conditions both within and without the academy. Struggle is what political ecologists write and teach about; it is also what they themselves experience in their own lives, albeit usually in much less intense ways than is the case for those who they write about. Gaining voice is a struggle, but so too is giving voice. Still, it is the fate of political ecologists to be involved in ceaseless struggles that match the endless conversations that they are involved in.

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PART II

ISSUES AND APPROACHES

3. Doing political ecology inside and outside the academy

Simon Batterbury

This chapter reflects on some practical settings in which political ecology is practised inside and beyond academia.¹ I survey political ecology scholarship, and the extent to which it treads its own path as a way to explain complex socio-environmental dynamics. Its particular type of interdisciplinary thinking continues to clash and merge with other approaches to understanding nature–society interactions and relationships.

After defining the field, I examine the context for political ecology work in academic institutions, including a fast-changing environment for critical scholarship. Publication outlets include several dedicated journals, and in recent years an increase in the volume of political ecology articles and other outputs. I then argue that teaching is usually an essential component of being a political ecologist, noting that the number of political ecology classes is growing. The presence of political ecology outside the academy is gaining strength too (albeit slowly), and so is its potential for alliances and academic engagement, notably with NGOs and social movements (who already have their own analytical tools and strategies for engaging in environmental politics). A logical outcome for scholars who interrogate causes of inequality and environmental injustice is personal engagement – critically and on the ground – potentially involving advocacy and activism.

DEFINING THE FIELD

The test of any framework for understanding nature–society interaction lies not in its theoretical complexity or neatness, but in its ability to understand and explain events past and present, as appraised through research, reflection and observation. Contemporary political ecology passes this test, explaining how and why humans are transforming nature. Peet and Watts (1996) traced the term back to the 1970s, when it largely referred to the study of environmental or green politics (Enzenberger, 1974). Political scientists employed it in this way, as an ‘inclusive term encompassing diverse research into policy, politics and the environment ... Neither politics nor the environment operates as a dependent or independent variable; they are interdependent’ (Somma, 1993: 372). Bryant (1992: 13) defined political ecology as ‘the attempt to understand the political sources, conditions and ramifications of environmental change’.

Meanwhile ‘regional political ecology’ developed in the 1980s as a multi-scale research approach, with greater links to the environmental sciences and using a unique methodology. It entered Anglo-American geography and development studies through Piers Blaikie’s ground-breaking analyses of soil erosion (Blaikie, 1985) and land degradation (Blaikie, 1989b, 1991; Blaikie and Brookfield, 1987). Rejecting apolitical

(or non-political) explanations that tend to blame overpopulation or land-user practices for land degradation, this approach uses nested analytical scales spanning ‘local-level field studies and macro-level processes’ (Bassett, 1988: 472), and combining a rigorous political economy analysis of land degradation with social and environmental investigation. The argument is that access to environmental resources is always socially mediated or constrained, usually involving multiple processes acting at different scales. It is not a theory; rather, as Blaikie (1989a: 27) points out, it is the ‘spine’ of an approach to which theoretical and empirical material may be attached. Students of the Blaikie and Brookfield model have refined it and attacked it, but applied it to understanding social vulnerability to natural hazards, as well as to a loss of access to natural resources more broadly. It has proven particularly effective in uncovering the roots of environmental degradation and different forms of injustice.

Political ecology has proven to be a popular academic approach. Some of this has to do with the growth of environmentalism since the 1960s, responding in particular to the effects of environmental problems and injustices, many linked to globalization and neoliberal regimes. The threats include the real and existential, particularly from anthropogenic climate change, and a widespread failure by key actors (states, large corporations) to recognize environmental and social justice as more important than short-term profits and votes. For most political ecologists, a deep ethical commitment, sometimes but not always tied to a radical personal politics, means that what really matters to them are the constraints placed by an ‘unsympathetic socio-economic milieu’ (Amanor, 1994: 222) on human agency and creativity, as well as on healthy environments and biodiversity. Problems of differential and gendered resource access, land rights and indeed the wider political economy conspire to leave some people more vulnerable or ‘marginalized’ than others (Wisner, 1993; Wisner et al., 2004). Many aspects of how contemporary economies, cultures and ways of life operate today pose limitations on the adaptive capacities of human agents in specific localities, even as these agents struggle and fight against these broader constraints (Davies, 1996: 57).

The best research in political ecology begins with the tactics and strategies of making a living in a particular environment, while also interrogating the socio-economic milieu and the dynamics of that environment (Perramond, 2007; Tschakert, 2013). There are often complex geographical and historical dimensions to these livelihoods, prompting scholars to develop a ‘chain of explanation’ to understand them. Key themes have included:

- (1) Access to resources. Rights to natural resources are vital for welfare and livelihood. Gender, class, ethnicity, political status and other vectors of power influence patterns of ownership and control. Resource access is a function of how production and economic accumulation strategies occur, which in turn influences differences in social relations. A large literature has formed around these ‘access to resources’ questions (Bassett and Crummey, 1993; Bassett, 1988; Berry, 1993; Gray and Dowd-Urbe, 2013; Rocheleau et al., 1996; Rocheleau and Edmunds, 1997; Schroeder, 1997).
- (2) Struggle and resistance against forces that conspire to frustrate people’s attempts to make a living, notably closure of resources access and environmental ‘bads’. This may occur through open forms of political organizing and protest or less

visible forms of ‘passive’ resistance that short-change the powerful in diverse ways (Peluso, 1992; Scott, 1985). Activists and social movements have fought for rights and justice, often ahead of the political ecologists that later adopt their ideas and concepts (Escobar, 2008; Martinez-Alier et al., 2014).

- (3) Profound upheaval in local people’s ways of life that involve social, economic and environmental change, for example ‘the transformation of indigenous systems of resource management in the process of incorporation into the global economy’ (Bassett, 1988: 454). Scholars also assess the impact of international development programmes and associated reconfigurations of state–society relations (van der Ploeg and Long, 1994; Olivier de Sardan, 1984). The penetration of capitalist relations in the non- or less-capitalist world, and the appropriation of land and labour in this process through commodification, has been a major concern. Political ecologists also examine ‘identity’ and the struggle between the different worldviews and philosophies guiding humanity’s relationship to nature (Escobar, 2008).

Today, scholars are also engaging with an array of old and new topical areas, notably extractive economies and the growth of mining (Adkin, forthcoming; Bebbington and Bury, 2013), international land grabs for food security, biofuel or timber (McMichael, 2014), the impact of protected areas on livelihoods (Vaccaro et al., 2013), food politics (Bryant and Goodman, 2004), and the possibilities for equitable economic de-growth under capitalism (Schneider et al., 2010). There are, too, links to the international climate change agenda, through studies of CO₂-emitting culprits and local vulnerabilities to changing climates (Tschakert, 2013). Then there is a strong political ecology of urban environmental dynamics (Lawhon et al., 2014). These and other new research areas benefit from, and contribute to, analytical and methodological pluralism in the field and across the environmental social sciences (Doolittle, ch. 37 this volume; Perramond, 2007; Turner, ch. 38 this volume).

ACADEMIC POLITICAL ECOLOGY

Who practises political ecology? Most of those who would classify themselves as political ecologists are based in academia. Academic political ecology is largely conducted in institutions that nowadays tolerate its radical aspirations. Tolerant is undoubtedly linked to the field’s popularity, as evinced by the sheer number of academic job seekers, publications in diverse formats, conferences, and undergraduate and postgraduate enrolments.

This growing popularity occurs in a broader context of increasing academic insecurity. In the USA, permanent (or tenure track) teaching and research jobs are on the decline. Meanwhile, where demand for teaching remains high, much more of it is being done by adjunct staff – a temporary labour force paid per class and often without satisfactory workspace, health cover or superannuation (Batterbury, 2008). This process is all about saving costs during a period of unprecedented systemic stress, some of it driven by the lingering effects of the global financial crisis that has hit universities in Europe and North America especially hard. These pressures demand greater employee

flexibility in response to the ebb and flow of student demand and funding. Critical scholars, including many political ecologists, object to neoliberal thinking that seeks to remove freedoms that interfere with the ‘smooth operation’ of the education marketplace (notably unions and tenure contracts). In Australia and the UK, years of politically minded interventions have produced a more ‘competitive’ setting (designed to emulate the private sector) in which universities fight each other for research funding and ‘rankings’ – things that in turn directly influence which academics are hired or fired. Although less the case in the USA, ‘restructuring’ processes alter departmental names and disciplinary groupings. Intellectual logic has little to do with any of this.

Not surprisingly, most political ecologists find that restructuring and performance metrics breach the basic principles of academic freedom. They hold to a tradition of radical distrust of powerful institutions that lack transparency and fairness. And, while many political ecologists are by nature somewhat flexible in the sense that they can operate in or across different academic disciplines, student ‘access’ to radical, politically potent and establishment-threatening ideas may be shut down. Hence that marketplace may serve as a *de facto* means of intellectual censorship, closing yet another space in society for alternative thinking.

And yet, as I argue elsewhere, political economy (including radical political ecology) is so entrenched in Western universities that it is apparently hard to dislodge it. Indeed, some ‘productive’ radical scholars have even taken key institutional leadership positions (Batterbury, 2013). It is ironic that radical intellectual content is compatible with performance metrics – this marks a change from the 1960s and 1970s when scholars were fired and denied tenure in North America for espousing radical views.

How to ‘perform’ political ecology in such an environment? Scholars certainly need to accommodate an increasingly difficult and fragile set of institutional constraints. Most of them work in departments without many like-minded colleagues, where students take their specialist classes as optional units, and activity is generally built around disciplines. In some institutions there are clusters of individuals with similar interests, often across disciplines or departments, albeit groupings that ebb and flow over time with departures, arrivals and funding opportunities.

Key Clusters and Academic Centres

There is a discernible if ever-shifting geography to the worldwide political ecology community.² In the USA, employment in a PhD-granting programme offers the possibility of gaining academic tenure, and forming a political ecology ‘node’ or ‘cluster’ with students who then perpetuate the field. The University of California, Berkeley and Clark University (in Massachusetts) have arguably produced the greatest number of PhD students connected to political ecology, working with scholars including Jake Kosek, Donald Moore, Nancy Peluso, Nathan Sayre and Michael Watts; and Doug Johnson, Dick Peet, Dianne Rocheleau, Billie Lee Turner II, Tony Bebbington and James McCarthy. Indeed, Berkeley has its own Political Ecology Research Group (<https://plus.google.com/111554681451775708952>). But Clark and Berkeley are certainly not alone in teaching and granting PhDs, with significant groupings of faculty and students at the public universities of Colorado (Mara Goldman, Emily Yeh), Georgia (Peter Brosius, Nik Heynen, Jennifer Rice, Julie Velásquez Runk), Illinois

(Tom Bassett, Trevor Birkenholtz, Jesse Ribot), Kentucky (Shannon Bell, Lisa Cliggett, Tad Mutersbaugh, Sarah Lyon), Michigan (Arun Agrawal, Bilal Butt, Rebecca Hardin, Paul Mohai, Ivette Perfecto, Dorceta Taylor), Ohio State (Kendra McSweeney, Becky Mansfield, Joel Wainright, Anna Willow), Oregon (Derrick Hindery, Katie Meehan, Peter Walker), Penn State (Brian King, Karl Zimmerer), Rutgers (Heidi Hausermann, Rick Schroeder, Kevin St. Martin), UC Santa Cruz (Jeff Bury, Julie Guthman, Margaret Fitzsimmons, Ravi Rajan), Washington (Lucy Jarosz, and a Center for Environmental Politics), Wisconsin–Madison (Ian Baird, Lisa Naughton, Paul Robbins, Morgan Robertson, Matt Turner), and in the New York college system (e.g. Paige West at Barnard). The University of Arizona has Tracey Osborne's Public Political Ecology Lab (<http://ppel.arizona.edu>), and it is where Diana Liverman also co-directs the Institute of Environment, and anthropologists Jim Greenberg and Tad Park founded the *Journal of Political Ecology* in 1993 (see below). There are political ecologists at Cornell (Ron Herring, Phil McMichael, Wendy Wolford), Syracuse (Sharon Moran, Tom Perrault, Farhana Sultana) and Yale (Michael Dove and several others working across environmental studies, forestry and anthropology).

In Canada, the University of British Columbia (Philippe Le Billon, Karen Bakker, Juanita Sundberg, Leila Harris), the University of Toronto (Michael Ekers, Tania Li, Ken MacDonald, Sharlene Mollett, Scott Prudham) and McGill (Sarah Turner, John Unruh, Ismael Vaccaro) have significant expertise. York University (Roger Keil, Robin Roth, Peter Vandergeest) also hosts an international political economy and ecology summer camp. In Mexico, Durand Smith et al. (2011) identify a node of researchers at the Universidad Nacional Autónoma de México (UNAM) led by Enrique Leff that heralded the arrival of an '*ecología política mexicana*'.

The UK also has a longstanding and vibrant community. London is one centre, with faculty notably at the School of Oriental and African Studies (Rosaleen Duffy), the London School of Economics (Jennifer Baka, Tim Forsyth), King's College London (Raymond Bryant, Alex Loftus, Daanish Mustafa, Mark Pelling, Michael Redclift and formerly Mike Goodman, now at Reading University) and University College London (Matthew Gandy, Ilan Kelman, Ben Page, Graham Woodgate). But there are important political ecology groupings elsewhere in the UK, notably at Cambridge (Bill Adams, Ivan Scales, Bhaskar Vira), Manchester (Dan Brockington, Maria Kaika, John O'Neill, Erik Swyngedouw, Phil Woodhouse), Durham (Gavin Bridge, Harriet Bulkeley), University of East Anglia (Piers Blaikie, Jessica Budds, Thomas Sikor, Oliver Springate-Baginski) and at Sussex, where the work of Terry Cannon, James Fairhead, Amber Huff, Melissa Leach, Lyla Mehta, Peter Newell and Ian Scoones resonates with a political ecology approach. Lancaster University is establishing its own research and teaching, linked to an existing environmental institute.

Political ecology has also set down roots in a variety of other European countries, reflecting a complex set of historical influences and tendencies. Research in northern Europe encompasses faculty in Norway (Tor Benjaminsen), where there is a national research network on Political Ecology and Environmental Policy (<http://www.ntnu.edu/political-ecology>), Sweden (Henrik Ernstson, Alf Hornborg, Andrea Nightingale), Denmark (Christian Lund, Jens Friis Lund), and Finland (Anja Nygren). The approach is represented in universities in Austria (International Political Ecology research group, University of Vienna), Switzerland (Benedikt Korf, Christian Kull, René Véron, Anna

Zimmer) and Germany (Thomas Krings, Marcus Nüsser and the late Hans-Georg Bohle). The Netherlands has at least one Chair in political ecology and scholars working across several major universities and disciplines (e.g. Murat Arsel, Rutgerd Boelens, Bram Büscher, Rob Fletcher, Kees Jansen, Esther Turnhout), while in Belgium, there are scholars such as Anneleen Kenis and Johan Bastiaensen.

There is also growing interest in Italy (Koensler and Papa, 2013) and Portugal (Stefania Barca; see also Freitas and Mozine, ch. 43 this volume), as well as in Spain, especially at the Autonomous University of Barcelona (AUB), which is at the forefront of work connecting political ecology to ecological economics (Joan Martinez-Alier, Giorgos Kallis). In France, there is a longstanding and unique tradition of '*écologie-politique*' that has 'Green' activist political connotations, and some academic connections via the work of Alain Lipietz and René Dumont (Chartier and Rodary, ch. 39 this volume). But a group of geographers has begun to use the label 'political ecology' (when writing in French) (Gautier and Hautdidier, ch. 5 this volume; Molle et al., 2009). Benchmark books (e.g. Gautier and Benjaminsen, 2012) and conferences (<http://www.politicaecology.fr>) have been the result.

Political ecology extends well beyond Europe and North America. In Australia, for example, the Australian National University was the prime node for environment and development research for many years, and has several faculty members while offering postgraduate degree options (Matthew Allen, Keith Barney, Kuntala Lahiri-Dutt, Sango Mahanty, John McCarthy, Sarah Milne). Faculty members broadly interested in political ecology work at universities in New South Wales (Noel Castree, John Connell, Phil Hirsch, Fiona Miller, David Schlosberg), around Brisbane (Jason Byrne, Kristen Lyons, Kim de Rijke), as well as through an informal network connecting Melbourne and Monash universities (Hans Baer, Simon Batterbury, Adam Bumpus, Brian Cook, Wolf Dressler, Lisa Palmer, Haripriya Rangan, Craig Thorburn).

In South Asia, a particular focus has been on the interconnections between environmental history and political ecology, inspired in India by literary giants such as Ramachandra Guha and Madhav Gadgil, who wrote expansively on the *longue durée* of human–environment relationships (Gadgil and Guha, 1992), as well as Mahesh Rangarajan (Director of the Nehru Memorial Museum and Library). Scholarship by Bina Agarwal (Delhi and Manchester universities) has explored governance themes in feminist political ecology. There is also a strong tradition of interrogating peasant society, agrarian change and state–society relations, but largely from outside the continent (e.g. Arun Agrawal, 2005). Meanwhile, the Ashoka Trust for Research in Ecology and the Environment (ATREE), with its main base in Bangalore, is beginning to act as a centre for Indian political ecology with Sharachchandra Lélé and others (and now awards masters and PhDs through Manipal University). Scholars based in Bangladesh (Tanzimuddin Khan), Pakistan and Nepal (Pandey, 2013) also conduct research in the field. In South-East Asia, political ecology themes appear at the National University of Singapore (Harvey Neo, C.P. Pow, Jonathan Rigg) and De La Salle University, Manila (Antonio Contreras, Marvin Montefrio). South Korea and Japan produce a literature that loosely connects to political ecology often linked to water and conservation matters (e.g. Lee, ch. 14 this volume; Tuk-Po et al., 2003), while, in China, most scholars are still based outside the country (Yeh, ch. 44 this volume).

In Latin America the international character of political ecology is clearly demonstrated. Here, intellectual influences have come from inside and outside the region, featuring writing in Spanish, English and French (Chartier and Löwy, 2013; Martin and Larsimont, 2014; Leff, ch. 4 this volume; Freitas and Mozione, ch. 43 this volume). Notable is the work linked to CLACSO in Argentina with a working group concerned with power dynamics and nature–society relations (Hector Alimonda, 2002). Eduardo Gudynas heads a social ecology research centre in Uruguay (CLAES). Often there is a concern with past and present relations of coloniality (Alimonda, ch. 11 this volume; research by Andréa Zhouri on Brazil), while in Colombia the Universidad de los Andes has a group working on development and environment with connections to other regional universities. Serving as a ‘bridge’ between this variegated scholarship and the Anglo-American literature is the Colombian-born anthropologist Arturo Escobar (University of North Carolina) (e.g. 2008) and other western-trained political ecologists, including Diana Ojeda.

African universities have so far largely bypassed the approach, with the exception of South Africa (Patrick Bond, David Fig, Mary Lawhon, Maano Ramutsindela) (Bond, 2012; Lawhon et al., 2014; Wynberg and Fig, 2014), although scholars draw on it in Ghana (Kojó Amanor), Nigeria (Godwin Ojo) and Tanzania (Christine Noe). As this *International Handbook* highlights and as Kim et al. (2012) note, ‘other’ political ecologies signal an expansion and a shift in scholarly activity as work in the global South is expanding – driven in part by returnees from European and North American doctoral programmes.

Networks

The hallmarks of a strong academic field include being open and supportive, and building bridges across academia, non profits and implementing agencies. Political ecologists, scattered around the world, operate through a multifaceted set of academic networks. Long before social media, the Cultural and Political Ecology Speciality Group of the Association of American Geographers played a role in hosting a newsletter, annual awards and conference sessions, and then a listserv from the early 1990s. The Santa Cruz based Center for Political Ecology dates to 1989, and was established by the Marxist academic, James O’Connor. It describes itself as a ‘flexible, resilient cyber-based organization’ (<http://www.centerforpoliticalecology.org>). It also established the journal *Capitalism Nature Socialism*, and features the work of several scholars with strong activist links, including Barbara Rose Johnson. American anthropologists have the Political Ecology Society (PESO) and its listserv, as part of the Society for Applied Anthropology. Other networks include the interdisciplinary Political Ecology Working Group, established at the University of Kentucky in 2010, which organizes an annual Dimensions of Political Ecology Conference (DOPE). Its listserv, the International Political Ecology Collaboratory (IPEC), has rapidly internationalized, showing the power of new media (www.politicalecology.org). In Europe, the European Union has funded political ecology networks and doctoral student activities. These include a Political Ecology training network, largely for PhD students, called ENTITLE (<http://www.politicalecology.eu>), coordinated by the Autonomous University of Barcelona (AUB). It involves eight universities, NGOs and an environmental consultancy.

PhD students can undertake secondments to EJOs (environmental justice organizations). Meanwhile, Environmental Justice Organisations, Liabilities and Trade (EJOLT), which is also based at the AUB, is a global research project cataloguing, mapping and analysing ‘ecological distribution conflicts’ and environmental injustice (<http://www.ejolt.org>). In Latin America, scholars have built on CLACSO while linking to ENTITLE; the first Latin American Conference on Political Ecology was held at the University of Santiago in Chile in October 2014.

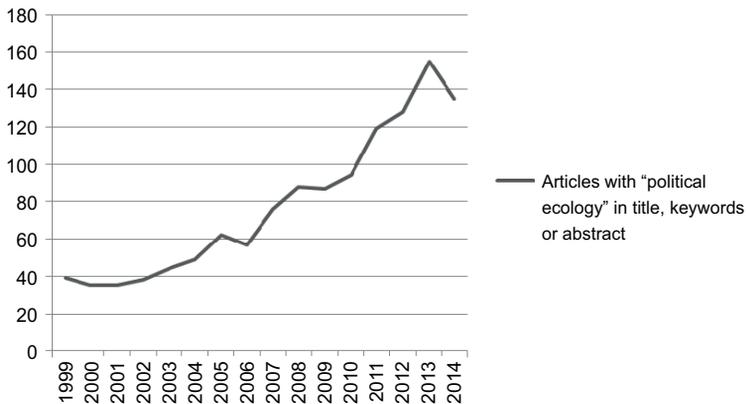
This growth of innovative scholarship, centres and networks in political ecology is encouraging, even though it has occurred against the backdrop of the broader academic changes noted above. It is indeed somewhat ironic that the rapid growth of the field has occurred in the context of the increasingly market-driven forces in academic institutions that I have described. Whether this trend can continue, or will sooner or later hit a ‘market saturation’ point, is unclear, but the demand from students reflecting political ecology concerns will surely shape how and where the academic field develops in the years ahead.

PUBLISHING OUTLETS

A publishing frenzy in the field has been driven by growth in the political ecology community, technological advances enabling faster writing, graphics, mapping and publication, as well as university ‘publish or perish’ drivers that measure and compare scholars in terms of quality and quantity of outputs. Books have regularly appeared in university presses and the major commercial publishers since the 1990s. This suggests that there is a market, whether through print or e-book media.

Similarly, academic journals have been a fertile ground for scholars. Of particular importance are three dedicated journals: the *Journal of Political Ecology* (JPE), *Écologie et Politique* and *Ecología Política*. Broad-based journals where significant work in the field is published have included: *Capitalism Nature Socialism*; *Conservation & Society*; *Economic Geography*; *Human Organization*; *Society and Natural Resources*; *Progress in Human Geography*; and *Geoforum*; occasionally too in *Annals of the AAG*; *Antipode*; *Development and Change*; *Human Geography*; *Political Geography* and several other, mainly US-based, anthropology and international studies journals. Figure 3.1 gives some sense of this publication process in that it calculates the number of articles published each year between 1999 and late 2014 in which ‘political ecology’ appears in the title, keywords and abstract. This is an underestimation of actual journal article output, because the database used does not include all journals.

My own involvement has been as co-editor of *Journal of Political Ecology* since 2003, processing almost 100 articles in this period. The case of JPE is illustrative of authorship trends in the field. Back in the early 1990s, two anthropologists at the University of Arizona, Jim Greenberg and Tad Park, obtained some funding to establish JPE as an online entity, soon after internet connections began to appear on American campuses. As one of the oldest open-access journals in the social sciences, and operating in three languages (English, Spanish, French), JPE now publishes over 30 papers a year and is cited thousands of times. It remains free online, has no commercial publisher, and relies on volunteer labour. Since almost all political ecology research,



Note: Many journals are not yet included in Scopus, and the *Journal of Political Ecology* was counted only after 2011.

Source: Scopus.

Figure 3.1 Growth in political ecology articles referenced in Scopus, 1999–October 2014

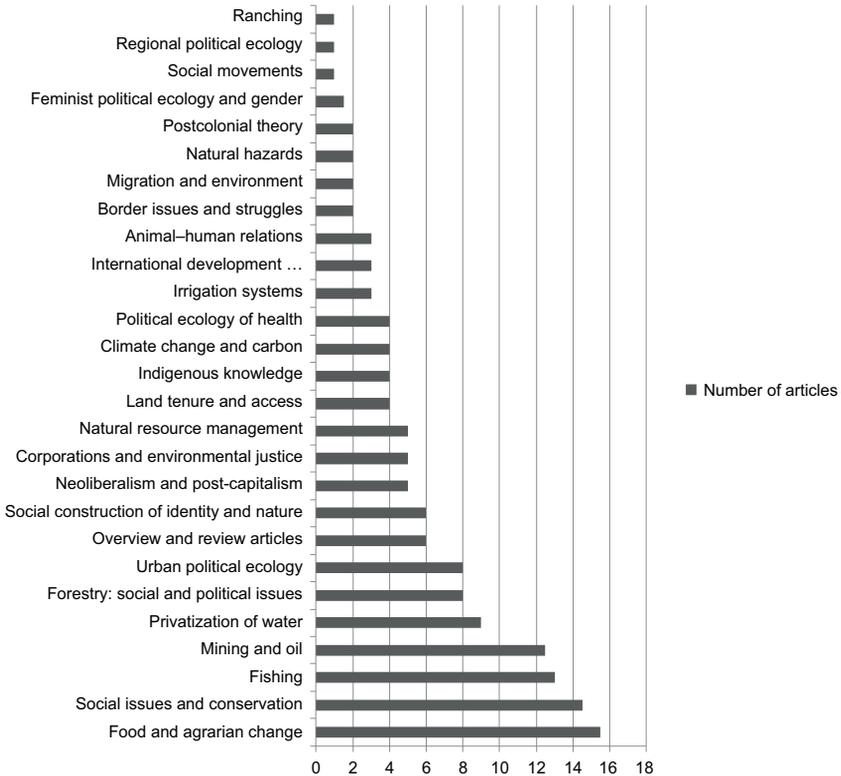
including that which is opposed to injustice, is published by major corporate publishers, the JPE is unusual.

The Journal is useful for charting trends in political ecology. Initially there was an attachment to the ideas of the American anthropologist Eric Wolf, who offered a Marxist account of the transition from feudalism to industrial capitalism (Wolf, 1982). Scholars such as Greenberg and Park were inspired by this, feeling that political ecology ought to amalgamate two important bodies of knowledge in relation to exploitation of the natural world – political economy, with ‘its insistence on the need to link the distribution of power with productive activity’ and ‘ecological analysis with its broader vision of bio-environmental relationships’ (Greenberg and Park, 1994: 1). They argued in JPE’s opening paper that ‘political ecology ... must begin not with abstract premises or dogmas, but with the productive activities of real individuals’ (ibid.).

Robert Netting is cited as another important forebear. Netting’s work (labelled cultural ecology) included deep historical analysis when examining agricultural societies in West Africa and Switzerland. Other influences included Meredith Turshen’s *The Political Ecology of Disease* (1984), which showed how health status connects to the division of labour and certain forms of class struggle. Work by dependency theorists, including Andre Gunder Frank (1966) and Immanuel Wallerstein (1974) also appealed to the Arizona political ecologists. But as Wolf (1982) observed, dependency theory could efface important differences between mercantile trade, capitalist modes of production, and the assimilation of other forms of production into capitalism. On the ecological side, meanwhile, the challenge was to link new developments in ecological theory to political economy and historically based materialist analysis. Nonetheless, the aim was not to be dogmatic: ‘we feel it would be ill advised to define “political ecology”, and maintain rather that all legitimate forms of political ecology will have some family resemblances but need not share a common core’ (Greenberg and Park, 1994: 8).

This was quite fortunate, since in the 147 articles published in the journal to October 2014, the one thing that is lacking is a common definition of political ecology, let alone a standardized methodology. Instead, authors have searched far and wide to find inspiration in different intellectual traditions ranging from the materialist work of Piers Blaikie to post-structural approaches focusing on discourses, identities and cultures (Escobar, 2008; Robbins, 2004). The current editors (Casey Walsh and I) insist on situating articles in some variant of political ecology, to impart intellectual coherence to the Journal.

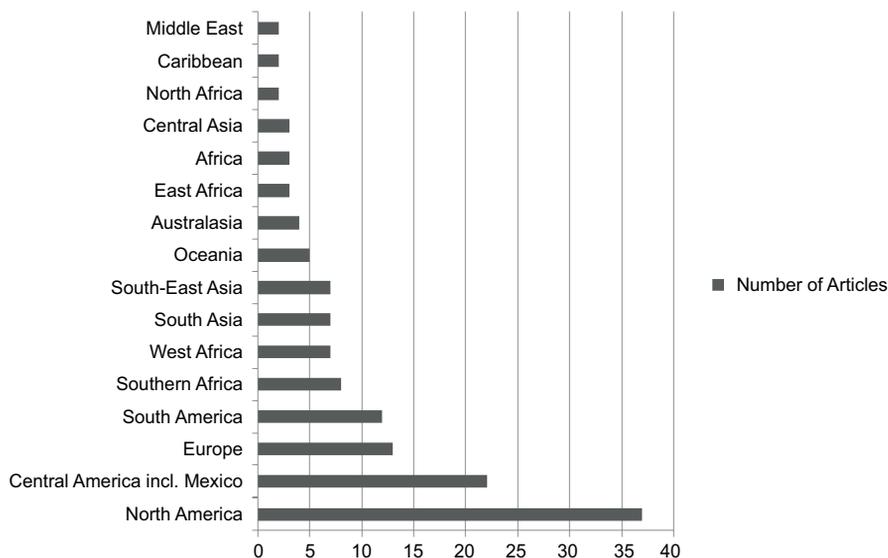
Let me turn briefly to the sorts of topics that have featured over the years. The number of submissions has climbed, especially since the late 2000s, reflective of a wider scholarly interest in the field. Dominant themes have been the political ecology of agrarian change/agricultural issues, conservation, fishing and aquaculture, and mining (Figure 3.2). There is still a prevalence of papers dealing with North, Central and South America (reflecting the longstanding Arizona base of JPE), although this is weakening as more is published (Figure 3.3). Recent special sections have included



Note: N = 145.

Figure 3.2 *Articles published in the Journal of Political Ecology 1994–October 2014, by main theme*

‘Non-capitalist political ecologies’, edited by Brian Burke and Boone Shear; ‘Energy, environment, engagement: encounters with hydraulic fracking’, edited by Anna Willow and Sara Wylie, and ‘Ecologies of hope’, edited by Ravi Rajan and Colin Duncan.



Note: $N = 137$.

Figure 3.3 Regional focus of articles published in the *Journal of Political Ecology* 1994–October 2014

PEDAGOGY

Since most political ecology activity remains centred in universities, teaching is vital to its perpetuation. There is a paradox here. The same cost-cutting exercises in universities described above have led to a downturn or cancellation of some critical classes in favour of those ‘more useful’ to students seeking practical skills necessary for work opportunities.³ But at the same time, the sheer popularity of critical environmental perspectives (including political ecology) with students has meant that university leaders and managers see the financial bottom line – they support some teaching in this field for its much-needed student numbers and, in some cases, fee income.

Political ecology now features in an array of undergraduate and postgraduate classes taught in diverse disciplinary and interdisciplinary homes, including geography, anthropology, sociology, politics, development studies and environmental studies. In the undergraduate curriculum, classes commonly include ‘political ecology’, ‘environment and development’ or ‘environmental politics’ in the title, with most of them assuming a basic understanding of natural resource access and international development questions. A quick internet search reveals many such classes with a heavy concentration in the

USA, Canada, the UK and the Antipodes, but with English and foreign-language versions in Europe and beyond (e.g. Brazil, Chile, Singapore). These classes are usually optional. This situation underscores the marginal status of political ecology in the modern (Western) academy insofar as the field is not deemed to be essential. But it also means that students enrol in political ecology classes voluntarily (which may sometimes relate to their subsequent career choices). While detailed surveys have not been done, my own experience is that political ecology students aspire to change and/or to be changed; they are dissatisfied with the predominant politico-economic and environmental management narratives of the day, and want to understand different resource struggles and potential responses to them, perhaps with an eye to allying with or joining campaigns or movements (Kepe et al., 2008). Mainstream academic fields do not fill this gap in the university 'market' quite so readily.

It is at the postgraduate level that political ecology thrives. This has certainly been my experience. I started teaching political ecology in 1997 with Tony Bebbington in a Masters class at the University of Colorado. Initial numbers were very small (four students, three of whom went on to become academics: Jeffrey Bury, Brian King and Elizabeth Olsen). Subsequently, I have taught the subject at diverse universities in Europe and the USA (e.g. the London School of Economics, Oxford, Arizona, Roskilde), where the desire of the students to learn about political ecology was usually matched by a wish to continue this type of work after graduation, in the workplace or through some form of advocacy or activism. Students I have taught have found work in diverse areas, including the United Nations and international development, humanitarian and environmental NGOs, in publishing firms, local government, as well as in the social responsibility and environmental appraisal units of large corporations, and in start-up companies concerned with such things as carbon management, the green economy, ecotourism and eco-planning. Based in Australia today, I regularly teach over 60 students in a postgraduate political ecology class, with several later embarking on PhDs around the world. Given its interdisciplinary appeal, my class draws in students majoring in such fields as Urban Planning, Development Studies and Public Policy, where career paths may be more obvious, but still the students are attracted to more critical perspectives. International students often return to their home countries dismayed, but more knowledgeable, about the political and ecological implications of the neoliberal situations they find there – and they are keen to find a way to promote change conducive to social and environmental justice.

The pedagogy of political ecology is also shaped by the complex career paths and life-stages of those who teach. The chance to teach in this field is relatively rare, despite the popularity of political ecology among students. Hence only a few academic job advertisements specify the ability to teach it, and this may come only with greater seniority. Mid-to-late-career academics may be more knowledgeable than junior colleagues, but they can be just as angry about injustice as the students they teach. Others are just keen to pass on their research techniques and findings.

Perhaps the greatest constraint to good teaching is that, except if tenured, an individual (however senior and respected) can lose their job by failing to simultaneously produce research inputs and outputs such as grants, publications and research students. This situation again reflects market forces; 'scholarship', for the purposes of rankings and excellence, is largely about research and far less about teaching or

‘practically focused’ work. Concurrently, it creates a tension within the university world (less so in colleges that have a teaching mission) in which ritualistic extolling of the value that institutions place on the student, and teaching, is offset by the *de facto* privileging of a research-led agenda for its academic staff.

ENGAGEMENT

While centred on the world of higher education and the university, political ecology has never been reducible to it. There are myriad networks and institutions in civil society that encompass such things as the everyday actions of social and environmental movements (including more radical NGOs, such as Global Witness and La Via Campesina), as well as campaigns for environmental justice. There has been an elaboration of key ideas outside the university (Martinez-Alier et al., 2014). There are also activist-writers whose activity is mostly or entirely beyond the academy, and whose publications are *de facto* political ecology. These include the investigative journalists and authors – George Monbiot (UK), Ann Danaiya-Usher (Norway/Thailand), Marites Dañguilan Vitug (Philippines), Naomi Klein (Canada) and Larry Lohmann (UK).

The work of a wider community keeps academic political ecologists on their toes. Already impelled forward by their students, as well as by personal conscience, academics feel acutely the need to ‘be useful’, whether or not their institutional home promotes an applied ‘engagement’ mission or is even accepting of radical voices. ‘Explanation’ is a necessary, but not sufficient, component of academic work (Batterbury and Horowitz, forthcoming). The role of the ‘analytical critic’, which many of us adopt, works best when it at least provides some tractable alternative proposals to the environmental and social problems that our research uncovers. Yet the problem for academics is finding ways to move forward – from complex explanations towards solving complex problems, be it through advocacy, applied research or policy advice (Bryant and Bailey, 1997; Blaikie and Muldavin, ch. 30 this volume). Burawoy (2005) for instance argues that academic labour places discovery and experimentation above utility or social relevance; he recommends four paths to making social science relevant, termed professional, critical, policy and public. The latter two elude many scholars. Robbins (2004) makes another distinction: political ecology can be used as ‘hatchet’ and as ‘seed’: the ‘hatchet’ is incisive critique and a search for causation, and the ‘seed’ offers fresh and useful ideas, also including critique, that can feed through into direct advocacy and activism (see also Batterbury and Horowitz, forthcoming).

Debate over ‘relevance’ is fierce. Noteworthy here is the question of what kind of engagement to pursue (to seed or to plant?). For some, cooperating with powerful institutions through policy advice or advocacy is off the agenda; engagement should be with ‘alternative’ movements that seek to assert their rights and thereby subvert the powerful. For example, Arturo Escobar is renowned for critiquing mainstream development thinking and the international development sector. He has nurtured a longstanding research and activist connection to Afro-Colombian movements battling to establish an alternative way of life and territoriality beyond capitalism (Escobar, 2008). Meanwhile,

Lucy Jarosz (2011), based at the University of Washington, has long promoted a local activist agenda based on a feminist care ethic and alternative agricultural production.

Other scholars believe that strategic cooperation with selected development institutions is required in order to sway their path. For example, Ed Carr (2011) pursues research in West Africa that is partly linked to USAID programmes, while long ago Tony Bebbington and Judith Carney (1990) advocated working with international agricultural research centres, and Bebbington worked at the World Bank on several projects. Indeed, political ecologists have been employed in such agencies as the UK's Department for International Development, and diverse Scandinavian aid agencies (Bebbington and Carney, 1990; Batterbury and Horowitz, forthcoming). Piers Blaikie, based at the University of East Anglia, held an academic post where a percentage of his work was conducted as a consultant, mostly with development agencies. He combined being a political ecologist with a clear bent towards policy advice (Blaikie and Muldavin, ch. 30 this volume). Policy think-tanks have hosted political ecologists: the World Resources Institute (Jesse Ribot), the UK-based International Institute for Environment and Development (where John Thompson, Jules Pretty, Tony Bebbington and Ian Scoones worked; see Batterbury, 2004) and the Overseas Development Institute (Tony Bebbington). Also in the UK, Larry Lohmann, Nicholas Hildyard and Sarah Sexton are based at the not-for-profit company The Corner House (www.thecornerhouse.org.uk), while the Transnational Institute (TNI, <http://www.tni.org>), formed in the USA, is an important network of activist-scholars spanning the globe. The Centre for Science and Environment in Delhi, directed by Sunita Narain, has undertaken applied varieties of political ecology work. Finally, many scholars will use opportunities that present themselves to share research findings with relevant official bodies or programmes (as I did with one German-funded development project in Burkina Faso in the 1990s; see Batterbury, 1998). In short, political ecology can be policy-relevant, helping to detour and shape the agendas of powerful institutions.

In diverse ways, therefore, political ecologists can often demonstrate the feasibility of engagement. The point in doing so is not to abandon one's critical faculties, but to deploy them (Olivier de Sardan, 1995). All manner of involvement is possible, notably in organizations that are conserving natural resources, tackling persistent poverty, and fighting for environmental justice (Martinez-Alier et al., 2014).

CONCLUSION

I have argued that political ecology is a research field with many personal and political dimensions. Deliberately conceived as a multidisciplinary enterprise, it is found in the scholarship of individuals who often transgress the quotidian hierarchies and structures of universities and academic disciplines. Its key findings transcend the social and natural sciences, while zeroing in on social and ecological injustices: for example, evictions resulting from protected area management and land grabbing.

Political ecology is broad in scope. There are no university departments of political ecology with core funding and a legacy of staff and PhD students to sustain them; instead there are clusters and individuals scattered across the world. Research output is plentiful, widely read and published in a range of outlets, but so far it has lacked a

natural centre of gravity (although the non-commercial *Journal of Political Ecology* may be starting to fill this gap). It has not always directly penetrated mainstream thinking on environmental issues, including the ‘human dimensions of global environmental change’, despite the complex and cutting explanations offered by its practitioners (Castree et al., 2014: 763). Teaching is largely conducted as ‘bolt-on’ classes in existing programmes, with ‘optional’ status in courses. But these classes are proving increasingly popular with students and contribute to a burning sense of injustice, as well as a desire to right at least some of the wrongs of untrammelled greed and inequality in the world.

Given that it is a field fighting against the very strong neoliberal current of our times, it is only to be expected that political ecology will remain a marginal part of the academy in the short and medium term (despite its increasing prominence in human geography and anthropology). This is also true outside Western academic institutions. While it might be rooted in different national and regional academic cultures (as this *International Handbook* explores), the general consensus is that political ecology must address and fight political, economic, social and ecological inequities. This means that it will never be popular with universities that are fully beholden to political and economic power-brokers. Indeed, and as scholars join forces with political ecologists ‘out there’ in civil society, the stage is set for an even greater oppositional politics both inside and beyond the academy (e.g. Willow and Wylie, 2014). Political ecologists will not shy away from such confrontation as they join wider struggles that seek to ‘speak truth to power’, attempting thereby to influence policies, organizations and practices. This task will not be easy, but then they have known that all along.

NOTES

1. I wish to thank Bram Büscher, Wolf Dressler, Christian Kull, Eric Perramond and Priya Rangan for helpful suggestions.
2. This is not an exclusive list of key individuals and institutions, and it is a snapshot as of late 2014. Of course, many political ecologists work outside such groupings.
3. I will not list these, but there are also newly established ones, for example at SOAS (School of Oriental and African Studies), University of London.

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4. Encountering political ecology: epistemology and emancipation

Enrique Leff

This chapter considers the development of political ecology with an eye to how this research field has been shaped by Latin American experiences and scholarship. This is not simply a story about how a political ecology perspective offers useful insights into past and present political, economic, cultural and ecological processes in this geographical region. Rather, it is about how social movements in this region and Latin American environmental thinking have helped to constitute a wider perspective and approach to this emergent discipline and field of social action. Other regions and scholarly traditions have certainly also played their part in this growing international intellectual phenomenon (e.g. Batterbury, ch. 3 this volume; Gautier and Hautdidier, ch. 5 this volume). Yet it is arguably the case that Latin America deserves pride of place in this regard.

In this chapter, I develop this argument, drawing in a selective manner on historical and contemporary literature from a ‘Latin American political ecology’.* Thus I first briefly discuss some of the pioneers in this literature to show the deep roots of political ecology thinking in the region. Then the chapter explores how Latin American scholarship has shaped the epistemological bases of the wider research field, illustrating this argument with the examples of dependency theorists, decolonial studies, ethno-ecological research and environmental thinking as core references of Latin American environmental thinking (Leff, 2012). Next I consider how that scholarship has also framed the emancipatory potential of political ecology, via examples relating to ontology of diversity, politics of difference, ecological redistribution conflict, cultural re-appropriation of nature, dialogue of knowledges and processes of territorial-based resistance (and *re-existence*). The conclusion briefly considers the future of Latin American political ecology and its wider influence.

POSTCARDS FROM LATIN AMERICA

The roots of political ecology stretch far back in time – before the great wave of institutionalization of a new academic discipline in the 1970s and 1980s, before the radical intellectual politics of the 1960s, before the revolutionary writings of early twentieth-century anarchists, back to the advent of Marxism in the mid-nineteenth century. Those roots spread far across space too, through Europe, Asia, Africa and the Americas, in the roots and branches of anglophone, French, German, Spanish, lusophone, Indian and Latin American political ecology (Leff, 2014, 2015a, 2015b;

Freitas and Mozione, ch. 43 this volume). Here, the main focus is on Latin America and its multifaceted contribution to this now quite international and intercultural research enterprise.

Latin America, encompassing lands and peoples stretching from the Mexican–US border to the southern tip of Argentina and Chile, has a fair claim to being the most important region in the history and development of political ecology. For one thing, it has long been a fertile source of thinking about how power relations infuse politics, economics, ecologies and cultures through processes of de-territorialization and re-territorialization that shape landscapes and people's livelihoods. For another thing, it has long been a favoured object of attention by writers both from within and without the region. On both counts, Latin America has long prompted and shaped the political ecology imaginary – with worldwide implications in terms of theory and practice. Below, I explore selected Latin American contributions in relation to the epistemological reflection and emancipation processes that give its identity to Latin American political ecology.

While a case can be made for thinking of a nineteenth-century writer such as Euclides da Cunha (see Hecht, 2008) or even Jorge Amado (e.g. his 1943 classic *The Violent Land*) as proto-political ecologists, it is more overtly political thinkers and activists such as José Martí (1963), José Carlos Mariátegui (1971), Frantz Fanon (2004) and Aimé Césaire (1955) who are arguably precursors of Latin American political ecology. In Martí's (1963) affirmation that struggle was not between civilization and 'barbarism' but between false learning and nature, we find a critical response to European epistemological-political colonization. From Mariátegui's (1971) Latin American Marxism, intended to root socialism in the traditions of indigenous peoples, including restoration of their community life and productive organization, to the liberation pedagogy of Paulo Freire (1970) and the eco-pedagogy of Leonardo Boff (1997), we can trace a lineage of critical thinkers who have forged this research field.

Meanwhile, Eduardo Galeano (1971) recounted in *The Open Veins of Latin America* the history of its exploitative colonialism. Here, he brought to light the production of poverty generated through exploitation of the earth's wealth, with feverish extraction of gold and silver over centuries so rapacious that it had seemingly exhausted the hitherto abundant supply of metals in the crust of Latin American territories while oppressing and displacing traditionally resident populations – until, that is, the recent and fiercely contested reinstatement of this exploitative form of capitalism expressed today via the invasion of technologically advanced mineral and oil extraction enterprises in the region (Alimonda, ch. 11 this volume). Likewise, poverty was produced in the old agricultural *latifundia* (large agricultural estates) – for example, sugar cane in Cuba, rubber in Brazil, bananas in Ecuador and Colombia – that also reappears today with traditional forms of land exploitation as well as with new transgenic crops, biofuels and other so-called ecological forms of capitalism. These historical and contemporary manifestations serve to demonstrate the insatiable thirst of capital for nature that triggers socio-environmental conflict at the core of political ecological processes in Latin America and more generally in the global South (Svampa and Antonelli, 2009; Svampa and Viale, 2014).

Political ecology in Latin America has been also nourished by a rich tradition of anthropological and ethno-ecological research. For example, there is the analysis of

John Murra (1956) regarding the organization of geographical space and vertical ecological zones (also called 'vertical archipelagos': structures of exchange and access to separate altitudinal resource zones or *pisos ecológicos* of the Andes) of the original people of *Tawantinsuyu* (the Quechua name for the Inca Empire). In addition, work on the cultural and ecological potentialities of Mesoamerica (e.g. Palerm and Wolf, 1972) or the roots of 'deep' or 'real' Mexico (Bonfil Batalla, 1987) had an impact on the research field. At the same time, the classic book *Geografia da Fome* [*Geography of Hunger*] by the Brazilian physician, geographer and writer Josué de Castro (1946) was a precursor to a legion of political ecology studies addressing critical health and other problems faced by Latin American populations affected by ecological degradation in their territories and linked to the actions of powerful outsiders. More recently, research is connecting cultural anthropology and environmental geography through work about the forging of a politics of territoriality and difference by socio-environmental movements guided by principles of political autonomy and a cultural re-appropriation of nature (see below). The field of political ecology is thus being forged in Latin America through the welding of theoretical thinking, empirical research and political action.

Indeed, in the emancipatory projects that they formulate, indigenous peoples in Latin America assert that their struggles are simultaneously epistemological, political and cultural processes. In the literature, this dialogue between theory and practice has been exemplified over time by a variety of in-depth landmark case studies – for instance, in pioneering research highlighting the defence of subsistence ecology by the Miskito Indians in Nicaragua (Nietschmann, 1973), the extractive reserves of the *seringueiros* (rubber tappers) in Brazil (Porto-Gonçalves, 2001) and the activism of Afro-Colombian communities fighting the appropriation of their territories in Colombia (Escobar, 2008). Recently, scholars have sought to pull together and reflect on some of these historical and contemporary threads, notably via a working group on political ecology established in 2000 under the auspices of the Latin American Council of Social Sciences (CLACSO) (Alimonda, 2002, 2006).

KNOWING POLITICAL ECOLOGY (EPISTEMOLOGY)

That Latin American experiences and scholarship have shaped the epistemological bases of political ecology can be seen in the diverse contributions that have influenced, often in differing ways, how the research field has understood its subject-matter. Political ecology has its roots and establishes its disciplinary identity in the power relations that cut across all theoretical, discursive and economic structures/strategies in the social appropriation of nature (Marx, 1965; Foucault, 1980). Thus the practice of political ecology notably concerns deconstruction of theories, decolonializing modes of thinking and confrontation of strategies of power-in-knowledge that dominate Latin American environments and peoples.

The classic case is dependency theorists, who tended to be centred on Latin America. Here the preoccupation was to understand how and why Latin America was subjected to economic domination, social inequality and ecological destruction at the hands of European (and later US) powers over the course of centuries of colonial and

post-colonial subjugation – a process that is ongoing (Alimonda, ch. 11 this volume). Latin American environmental thinking has reflected on how modern (i.e. Western) rationality constructed an unsustainable world (Leis, 2001; Leff, 1995, 2004). Ecological destruction generated by the exploitative appropriation of nature during the colonial regime and then on to the present world economic order was accompanied by the exclusion and eradication of traditional practices even as Western knowledge, economic rationality and religious beliefs were imposed on the conquered territories. These sweeping changes were simultaneously linked to the political and economic rise of the West, as early capitalist relations of production were formed in and through exploitation of the peoples and natural resources in the region.

Critical theorists writing in and/or about Latin America drew creatively on an earlier generation of Marxist writers as well as influential Latin American intellectuals (e.g. Raúl Prebisch and the CEPAL School – who stressed the structural dimensions of the region's economic woes) to develop the theories of unequal exchange, underdevelopment and dependency of the Third World on the First World in a world system organized by and favouring the latter (e.g. Gunder-Frank, 1966; Dos Santos, 1978; Wallerstein, 1974). Thus Cardoso and Faletto (1979), in *Dependency and Development in Latin America*, connected unequal international economic exchange to the creation of 'enclave' economies as well as the historical and political alliances and dynamics in Latin American countries that facilitated such activity. This theory was fundamental to the development of political ecology in so far as it conceived of dependency and underdevelopment as a structural state of world affairs where poor nations provided the natural resources and cheap labour in an unequal interchange for capital and technology from 'developed' nations. Here the cause of Latin American misery was firmly connected to capitalist relations of production that underpinned the wealth and power of Euro-America – and not, as some Western writers (such as Paul Ehrlich) had it, to rapid population growth in the Third World (for critique from Latin America, see Herrera et al., 1976). At the same time, dependency research was reinforced by studies on 'internal colonialism' where hierarchies and inequalities are internalized and constructed within the class structure of poor countries (González Casanova, 1965; Stavenhagen, 1965). With the contemporary emergence of severe and intensifying environmental crises, the dialectical relation of capital and ecology was incorporated into these previously examined contradictions of the economic world order – prompting in turn fresh critical understanding of how destruction of the ecological and cultural potential for a more equitable, diverse autonomous and sustainable development of the South has occurred (Leff, 1995).

This Latin American literature proved immensely popular to a new generation of critical scholars, notably emerging in Western Europe and the USA in the 1960s and 1970s, who were also keen to challenge mainstream thinking about environmental crises as a product of a Third World population 'bomb' or the 'tragedy of the commons' (e.g. Ehrlich, 1968; Hardin, 1968). The emergence of political ecology in these regions was thus strongly influenced by neo-Marxist thinking in general and dependency theories in particular – with some scholars conducting their own research in Latin America in this idiom (e.g. Wolf, 1982; Bunker, 1985). More generally, the recurring focus in political ecology on unequal power relations – between rich and

poor, North and South, men and women – owes much to this dependency literature (Bryant and Bailey, 1997; Robbins, 2012).

Yet the epistemological inquiry did not stop there – in subsequent decades, political ecology has continued to draw inspiration from the Latin American context. One such example is the attention given to decolonial thinking, a way of looking at centuries of oppression that widens the scope of analysis further from political economy to also encompass cultural modes of power, domination and resistance.

Hence a critical literature has developed in recent times addressing the coloniality of knowledge (e.g. Lander, 2000; Mignolo, 2000, 2011; Mignolo and Escobar, 2009; Quijano, 2008). Decolonization of knowledge leads scholars to inquire how Eurocentric ideas, stretching from ancient Greek philosophy to modern Western science and technology, were introduced to traditional societies and cultures in Latin America through conquest, colonization and globalization. This process entailed the systematic subversion of indigenous modes of thinking, productive practices and cultural life-worlds, which were belittled as being the antithesis of ‘modernity’ and ‘progress’. However, such oppression and extermination generated an often fierce reaction, as indigenous groups mounted political resistance and purposive actions for the decolonization of knowledge as a condition for the re-appropriation of their bio-cultural patrimony (Boege, 2008), the product of the co-evolution of their original cultures in the ecological conditions of their living territories.

Fundamental to this process is the deconstruction of metaphysical thinking and logocentric science instituted as a hegemonic way of conceiving reality constructed by modern economic/scientific/technological rationality. This is an endeavour designed to deepen understanding of the epistemological foundations of colonial regimes and their power–knowledge strategies that dominate peoples and environments in Latin America to such ill effect. At the same time, it is about helping to construct sustainable societies rooted in the ecological potentialities and cultural identities of local peoples – an initiative that involves decolonizing knowledge so as to liberate them from cultural as well as political-economic exploitation, inequality and subjugation that hinders the realization of alternative life-worlds.

Beyond a hermeneutic deconstruction of domineering knowledge, decolonization of knowledge implies the recognition and revaluation of traditional and ‘other’ knowledge systems – often labelled ‘local knowledge’, ‘popular wisdom’ or ‘folk science’. Long rejected or ignored altogether in Western literature, this body of knowledge is variously described as ‘indigenous science’ (De Gortari, 1963), ‘macro-systems’ (López Austin and López Luján, 1996), ‘native sciences’ (Cardona, 1986), ‘popular knowledge or people’s science’ (Fals Borda, 1981, 1987) or ‘systems of indigenous knowledge’ (Argueta et al., 1994). This ‘non-Western’ understanding of the world is fundamental for the construction of an alternative rationality capable of deconstructing the globalized world-system and building other possible life-worlds. The construction of a global world order founded in differences and specificities of diverse territories emerges from peoples’ knowledge embedded in their ecological conditions and embodied in their cultural being. Traditional ecological knowledge and ‘cultural imaginaries of sustainability’ are the roots and sources of Latin American thinking, offering new perspectives for sustainability (Leff, 2010, 2014).

Scholars, as well as environmental activists and indigenous peoples, emphasize just how high the stakes are in this epistemological struggle. Colonization of knowledge has been a fundamental instrument for cultural submission and appropriation of nature, from the original conquest of peoples and their territories to present strategies framed by the ‘geopolitics of sustainable development’ (Leff, 2002). Indeed, today, such colonial thinking is *increasingly* found as territories are revalued and re-appropriated as areas for the development of the euphemistically called ‘green economy’. Here, this involves such things as unrestrained exploitation of non-renewable resources (oil, coal, minerals), biodiversity ‘conservation’ through the transformation of bio-diverse ecosystems to commercial mono-cropping to absorb greenhouse gases and foster biotechnological prospecting for the production of cellulose, transgenic crops, foodstuffs, genetically modified forestry and agro-biofuels – all designed to underpin and/or revive economic growth in ‘developed’ countries in the West as well as key emerging economies such as China, India and Brazil. As such, decolonizing knowledge, epistemological vigilance and critical thinking about the power strategies that are being deployed in the contemporary geopolitics of sustainable development are central to the fight-back against the rampant forces of global capital that combine traditional and new forms of exploitation and oppression in Latin America (as well as in the rest of the global South).

This task involves deconstructing theories embedded in the politico-economic world order and embodied in the life-worlds of people throughout Latin America (and beyond). The idea is to disable institutionalized structures that uphold an unsustainable rationality. Deconstructionism thus unveils the ways that knowledge was constructed and inscribed in the world system such that today it dominates the order of life on earth. Political ecology research assesses precisely where ontological difference turned into social inequality, where being-in-the-world turned into world ‘thingness’, where the reflection of nature and human labour turned into abstract ideas based on generalized monetary value. Decolonizing knowledge is therefore an epistemological condition for deconstructing the exploitative trends of the global economy and reviving the ecological potentials and cultural meanings of local people, thereby giving life to alternative modes of production, thinking and being.

This is indeed a complex and challenging task, demanding new ways of thinking arising from these subjugated places of being and enunciation where discursive power strategies are wielded and welded. In a globalized world, the social re-appropriation of nature is inevitably rooted in the reinvention of cultural identities. The rescuing and reconstruction of traditional knowledge occurs precisely in the encounter of conflicting rationalities, as well as through intercultural hybridization and a dialogue of knowledges. A sustainable world is hence constructed in the clash of thoughts and actions, in cultural re-identifications, as well as in the reinvention of practices, negotiation of interests, and expression of existential meanings through the social re-appropriation of nature in a plural world based firmly on ecological productivity and social justice.

Indeed, Latin American political ecology seeks to articulate an ‘alternative environmental rationality’ centred on ecological sustainability and cultural meanings that builds on rooting critical thinking in new life-territories through political practices. This is not simply the application of deconstructive theories, complex sciences and sustainability blueprints to the design of new cultural territories; it goes well beyond the

purpose of adapting technologies to the ecological and social conditions of Latin America, building a new dominion of knowledge subject to the global ‘comparative advantage’ of the ecological conditions and natural resources endowments located in Latin American countries.

Deconstructing theory and decolonizing knowledge precisely entails politicizing the ontology of diversity, difference and otherness to thereby construct sustainability discourses and practices rooted in specific cultural territories rather than Western scientific narratives based on universalist concepts, as well as de-politicizing notions such as biodiversity hotspots, ecosystem services and sustainable development, that in the end disregard the ecological conditions of life and disrespect local peoples’ existential conditions and knowledge systems (Leff, 2004, 2014). As noted below, this politicization process requires establishing and enforcing rights for cultural diversity that undergird construction of ‘territories of difference’ (Escobar, 2008) while promoting a political ethics of otherness. This process opens new perspectives in the deconstruction of the unitary hegemonic global world founded on scientific ‘objectivity’ and the conceptual universals of pure reason, in order to construct instead a world founded on differentiated ecological potentials and cultural meanings. It seeks nothing less than the reorientation of the destiny of humanity – guided by the hetero-genesis of natural and cultural diversity arising from eco-cultural co-evolution – in support of the construction of a future global world integrated by different cultural projects of the sustainability of life.

Deconstruction of modern rationality thus goes beyond a paradigmatic shift from Western mechanistic and structural science to a new episteme of generalized ecology and complex thinking. ‘Normal’ epistemology is de-centred by environmental rationality. The environment is hence not the milieu that surrounds material and symbolic processes centred on their internal organizing principles: it is not only an ‘externality’ of the economic system and logocentric sciences that can be internalized by a holistic view, a systemic approach or an interdisciplinary method (Canguilhem, 1971, 1977; Leff, 1986, 2001). The environment, as an epistemological category, emerges as the exteriority of scientific and economic rationalities, as the ‘other’ of totalitarian knowledge; it calls us to rethink relations between the Real and the Symbolic in order to enable people to construct sustainable futures. Environmental rationality goes beyond a hermeneutics of nature’s meanings in order to re-signify nature through language, symbolic codes and power strategies, involving visions, feelings, reasons and interests that are debated as power strategies in the political arena. Thus it guides socio-environmental movements in their quest for the social re-appropriation of nature (Leff, 2004, 2014).

While both decolonial thinking and the articulation of an alternative environmental rationality have so far had a greater impact on the epistemology bases of political ecology as practised inside Latin America, it is nonetheless the case that such political epistemology is gaining prominence outside the region. To take but one example, calls for an indigenous political ecology that is notably based in American Indian thinking and territories in various parts of the USA today clearly are based on advocacy of decolonization (see Middleton, ch. 40 this volume) – part of a broader ‘epistemic decolonial turn’ (Grosfoguel, 2007).

ENACTING POLITICAL ECOLOGY (EMANCIPATION)

The contribution of Latin America to the wider international political ecology community can also be seen in the invaluable intellectual interventions as well as empirical examples (i.e. social movement practice) that inform a political ecology of emancipation. Here, enacting political ecology builds on knowing political ecology (and vice versa) in ways that go to the heart of political ecology today.

Critical to this endeavour are the strategies for territorializing the ontological principles of diversity, difference and otherness in a 'cultural politics of difference'. Building on the sorts of epistemological deconstruction and reconstruction noted above, the ontology of diversity is firmly based in the location-specific socio-natural practices and understandings of Latin America's indigenous peoples. As scholars observe, this involves the rejection of a Western process in which nature was 'constructed' as an ontological order: nature as *physis* embraced the Real. Later on, the naturalness of reality became a fundamental argument to legitimate the 'real existing order'. Yet this 'naturalness' of the order of things became the metaphysical foundation of an anti-nature rationality as, in modernity, nature was converted into an object of scientific inquiry as well as an input – as raw material – for economic production under capitalism. In short, nature was de-naturalized from the ecological and thermodynamic order of life. The emancipatory response here is to reconstruct nature, albeit not based on essentialist ontology. Rather, reconstruction follows a hybrid path – physical, organic, symbolic, techno-economic – through the encounter and confrontation of heterogeneous rationalities and practices that are part-and-parcel of the reinvention of cultural identities and of new productive strategies for the conservation and sustainable use of their natural resources. Such ontology of diversity reflects both the heterogeneous conditions, interests and perceptions of indigenous peoples across Latin America and recognition of the need to engage through a dialogue of knowledges with broader trends in the world.

Ontology of diversity and difference derives from a fundamental ontological condition: the sources of life. Following Erwin Schrödinger's (1969; originally published in 1944) insight on the thermodynamic condition of life, I call it 'negentropy'. Negentropy is that strange 'reason' of life, the cosmological 'error' (as the late nineteenth-century German philosopher Friedrich Nietzsche would have it) that brought life from chaos: the principle of life drawn from the transformation of solar energy into biochemical energy through photosynthesis. Environmental rationality embraces two principles: the production of life and the production of existence. Thus sustainable production is based on the negentropic conditions of production based on the ecological potentials of the earth and the cultural creativity of the peoples that inhabit the living planet. Concurrently, environmental rationality deconstructs and encounters the hegemonic modern economic, scientific and technological rationality that drives unsustainable economic growth to the increasing degradation of ecological organization and ultimately to the entropic death of the planet (Georgescu-Roegen, 1971; Leff, 2004). Political ecology faces the challenge of harnessing and reversing this process of entropic degradation by prompting negentropic thermodynamic processes in the construction of a social order founded in the immanence of life, the ecological productivity

of the biosphere, and culturally innovative practices that preserve and enhance the sources of life on the planet.

Engagement with a politics of difference has been a hallmark of Latin American political ecology. Here, cultural diversity and ontological difference are at the core of such a politics, which seeks to disrupt unitary and controlling systems of knowledge, power and culture that have long afflicted indigenous people across the region. As Escobar (2006) notes, ‘ecologies of difference’ connect to different cultural meanings being assigned to nature, with power dynamics implicated in this process. Hence those meanings are linked to the political assertion of human rights to thereby confront hegemonic systems – based on individual private rights (that underpin the ‘rights of the market’ and intellectual property rights) forged in keeping with Western law and judicial thinking – in order to construct alternative ways of inhabiting the world based on collective rights over the ‘commons’. Concurrently, there is a commonality that could be the leitmotif of political ecology itself: political difference is the right to be different, the right to differ: to contest the already existent reality and to conceive the construction of a sustainable world through the deployment of ontology of *différance* (Derrida, 1982) through a politics of difference. In a context in which some political ecologists warn of the de-politicizing tendencies of the current neoliberal times (Swyngedouw, ch. 10 this volume), the assertion of political difference in Latin American political ecology assumes a far wider significance.

A critical ethics of otherness (Levinas, 1969) is vital to this enterprise in so far as it helps to dissolve the unitary and universal ontology of being and epistemologies that inform the hegemonic world economic and political order today. Beyond the intrinsic moral well-being that flows from such an ethics (i.e. acknowledging common rights, the rights of others, as well as indigenous and local people’s rights, needs and perceptions), it is also essential in that it destabilizes powerful and established ways of domination and of being-in-the-world, by restraining the unleashing of the will to power (Nietzsche, 1968) arising from the lack-in-being of the symbolic-unconscious condition of humankind (Lacan, 2006) and building new social norms to live peacefully and sustainably in a world of cultural differences. The ‘Other’ is incommensurate and untranslatable; it does not assimilate to a consensus of conflicting differences or to common knowledge through communicative rationality (Habermas, 1984). In a way, this ethics and cultural politics of difference subverts the domineering theoretical, scientific and techno-economic hegemonic rationality. The construction of a sustainable world is viewed as the outcome of a dialogue of knowledges, understood as the conflictive encounter of cultural beings, of different modes of being-in-the-world.

Enacting political ecology has also revolved around a clear sense of how past and present hegemonic power structures impinge on people’s everyday lives. To plot a strategy of emancipation involves an often highly location-specific sense of multi-faceted ecological distribution conflicts (i.e. unequal allocation of environmental costs and benefits as well as associated conflicts; see Martinez-Alier, 1995) geared by multiple power structures. In effect, socio-environmental conflicts encapsulate the battle between sameness and otherness, likeness and difference, and ontological uniformity and diversity. While assessment of these conflicts is by no means confined to Latin America, this region affords an especially rich setting within which to explore and test this concept – with insights that then inform wider thinking about it.

In Latin America, the idea that socio-ecological justice and emancipation is based on the ‘cultural re-appropriation of nature’ is central to political ecology analysis. If the ethical politics of otherness points towards the pacific coexistence of different ways of being-in-the-world, the varieties of ways in which human cultures construct nature open political ecology to conflicts of ‘equality in difference’ arising from different cultural visions and valuations of nature, as well as the confrontation of cultural/economic rights to appropriate nature and to territorialize cultural diversity. However, difference of cultural values and visions does not become a political force by virtue of their ontological and ethical principles *per se*. Rather, to legitimize differences that privilege new values and empower cultural beings hitherto subjugated (e.g. the *buen vivir* or ‘living well’ of Andean indigenous peoples; see Huanacuni, 2010) is to confront the saturation effects of the forced homogenization of life induced by Western metaphysical thinking and modern rationality. Politics of difference thus emerges as the resistance of cultural beings to the dominion of global hegemonic homogeneity, as well as to the associated objectifying of people and their environments. Indeed, the push for equality within the scope of (Western-style) human rights and its juridical procedures based on individual rights ignores the political principle of ‘equality in difference’ that claims its rights precisely in a culture of diversity and otherness.

Finally, Latin American experience and scholarship has pointed the way forward by highlighting the complex but nonetheless vital link between processes of resistance and re-territorialization. Here, emancipation occurs in part through the re-assertion of territorial control – a process that is as important as it is unique: ‘any territory is a territory of difference in that it entails unique place and region making, ecologically, culturally, and socially’ (Escobar, 2008: 25). Thus, for example, the construction of extractive reserves in the Brazilian Amazonia by the *seringueiros* (rubber gatherers) was simultaneously cultural identification, re-appropriation of nature, challenge to wider political and economic power structures, and territorial claims-making (Porto-Gonçalves, 2001). Indeed, these political actions are more than processes of resistance: they entail movements for *re-existence* of peoples and nature (Porto-Gonçalves, 2002).

CONCLUSION

This chapter has examined political ecology in relation to its articulation as an international research field that has been significantly shaped by Latin American scholarship and experiences. While the political ecology imaginary is certainly not reducible to that literature and empirical record, it is not far-fetched to argue that it has had an important influence on that imaginary. Of course the boundaries of knowledge are relatively porous: just as Latin Americans have inspired writers elsewhere in the world, so too have that region’s scholars drawn insight from Eurocentric thinking, as is the case of the rooting of postmodern thinking in the practice of political ecology.

Latin America’s encounter with political ecology has been a long-standing affair with roots going back many decades and linked to a rich history of political and intellectual activism designed to fight oppressive conditions of coloniality. As this chapter showed, that encounter remains intense today, notably in relation to epistemological and emancipatory issues that provide novel theoretical and practical insights that encompass

everything from decolonization to re-territorialization, from environmental rationality to cultural re-appropriation of nature, and from dependency political economies and ecological distribution conflicts to a cultural politics of difference based on an ethics of otherness. Such thinking and practice is unparalleled, offering hope to indigenous peoples, social movement activists and academics both within and without the region to build a sustainable world order.

The future of Latin American political ecology remains bright both in relation to the broader international research field and with regard to its contribution to locally grounded activist agendas. The literature shows that there are different doors into the field of political ecology. It demonstrates that political ecologists can ‘make a difference’ through both intellectual and activist work that speaks to those who are socially and ecologically marginalized: the long-proclaimed focal point of the research field as a whole. Above all, it reveals that hope is not misplaced when it is combined with the strategic sense of what political ecology is all about in facing the human challenge of constructing a sustainable and meaningfully diverse world order.

NOTE

* For a more extended account of a number of the issues contained in this chapter, see Leff (2014).

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5. Connecting political ecology and French geography: on tropicality and radical thought

Denis Gautier and Baptiste Hautdidier

One of the more under-appreciated aspects of the story of political ecology is how it has been articulated in the francophone world, and with what possible affinities to Anglo-American scholarship. It is a tale of fragmentary conversations, contrasting scholarly and normative concerns, as well as sometimes mutually indifferent academic cultures. And yet, as this chapter argues, the two political ecology traditions also resonate at times in intriguing ways, pointing to areas of commonality that provide some basis for deeper connections in the future. In what follows, we provide a selective assessment of French scholarship in order to highlight these contrasting concerns and areas of possible commonality, thereby underscoring fruitful synergies at the interface of French and Anglo-American political ecology.

Our chapter thus takes issue with the idea that French political ecology may be reduced to a view that sees it as an intellectual script for France's green movement unconnected to francophone academia. While it is true that 'political ecology' in France was not as clearly and extensively embedded in the discipline of geography (and anthropology) as in Anglo-American political ecology – with the latter's focus on access to and control over natural resources – this does not mean that debates recognizable to a 'broadly defined political ecology' have been absent in the former (see Whiteside, 2002 for a contrasting study of French eco-philosophy and Anglo-American environmental politics). To the contrary, and based in different intellectual traditions concerning nature–society relationships, a complex, multifaceted if often problematic French political ecology has developed over the years, drawing on 'home-grown' ideas of region, *terroir*, territory and landscape. Lacking the greater unity of the Anglo-American tradition, this fissiparous body of French scholarship, notably based in geography and agrarian development, has stoked impassioned debate since at least the time of Vidal de la Blache and Élisée Reclus in the nineteenth century. And yet, we argue, this rich intellectual tradition has often been held back because of an insufficient regard for the role of politics in understanding human–environmental relations.

This has led, in turn, to a curious imbalance in French influence on the development of Anglo-American political ecology – because the latter certainly draws on French thinking. On the one hand, even a cursory glance at Anglo-American texts (Agrawal, 2005; Peet et al., 2010; Peluso and Watts, 2001; Robbins, 2004) shows the dominance of contemporary French theorists: Foucault, Latour (and Callon), followed by Deleuze (and Derrida), as well as Lefebvre (and Rancière). Such texts also refer to other French intellectual trends – from Lévi-Strauss's structuralism to Braudel's *longue durée*, and from Bourdieu's sociology to the heterodox '*régulation*' school of Boyer, Aglietta and Lipietz (Peet et al., 2010). On the other hand, Anglo-Americans occasionally cite some

French geographers from the past – notably, the radical environmental researcher Élisée Reclus (1830–1905) and the tropical geographer Pierre Gourou (1900–1999) (who is discussed below).

This chapter thus selectively examines elements and ambiguities in the development of a broadly understood political ecology tradition in French scholarship, with particular attention to geography. This discussion is important because it both highlights important scholarly contributions and debates that have usually failed to gain traction outside the francophone world and suggests possible areas of commonality that might underpin future connections between French and Anglo-American political ecology.

LOST IN ‘TRANSLATION’

The impact of specific academic cultures – bounded by particular languages as well as modes of (discipline-based) behaviour – on the development of a research field such as political ecology is not to be gainsaid. Diverse issues such as the unevenness of ‘intercultural translation’ (de Sousa Santos, 2012) or the particularities of academic distinction-making (Bourdieu, 1988) present or obscure opportunities for the exchange of ideas that shape a field.

Thus, for instance, diverse francophone traditions in the geographical sciences include committed thinkers who have followed the broad trajectory originally plotted by Élisée Reclus – someone that Robbins (2004) argues is a landmark thinker in early critical environmental research. Unfortunately, and despite his immense body of work, the militant activism of Reclus meant that he was long ostracized by most of the French academic world. Much later, authors such as Lacoste (2005) and Brunet (Brunet et al., 1984) sought affiliation with his work, albeit for different reasons. However, such intellectual enterprises were far from the integration of science and environmental activism that can be seen in some Anglo-American writing. It is thus fair to say that the *Histoire d'un Ruisseau [History of a Stream]*, arguably one of the most influential works of Reclus (2005 [1869]), has had a fairly limited impact on the development of political ecology.

Yet some French scholarship, based notably in anthropology, did have such an impact, inspiring Anglo-American writing in the 1970s and 1980s. Thus the economic anthropologist Claude Meillassoux (1964) famously studied the economic systems of pre-capitalist societies – in particular the Gouro of the Ivory Coast – using Marxist concepts of infrastructure, superstructure and historical materialism. Social engagement complemented such scholarship – notably the ‘Tournon Street seminars’ – which he gave and that combined science and activism – something echoed by the scholarship of the ‘Berkeley School’ of political ecology. At the same time, some Anglo-Americans also drew on the research of the political anthropologist Emmanuel Terray (1969) who fitted in with Louis Althusser’s Marxist project (1965 [1996]). Terray’s dynamic analysis of the Abron kingdom of Gyaman in pre-colonial Africa thus went well beyond being a standard historical monograph, instead offering a fully fledged account of political anthropology (Terray, 1995). Work by these French anthropologists was useful to the likes of Piers Blaikie and Michael Watts, as they

sought to incorporate the political dimensions of class struggle into a cultural ecology that lacked political awareness (Shenton and Watts, 1979).

Yet such instances of intercultural translation were few and far between. Instead, there was usually relative reciprocal ignorance between the Anglo-American and French-speaking epistemic communities (Fall, 2007b). Consider for instance a few notable features of French geography for which the timeline differs crucially from the anglophone one: (i) Marxism was explicitly rejected in the 1980s by most of French academia, while it remained alive on Anglo-American campuses (Lévy, 1985); (ii) the relationship of research to fieldwork (*terrain*) was dismissed in the mid-1970s by the influential founders of the radical *Espace-Temps* journal as a practice that led to ‘visual pointillism’ – that is, something that hindered ‘real’ science while obscuring the human/physical divide (Sivignon, 2011); (iii) while modelling underpinned a quantitative surge in France well into the 1990s linked to the likes of *Groupe Dupont* and Roger Brunet; (iv) politics, often subdued among many French geographers, was nonetheless sometimes reflected in a heterogeneous activism centred on such things as decolonization, French leftist politics and the perceived ongoing relevance of France’s May 1968 ‘uprising’; (v) and environment, yet a traditional concern of geographers was later ‘sacrificed’ during geography’s ‘spatial turn’ (see also Lacoste, 1982). While the situation in the 2000s changed slowly, French geography remained wedded to conventional dichotomies (in the Vidalian tradition), especially in its teaching – human/physical, urban/rural, regional/general (Chivallon, 2003) – in contrast to developments in Anglo-American academia that emphasized hybridity and fluidity across such dichotomies.

Sometimes, too, there were simply contrasting expectations of the value of research. Partly this was about literal translation and how a work is ‘read’ in different languages. A personal anecdote of Louis Dupont (*L’Espace Géographique*, 2004, cited in Fall, 2007a: 114) is revealing here. The Quebec-born scholar recalls how his initial enthusiastic reading of English translations of the work of Michel Foucault during his time as an undergraduate student at Louisiana State University later waned somewhat when he consulted the original texts. There, Foucault’s discourse, which had once appeared to him complex and sophisticated, ended up coming across as somewhat blunt, and rather narrowly focused on France’s structures of knowledge.

Partly it was also about different politics underpinning scholarship. An interview with David Harvey (2001) is illustrative here. When asked by the editors of *New Left Review* how the *géopolitique* of Yves Lacoste (Bowd and Clayton, 2012; Lacoste, 1973, 2000) and the works on urbanism of Henri Lefebvre (1991) could or should have influenced him, Harvey revealingly observes that neither of these lines of thought was most influential among French geographers in the 1970s. Indeed, during his stay in Paris in 1976 and 1977 while working on *The Limits of Capital*, he recalled his increasing frustration with local intellectual life – whether it was shaped by the ‘arrogance’ of Althusserian thinkers (mostly non-geographers) or the apolitical stance of allegedly Marxist geographers.

Pierre George was the leading figure among the latter. An early affiliate of the French Communist Party, George nonetheless grounded his academic research in ‘Vidalian’ geography in that he valued description and possibilism over modelling or environmental determinism (Manzagol, 2008). His use of Marxism amounted to a description

of the proactive development of ‘productive forces’ (Clerval, 2011), and their one-way effect on social practice rather than on core Marxist concepts such as the relations of production or dialectics (Harvey, 2001). This restricted vision was thus heavily ‘economistic’ in the 1950s, while later embracing a broader ‘technicist’ viewpoint. Yet this evolution of thinking was subsequently denounced as a mere ideological varnish that masked political irrelevancy (Lévy, 1985; Pailhé, 1981). His temptation – according to Pailhé (1981) – of equating Marxism with rationalism and planning qualifies George as a modernist scholar. This stance can also be seen in a landmark early work that he wrote on the environment (George, 1971). In a recent panegyric on it, Yvette Veyret (Di Méo et al., 2008) aptly underlines its pioneering dimensions: prophecies about the generalization of market-based instruments as well as of fear- and guilt-based environmental discourses; an emphasis on issues of vulnerability; and a confident anti-Malthusianism. A political dimension was thus present here but lacked critical depth – something, in contrast, that is vital to research in Anglo-American political ecology.

There is here therefore a history of missed connections, occasional influence and mutual incomprehension if not outright indifference. This pattern of behaviour can also often be seen in research conducted in the global South where both French and Anglo-American scholars have long undertaken research that, in some respects at least, has shown some intriguing affinities.

GOUROU’S TROPICALITY: ON THE THRESHOLD OF POLITICAL ECOLOGY

Although for reasons that are different from the case of Reclus, the influential scholar Pierre Gourou could also have been a source of inspiration for political ecologists had he not stopped on the threshold of a full articulation of the political.

Central to his intellectual impact was the way that Gourou conceptualized what he called ‘*techniques d’encadrement*’ (social techniques) for the study of the peasant world. With this concept, he was going beyond simply describing the environmental interactions of peasants by assimilating that world to larger superstructures as a way of explaining the construction of social space and human population density (Gourou, 1936). Here the study of human action was linked to the political organization of societies. This was indeed a promising linkage of political economy and environmental matters that foreshadowed research in French geography (*espace vécu* or ‘living space’) and Anglo-American geography (political ecology).

Yet Gourou’s work was rife with ambiguity. For many Anglo-American geographers who read his work, it sometimes seemed that Gourou was more interested in the tropical *art de vivre* (Gourou, 1947) and analysis of complex ‘civilizations’ than he was in the fight for decolonization – something that did not go down at all well with this audience (Clayton and Bowd, 2006). Meanwhile, for certain French readers, his ‘crime’ was that his approach was redolent of Vidalian geography with its overemphasis on ‘case studies, privileging socio-spatial singularities and differences, discarding any

non-anecdotal political dimension (social relations of production or class struggles) that may upset ruling powers in the centre or in the periphery' (Bruneau and Courade, 1984: 77).

Despite these perceived flaws, Gourou's tropical research was nonetheless important in that it helped to nurture a diverse array of intellectual trajectories among his French followers mostly involving development research: from *espace vécu* to a cultural geography akin to the Berkeley School, from eco-geography to ecology, from quantitative and theoretical inquiry to empirical studies about modernization, and from dependency relations to power dynamics (Bruneau and Courade, 1984). A subsequent generation of '*tropicalistes*' scholars remained loyal to this research tradition (Blanc-Pamard and Poutier, 1999; Nicolaï et al., 2000). Gilles Sautter and Paul Pélissier were especially noteworthy here in that they were instrumental in the 'rehabilitation' of Gourou's thought in the journal *Hérodote* with a debate that was largely centred on his concept of '*techniques d'encadrement*' (Gourou, 1947; Gourou et al., 1984).

More than that, these two scholars, who were working for the French overseas research institute (ORSTOM) and spent a large part of their careers in West Africa (particularly in Senegal), were the initiators of *terroir* studies. The *terroir* concept advanced by French geographers connects modalities of social organization with the construction of village-level agricultural territories (Gilg, 1970). Within this basic framework for a rural community, research sought to precisely examine the complex relations between people and their environment that was argued to be a fundamental concern for human geography (Sautter, 1961). A series of village-level monographs in sub-Saharan Africa and Madagascar marked the great influence of the *terroir* approach in French-speaking development research (Pélissier and Sautter, 1964). These were indeed a showcase for fieldwork-intensive and highly detailed accounts of society–nature relations in village territories of the developing world (Antheaume et al., 1989; ORSTOM, 1979). For Sautter, the added value of this approach resided in its emphasis on the 'details of the connections between the agricultural and social systems and the natural complex', while acknowledging the need to accommodate multi-scale and multi-sector approaches (ORSTOM, 1979: 210).

Indeed, the perceived value of this *terroir* approach meant that it even gained policy traction, influencing the thinking behind rural development projects in diverse African countries. Yet such policy influence eventually prompted a critique from within political ecology – with the approach seen to be static and too narrowly local in its application (Bassett et al., 2007).

NEGOTIATING THE TROPICALIST LEGACY

Indeed, opposition to the work of Pierre Gourou and the *tropicalistes* can be traced to the research of a group of French scholars known as the '*tiers-mondistes*' ('Third World' scholars), who, somewhat like their Anglo-American counterparts (Bryant and Bailey, 1997), combined conceptual multi-scale analysis with political commitment. Whereas the *tropicalistes* stressed field studies, territories and landscape knowledge,

the *tiers-mondistes* emphasized the conceptualization of national space and international political economy (e.g. Western imperialism, the rise of transnational corporations) (Théry, 1987). Pierre Gourou's work was at the centre of this grand debate, with the former always referencing it and the latter frequently critiquing it. Given their strong political predilections, the influence of the *tiers-mondistes* has arguably been most felt in the emergence of the politically involved *écologie politique* movement than in the corridors of French academe (and especially in geography). A key figure among them was the agronomist René Dumont – someone we return to in a separate discussion below.

Yet the tropicalist legacy in French scholarship has not been all about its criticism. Environmental changes both in France and in the global South surrounding the failures of agricultural modernization have prompted some renewed appreciation of the fieldwork-based insights into small-holder agrarian practices conducted by the *tropicalistes*. Thus the *terroir* school was able to draw on a rich body of work that favoured bottom-up approaches to the understanding of African agriculture and its possible modernization (Gallais, 1960; Richard-Molard, 1951). Based in particular on extensive research into 'peasant logics' at the local level (Pélissier, 1995; Pélissier and Sautter, 1964), the school was able to explain what has been considered in France as the failure of the agricultural revolution in Africa (Dumont, 1962; Griffon, 2006). In line with interventions by James Scott (1976) on the moral economy and practice of small farmers, French tropical geographers such as Sautter and Pélissier documented the ongoing relevance of peasant practices, arguing that an unhelpful opposition was being created between 'peasant logic' and 'technical rationality' that created only prejudice (against farmers) rather than empirically based insight. Indeed, this issue was explored at a landmark francophone seminar held in Ouagadougou, Burkina Faso in 1978. During this seminar, Paul Pélissier demonstrated the effectiveness of the Sudano-Sahelian extensive farming system if considered in relation to work undertaken, but not in relation to land area: it was a means of maximizing work productivity across space (Pélissier, 1979). Through this means, it was possible to show that agricultural intensification and modernization were not appropriate in this case. While this debate has resurfaced in subsequent decades (e.g. Atta and Zoungrana, 2010), the practical contribution of the *terroir* school to debates in the field of agricultural modernization was affirmed.

Once more here, the scholarly value of focusing on land and landscape was emphasized. Thus Sautter's and Pélissier's research persuaded many agronomists to reconsider their concept of productivity and include the spatial dimension, thereby contributing to the foundation for French agro-geography (Benoît et al., 2006; Deffontaines, 1998). This focus on land was especially important for researchers affiliated to the *terroir* school of ORSTOM. Some of these scholars even showed strong affinities to political ecology. Thus, for example, Chauveau clearly integrated the political dimension of land tenure and land use into his meticulous study of the *terroir* of Bodiba in the Ivory Coast between 1972 and 1978 (Chauveau and Richard, 1983). Here, he carefully studied rights of access to and use of land and natural resources (Chauveau, 1997), identified winners and losers of Ivorian land policies (Chauveau and Koffi Bobo, 2005), and specified how those policies impacted on land use and

environmental conditions (Chauveau, 2002). Although Chauveau's trajectory is somewhat unusual among scholars of the *terroir* school, he has nonetheless developed an original path of research, sometimes with a team of collaborators that resonates well with Anglo-American political ecology (Hochet, 2006; Jacob, 2007; Le Meur and Hochet, 2010).

Still, the resonance between political ecology and the *tropicalistes* should not be exaggerated. Writers like Chauveau aside, the general tendency among the *tropicalistes* (including the *terroir* school) was to subtly downplay the explanatory power of the political – either by leaving it implicit or by ring-fencing the political at the local level (thereby neglecting multi-scalar political dynamics) (Pélissier, 1995). And, while there could be a broadly defined political economy evident in such thinking from time to time (Blanc-Pamard and Ramiarantsoa, 2007), it could often appear rather superficial and impressionistic (e.g. Gallais, 1994) – sometimes masking, as with Pélissier (Théodat, 2007), a reluctance to become engaged politically. This stance is illustrative of the ambiguities of Gourou's heritage, encompassing scholars whose career spanned the latter half of the twentieth century.

DUMONT'S RADICALISM

In contrast, a more politically radical stance in francophone tropical research is to be found in the work of agronomists, led by the most famous tropical agronomist of the 1970s, René Dumont. With a long intellectual career (until his death in 2001), Dumont's trajectory in some ways mirrored that of Gourou – something that can be seen in retrospectives on each scholar's life work (compare for example Dufumier, 2002 and Nicolai et al., 2000). Yet it is the differences that interest us here.

Above all, Dumont was a ferocious critic of the countries of the global North for their despoliation in both colonial and postcolonial times of the natural resources of the countries of the global South. The parallels here with research conducted by many Anglo-American political ecologists can be striking (Bryant and Bailey, 1997; Peet and Watts, 1996). Thus, even as a young agronomist, René Dumont developed an analysis that saw relations between men and their fields as being mainly based on the power play between men (Dumont, 1962). At the same time, he argued that good social relations between men depended on good relations between men and women, thereby asserting a belief in the need for women's emancipation (Dumont, 1978). Finally, Dumont was among the first in French academe to denounce the growing economic gap between North and South in the post-Second World War era (Dumont, 1962, 1973).

Yet, once again, the affinities here must not be exaggerated. As Chair of Comparative Agriculture at the *Institut National d'Agronomie* of Paris–Grignon between 1953 and 1974, René Dumont developed the 'French School of Comparative Agriculture' based on comparative analyses of the world's agricultural systems with its scholarship exploring similarities and differences in the trajectories of contemporary agriculture systems worldwide – becoming thereby intellectual leaders in this area (Cochet, 2012). Subsequently elaborated by the likes of Mazoyer (Mazoyer and Roudart, 1998) and Dufumier (2007), this school maintained Dumont's technical and historical approach to the detriment of a more 'actor-oriented' approach seen in Anglo-American political

ecology (e.g. Bryant and Bailey, 1997). Indeed, its approach meant that it tended to focus on the assessment of projects and policies associated with agricultural development rather than the analysis of socially differentiated environmental impacts as well as discourses – something, once more, favoured by many Anglo-Americans since the early 1990s (Bryant, 1998, 2001; Escobar, 1995).

For another thing, Dumont sometimes had a tendency to come across in his work as rather neo-Malthusian in tone – something anathema to Anglo-American political ecologists. Thus, for instance, he argued in 1973 that ‘if we maintain the actual rate of growth of the population and of industrial production until the next century, this one won’t end without a total collapse of our civilization’ (Dumont, 1974: 7). In essence, the comparative sort of work that Dumont promoted meant that it was prone to emphasize human population growth in the rural world as a key factor in trends in agricultural productivity rather than the inequalities between rich and poor that Anglo-Americans tend to stress.

Thus, while René Dumont was a pioneering *écologiste politique* in France, there was not a comparable depth of influence in French academia in terms of laying the foundations of French political ecology – and this despite selected affinities to the work of some Anglo-Americans. It is ironic, therefore, that in the end the non-activist *terroir* scholars influenced by Gourou were probably closer to the ethos of a fieldwork-driven Anglo-American political ecology than were the politically radical Dumont’s work and his closest intellectual adherents.

MAKING THE CONNECTIONS

And yet it has been only since the 1990s that sustained efforts have been made to elaborate a French political ecology that takes explicit cognizance of Anglo-American scholarship. To paraphrase a point made earlier, the timelines between French and Anglo-American practices have been converging in recent years, just as they diverged in the era of David Harvey’s Paris residency. While building on a long tradition of francophone scholarship, selectively discussed above, recent research has been more inclined than before to explore connections to Anglo-American writing.

One important development came in 1992, when an interdisciplinary team associated with Jean-Paul Deléage and based in Orléans launched a new journal named *Écologie Politique*. While drawing notably on France’s strong eco-political intellectual and activism tradition (Whiteside, 2002), and with a wide-ranging remit not explicitly focused on the tropical world, this journal has nonetheless regularly covered issues and themes linked to both tropical and non-tropical areas in the world with an increasing eye to Anglo-America related political ecology (Deléage and Chartier, 2012; Grove, 1992; Rodary, 2011). *Écologie Politique* has also directly featured work by Anglo-American political ecologists (McCarthy, 2011; Watts, 2011).

Meanwhile, the increasing movement of individual scholars back and forth between France and Anglo-America has encouraged the development of more durable networks of the like-minded than ever before. On the one hand, more and more French scholars now make the journey to the annual meeting of the Association of American Geographers to present papers and attend meetings – thereby encouraging greater

familiarity with the latest trends in the field there. Some of them undertake advanced training courses at leading UK and American universities, even sometimes thereafter taking up teaching posts in Anglo-America (e.g. Philippe Le Billon at the University of British Columbia). On the other hand, Anglo-Americans have come to France. One noteworthy example here was the sabbatical visit of Thomas Bassett to the *Centre d'Études Africaines* of *l'École des Hautes Etudes en Sciences Sociales* in Paris in 1995/96, where he introduced through lectures and seminars the key elements of Anglo-American political ecology to a receptive audience including the likes of Blanc-Pamard, Botte, Schmitz and Boutrais (Bassett et al., 2007).

While a seed was thus planted during the Bassett visit, it was not until the following decade that the affinities that had for so long lain dormant between the two research cultures became more visible. Ironically, this process was encouraged by wider and often quite unpopular developments in the French academic system. For one thing, tropical geography suffered a period of relative decline as new subjects were favoured at the expense of 'old' ones. For another thing, deep-seated reforms to French academe encouraged French academics (among other things) to become more international in outlook through research networks and English-language publications.

As a result, the pace of exchange and mutual interest has increased in recent years. Thus, for example, a summer school was organized in France in June 2009 in which no fewer than three major Anglo-American political ecologists (Peluso, Bassett, Robbins) were involved. This engagement was swiftly followed up with the creation of a website dedicated to exploring possible connections between the two research cultures in greater depth (www.politicaecology.fr) – something also undertaken in a recent edited collection *Environnement, Discours et Pouvoir: L'approche Political Ecology [Environment, Discourse and Power: the Political Ecology Approach]* (Gautier and Benjaminson, 2012). Other important developments include a conference on 'Geography, ecology, politics: a climate of change' held in Orléans in September 2012, as well as creation of a portal (<http://humanitesenvironnementales.fr/>) and an associated conference held in Nanterre in 2014 (*Penser l'écologie politique*). Finally, there is a growing array of political ecology works produced in French or English that show affinity with Anglo-American literature – for example, research by Arnauld de Sartre et al. (2014), Blanchon and Graefe (2012), Bouleau (2014) and Gautier et al. (2011).

These scholarly projects are quite diverse in nature – encompassing tropical and non-tropical themes, issues from both North and South, and multiple theoretical and methodological approaches. But one thing that they share is a greater willingness than ever before to reach out to and explore connections between French and Anglo-American political ecology.

CONCLUSION

French political ecology has come a long way since its intellectual forebears, and notably Élisée Reclus, who arguably created the first 'stream' in what would one day become political ecology, began to explore diverse facets of the human–environmental story. While in a sense that history can be read as a series of missed opportunities – sometimes not political enough (e.g. the *tropicalistes*), and other times too activist even

when grounded in fieldwork-based local understanding (e.g. Dumont's works) – it must nonetheless also be grasped as having provided a rich and multifaceted intellectual legacy upon which a new generation of French scholars can build. That new generation can thus gain insight from past trajectories in francophone scholarship even as it reaches out as never before to Anglo-American political ecology.

As such, it is an exciting time in French political ecology. More and more French students and scholars are reading political ecology articles and books even as they write some themselves in French or English. Undoubtedly, this trend is partly connected to wider developments – in French academia and perhaps even relating to the place of France itself in the world today. But it is also a reflection of the growing desire of many French scholars to engage with debates both within and without France.

What are some of the possible implications of this process for international trends in political ecology? While it is still early days, let us conclude by briefly mentioning two such implications. First, French political ecologists are well placed to draw on the key insights of decades of research in, say, the *terroir* and 'agrarian systems' approaches to elaborate ideas about the 'co-evolution' of local-level social and natural systems that combines clear affinities with post-structural research in Anglo-American political ecology (notably on the mutual constitution of the social and the natural) and which also asserts the diverse bases for locally oriented resistance to externally imposed policies and projects linked to globalization (such as land grabbing, REDD+ initiatives). Second, French scholars can also build on a long tradition of radical thought, showcased among others in the journal *Écologie Politique*, to assist in the further theorization of both understandings of globalized capitalist relations and efforts to promote alternative political ecologies 'after capitalism'. The promotion of 'de-growth' economies perhaps provides one of the best-known and most promising such areas of 'applied' research today, and once again chimes with how some avenues of thought in Anglo-American political ecology may also be going (see Healy et al., ch. 41 this volume).

Whatever the precise research trajectories and intellectual contributions the future holds, the growing affinity between French and Anglo-American political ecology looks as if it is set to coalesce in the years ahead – with important implications for both research cultures.

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6. Roots, rhizomes, networks and territories: reimagining pattern and power in political ecologies

Dianne Rocheleau

Political ecology provides for many scholars (myself included) a way to link social ecological theory with social and environmental activism, as well as practical and policy changes ‘on the ground’. Some of us have increasingly brought together the study of life, power and justice in social, economic, scientific and ecological realms (Escobar, 2008; Rocheleau et al., 1996). My experiences working in the field have led me to abandon or to stretch some of the models and methods that originally drew me to political ecology. Likewise, the social movements and communities with whom I have worked or about whom I have read, taught and written have caused me to entertain and embrace new metaphors, methods and conceptual models based in networks, roots, rhizomes and territories, all shot through with power. My shared experiences, conversations and analyses with them (and with other scholars) compelled me to seek out their own, and other, alternative tools of imagination, explanation and action. I need these to do justice to their, and my, visions, values and struggles for ‘another possible world’ in which many (just and viable) living worlds thrive.

INTRODUCING NETWORKS, ROOTS, RHIZOMES AND TERRITORIES

Marxist theorists describe political ecology as the study of uneven distribution and control over ‘natural resources’ in structural hierarchies of political and economic power, often enforced through ideologies of individual rights and property, control of development technologies and institutions, as well as armed force (Peet and Watts, 2004; Martinez-Alier, 2002). Regional political ecology (Blaikie and Brookfield, 1987) brought cultures and regions into play, while focusing on cultural technologies of production and management embedded in regional ecological formations as well as national and international political and economic structures.

‘Third World’ political ecology focused on multiple actors operating in and co-creating politicized environments (Bryant and Bailey, 1997). Meanwhile, post-structuralist and feminist political ecologists (Rocheleau et al., 1996; Castree and Braun, 2001; Escobar, 2011) brought culture and identity into play as well as challenges to modernist ideas (shared by many across ‘left’ and ‘right’) of progress, development and the centrality of economic relations. There was also more emphasis on social movements and the cultural and ecological dimensions of peoples’ environmental knowledges and political struggles (Escobar, 1999; Rocheleau et al., 2001).

Some poststructuralist, postcolonial and feminist political ecologists, along with indigenous and decolonial scholars and social movements, insist on a relational approach (Mignolo and Escobar, 2013). They include intersectional complex identities incorporating race, class, gender, sexuality, ethnicity, religion, caste and colonial legacy (among others) in relation, and question the assumed dominion of humans over other life forms and their separation from the living world.

Each wave helped expand political ecology, bringing new methods, metaphors, models and meanings into play. Such change provoked controversy within and between schools of thought within the field. My interest in this chapter is to explore the contributions of one such school: that which invokes networks, roots, rhizomatic and territorial ideas and methods. These enable new ways of seeing, being in and studying ‘naturecultures’ (a term used to challenge the dichotomous formulation of nature and culture and to evoke the relational logic and complexities of the living worlds we inhabit: Rocheleau and Nirmal, 2015), including relations of power within and between places, people and ‘things’ (Latour, 1993; Whatmore, 2003). Those ways of being constitute both ends and means in many struggles for freedom and autonomy. The adoption of new methods, theories, models and metaphors based on those experiences are also necessary, though not sufficient, to decolonize ourselves, our communities and our nations, and their ways of being-in-relation within and between various living worlds (Blaser, 2010; De La Cadena, 2010; Stengers, 2010; Rocheleau and Nirmal, 2014a, 2014b). The chapter begins by examining some key conceptual issues and practical developments that underpin such thinking, before showing how it has evolved in my own fieldwork via four case studies.

WHAT DO ROOTS, RHIZOMES, NETWORKS AND TERRITORIES CONTRIBUTE TO POLITICAL ECOLOGY?

Networks, as popularly understood, have always been a major fact of life, but the term has acquired a peculiar power since the emergence of information theory and new computing technologies in the mid-twentieth century. Likewise, organizational theory in sociology, as well as science and technology studies, has elaborated new meanings of the word. Geographers and economists have long used network analogies and models from an initial focus on trade networks to theories of globalization. Rapid (albeit partial and divided) globalization of communication and the proliferation of mobile communication devices in everyday life has further entrenched network thinking.

Many early applications of network models focused on ‘social’ transactions, tending to assume formal organizational relationships. In the 1980s some authors invoked networks of people’s social connections to demonstrate their economic and political value as ‘social capital’. Here, social life had instrumental value even as social connectivity itself was a currency. Economic models focused on trade, transportation and the flows and circulation of goods, people and services. Some emphasized direct interactions of buying and selling, while others extended to socio-spatial networks of people, organizations, places and ‘spaces of flows’ involving people, money, commodities, services and information (Castells, 2013). Power is treated within economic and

information theory paradigms through geometries of connection in commerce, communication and social organization.

Some critical scholars tend to see network theories and models simply as tools to describe and normalize capitalism, or even as direct instruments of power in those systems. They also react against network and rhizome metaphors and models emphasizing ‘horizontal’ as opposed to ‘vertical’ relationships, complaining that such approaches obfuscate power relations driving capitalism. Networks thus have a reputation among some critical scholars, including Marxist political ecologists, as being about imagined horizontal and ‘flat’ spaces in worlds devoid of power. Nothing could be further from the truth.

Indeed, some work in sociology is based explicitly on networks and power. For instance, G. William Domhoff (2005: 1, citing Michael Mann; bold and italics in original) presents the Four Networks Theory of Power:

the power structures within Western civilization [sic] are best understood by determining the intertwinings and relative importance at any given time of the organizations based in four ‘overlapping and intersecting sociospatial networks of power’ (Mann, 1986, p. 1). These networks are *ideological, economic, military, and political* – ‘The IEMP model’... Since the emphasis is on people acting through social networks, the distinction between ‘social action’ and ‘social structure,’ is cast aside. There no longer needs to be a periodic revival of the ‘agency vs. structure’ debate. Because the four networks have different and constantly changing boundaries that vary with the invention of new technologies and the emergence of new organizational forms, and the old division between ‘endogenous’ and ‘exogenous’ factors in the understanding of social conflict is discarded as ‘not helpful’.

Meanwhile, conceptual art by Mark Lombardi in *Global Networks* (2003) has similar subject matter and research methods, but goes well beyond these by incorporating elements reminiscent of Foucault’s theories of distributed power(s) and Wallerstein’s World Systems Theory. Most importantly, Lombardi (2003) brought a vision and method of artistic synthesis to visualize hidden power relations. His drawings gave form and dynamism to social science and journalistic accounts of power relations, revealing the patterns and logics of invisible power-lines. Both the Four Networks and the Global Networks approach constitute promising but thus far underutilized approaches for political ecology (Watts, 2010; Rocheleau, 2015a).

In contrast, work on social movement networks is central to political ecology, from structural and Marxist (Harvey, 2012; Hardt and Negri, 2001) to poststructural, feminist, postcolonial and decolonial subfields (Escobar, 2008; Harcourt and Nelson, 2015; Peet and Watts, 2004). These networks developed from the 1980s via civil society initiatives, political organizing and public protests operating beyond the scope of states, political parties and establishment trade unions. This wave went from streets, fields, forests, kitchen tables, collective houses, squats, encampments, coffee houses and bars, into the academy and back again. Theories and methods *about* social movements as well as *for* and *within* them emerged from social movement practice, reflection and analysis, as well as academic observation, accompaniment and theorization.

Rooted Networks

Case studies, theories and analysis emerged in sociology, anthropology and geography, responding notably to a distributed and networked phenomenon of grassroots groups simultaneously rooting, localizing, linking and globalizing. These 'rooted networks' (Rocheleau and Roth, 2007) extend their reach from below by creating or affiliating with global organizations and networks, stretching beyond social or environmental mandates to focus on both, and to link people by shared topics, perspectives and objectives. The resulting international networks often shift from identities to affinities as a basis for connection (Pieck, 2013). A few key instances of network convergence and consolidation illustrate this process.

DAWN (Development Alternatives with Women for a New Era), founded in 1984, emerged as a South-centred feminist network with Northern allies and global reach, and made its mark, feeding into the United Nations World Commission on Environment and Development. It submitted documents to that Commission as well as to the NGO forum that developed in tandem to it while bringing women's delegations from around the world to the latter (Sen and Grown, 1987). Vandana Shiva (1988) and Wangari Matthai (2006) became prominent through these organizations and events. International environmental NGO networks created at the 1972 UN Stockholm meeting likewise spun off networks that consolidated around sustainable alternatives to prevailing models of development and conservation. Both alternative environmental networks and South-centered feminist networks fed into the 1992 Earth Summit as well as the World Social Forum (WSF) and ancillary movements developing beyond the purview of the UN and its networks.

Then there is the WSF, which, together with NGO parallel meetings concerning the 1992 Rio Summit, built social network platforms for actors in mass movements and small place-based movements (Harcourt and Escobar, 2005; Fisher and Ponniah, 2003) to meet, think and act together. Women's and anti-racist environmental actions in the USA leaped from local action to national networks, to consolidation of a broad and intersectional environmental justice (EJ) movement, to the founding of international environmental justice networks. The first 'incubator' EJ offices in international conservation NGOs gave way to a vibrant movement that has taken the leading edge away from the big international environmental NGOs to the full-blown Climate Justice Network that emerged out of the encounters of EJ with NGO fora and protests at the UN-convened climate conferences in Copenhagen in 2009, and Cancún in 2010, as well as the NGO and alternative forums at each of those and the People's Climate Convergence Conference and March in New York City in 2014. These events simultaneously enabled and communicated the convergence of: indigenous peoples' networks; peace, civil rights, labor and human rights organizations; solidarity and green economy networks; and alter-globalization movements for autonomy and alternatives to development.

A parallel convergence occurred between alternative development and sustainable agricultural NGOs, EJ groups, farm-workers' organizations and science-based social justice and technology watchdog networks. Groups here ranged from the Basel Action Network, the Pesticide Action Network and the ECT (Erosion, Technology and

Concentration) Group to the International Federation of Organic Agriculture Movements and *Via Campesina* (the largest transnational agrarian network and leading voice of peasant farmers). This last group enjoyed a meteoric rise to prominence from its origins in 1993 at a conference of NGO observers and critics of the Uruguay Round of GATT talks (General Agreement on Tariffs and Trade), which led to the founding of the WTO (World Trade Organization) in 1995. *Via Campesina* ['Peasants' Way'] has become a global networking powerhouse linking perhaps hundreds of millions of farmers worldwide. It leads a global convergence rejecting environmental, economic, technology and social policies and practices that threaten the lands, territories and lives of farmers and the food production system that feeds us all.

On another front, indigenous uprisings since the 1990s have catalyzed deep and broad social movement convergences on issues of land/earth/territory, human rights, civil rights, indigenous rights and autonomy (Olivera and Lewis, 2004). For example, the Ecuadorian uprisings sought constitutional reform, rights of indigenous peoples to land and territory, and protection of the earth from harm. Led by CONAIE (Confederation of Indigenous Nationalities of Ecuador), the massive national strike in 1990 was popularly called the *pachakutik* (a cataclysmic time of rebirth, revolution and recovery of culture and land). Mass protests continued, notably in 1997 when the call for constitutional reforms resulted in constitutional changes enshrining new rights and foundational principles of the Republic: especially the plurinational state with respect for indigenous peoples, cultures and territories; full legal recognition of CONAIE; and recognition of the rights of nature/Mother Earth to be free from assault. Moreover, a left-leaning and self-proclaimed ally of indigenous and environmentalist groups, Rafael Correa, was elected president. His subsequent betrayal of both constituencies to promote oil drilling in indigenous territories highlights deep divisions between party politics and social movements.

Moments of Convergence

Many of the groups described above converged in Cochabamba for the Bolivian-sponsored World People's Conference on Climate Change and the Right of Mother Earth in April 2010. The Bolivian government then brought the People's Agreement of Cochabamba, drafted and signed at that conference, to the UN Climate Change Conference held in Cancún and to the week-long *Via Campesina* Alternative Global Forum on Climate Change and Social and Environmental Justice, held alongside the UN Conference in December 2010. Inside the main conference, Bolivia led resistance to market-based 'false solutions' of carbon trade and offsets for polluters. With the ALBA (the Bolivarian Alliance for the Peoples of Our America), they attempted to bring together the Group of 77 (poorest) countries and allies to resist market-based proposals for carbon trade, 'clean' development and payment for environmental services. The latter includes plans to displace peasant and indigenous communities from their territories to establish carbon reserves. The ALBA did not win; nonetheless it shone a light on the socially and environmentally bankrupt, market-based responses to climate change.

A small 'poor' Latin American country thus challenged the program of the world's most powerful countries at Cancún. It did so in an ephemeral social movement space,

in the company of thousands of indigenous people, alter-globalization activists, and advocates for human and gender rights, racial and environmental justice, earth rights, as well as those concerned about the wellbeing of peasant farmers and farm-workers around the world (let alone the billions of people they feed).

That space was organized by *Via Campesina* and was used by thousands of conference attendees. Facilities included three meals a day, camping pads, a tented roof and a five-day program of meetings, marches, and visits from government ministers and indigenous leaders, that culminated in an evening of music, speakers and a speech by the Bolivian president. The opening ceremony was officiated by an elder Mayan woman spirit guide, with an invocation to the four directions for strength and wisdom, the beneficent appearance of a double rainbow in the sky, and the sharing of maize and other seeds from near and far. On the final evening, two Bolivian bands played, interspersed with speakers such as Leonardo Boff (liberation theologian from Brazil), Nnimmo Bassey (Director of Environmental Rights Action/Friends of the Earth, Nigeria), a young indigenous Women's Ministry representative from the Bolivian delegation, and a young woman leader from a farmers' union. Last there was an impassioned speech by Evo Morales, wearing a traditional wreath of flowers, and speaking more like a guest organizer than a president. Under the main tent were people from across the planet. Caravans of buses and trucks had traveled throughout Mexico, making stops to disseminate information about climate change, the forums and environmental justice, while picking up people along the route to attend the conference. Volunteers provided simultaneous translation from Spanish to English and French using home-made equipment.

This space was a fractal for a larger process: a localized moment in a global movement. The people who drove caravans, raised tents, installed equipment and organized volunteers to build showers and clean the grounds were social movement workers and volunteers from across Mexico and indeed the planet. They knew that more than a good conference was at stake, that they were part of a longer string of beaded moments in the movement(s). And when the conference ended, campers folded their tents and left, volunteers brought down and folded the big tops and translation booths, returned the 4000 rented sleeping mats, tables and chairs, dismantled the sticks and plastic showers, filled in the holes in the grass – and went home.

Old sociology paradigms could neither explain nor embrace this event – let alone the global wave of social movements swirling and rising around the convergence of people living and working for earth, land, territories of life and livelihood, the food cultures and cultivators of the planet, social justice, gender and racial justice, human rights and recognition of indigenous peoples in plurinational societies. Rather, these moments and movements of convergence were more like neural networks, assemblages and rhizomes running silent and deep like the movable malleable stuff of roots and shoots. Then they push through the stuff of the world to send up a bright shining fruit of a mushroom that will reproduce, scatter spores and fall back into the ground from which it came.

Actor Networks and Assemblages

Actor network theory (ANT) and related thinking in Science and Technology Studies (STS) came from 'field data' collected in the laboratories and halls of universities and

research institutes, as well as across the kitchen tables of feminist activists and the desks of critical scholars. Scholars such as Bruno Latour, John Law, Anne Marie Mol and Isabelle Stengers brought complex assemblages and relational epistemologies and ontologies into conversation, with debates on nature and culture, the doing of science and the making of knowledge(s). They and those who joined them in this conversation challenged nature/culture and other dualities while speaking in terms of hybrid, more-than-human nature cultures and vibrant living worlds (for example, Donna Haraway, Sarah Whatmore or Jane Bennett). Many other conceptual breakthroughs of ANT and assemblage theories facilitate the study of actually existing nature cultures combining humans and other beings, technologies, artifacts, infrastructures and geo-elements (hills, mountains, rivers, chasms, soils, wind, rain – things once called ‘natural’). This thinking helps to clarify the basic collections of things and beings that make people’s everyday lives, as they know them, possible and recognizable. Likewise it lets us see how people are the center of some networks while being nodes in the networks of other beings and things, a familiar concept for many indigenous peoples.

These theories transform what I can do in the field and on paper in the name of ecology and political ecology. The assemblage and networks paradigm challenges the categories and practices that undergird conservation based on parks and reserves that exclude people and that see all deviation from imagined or selected ecological histories as damage and destruction. Deep intellectual understanding of assemblage metaphors, models and logics can contribute to political ecologists’ critical understanding of both content and process of biology, ecology and life sciences generally. It can also better prepare us for political encounters and resistance with respect to agriculture, conservation, land use, landscapes, biodiversity, biotechnology, pharmacology and much more.

The logic of assemblies facilitates discussion about and creation of ‘hybrid’ or patchwork agricultural formations, forests, soils, water and waste treatment, as well as medical and building technologies that may allow for dismantling and reconstruction of pre-existing ‘mainstream’ technologies. The latter can be reassembled in different ways at different times and places, to serve people and other beings without accepting entire ‘technology packages’ foisted on people by companies with state connivance. Packages often carry ‘poison pills’ of unacceptable damage to the wellbeing of people and ecologies, yet they may also harbor elements of interest for science by other means, and for other ends. The same may be true for combinations of wild and domesticated species in spaces no longer coded as wild versus domesticated. These shifts in thinking can help guide applied political ecology as science in solidarity with life-affirming projects in the above fields.

The networks and assemblages outlined in ANT and related approaches can also be imbued with complex relations of power, depending on how we apprehend them. At the core of the theories of Latour, Law, Mol and others is a radical empiricism that questions the categories and evidence of science-as-usual while challenging critics to do likewise within their own frames of reference. The act of naming and identifying something as an ‘item’ is itself political. The act of questioning the boundaries of apparent individual things or the fixedness of certain kinds of sets is thus also an exercise in power. Whether the categories are ‘ecological’ or ‘cultural’, there is a sense that all categories and boundaries are contingent, but some more so than others.

Rhizomatic Metaphors and Movements

Many STS, political ecology and nature society scholars (myself included) have turned to the rhizomatic metaphors of Deleuze and Guattari (1987) as well as thinking emerging from feminist STS. Such work is radically empirical in studying science and the deployment of categories in stories about the world, as well as in the process of making and being in worlds. The work is especially germane to political ecology because of its challenge to nature–culture dualities, the separation of humans from nature, and reconciliation with the matter of earth (Rocheleau and Nirmal, 2014b).

In reconciling with and thinking *from* earth, one lesson relates to the nature of fungal organisms, or, as Tsing (2012) puts it, the humble mushroom. At the place where trees meet land, we can open the soil and see roots and tendrils of the fungal mycelia, the crazy tangled underground thread of bodies of fungal organisms that keep the forest fed. The mushrooms we see are the fruit, the reproductive organs that rise, reproduce, scatter spores and fall back. What really matters here is under ground: it precedes and survives the eruption into mushroom form. It is a living lesson about our legibility problems with long-running stories and beings below ground.

As Raquel Gutierrez Aguilar (2014) says about the Bolivian Revolution, the energy that wells up from underground, rolling through people and places, does not stay there forever. It builds and rises and runs through everything, upending, cleansing, reordering the world, and then recedes. As academics and activists, what many of us often see as ‘the social movement’ is an event, an uprising and (over a somewhat longer time) a visible and vibrant social movement, at a time of quickening. When they recede, we call it a loss, another failed social movement, but, as Gutierrez Aguilar (2014) notes, people return to everyday life and much of it is as before, but people sense themselves and the significance of the everyday differently. Their connections to each other and the world have different meanings. And so it is that when we seek, only above ground, visible ‘social movements’, we may fail to see the tangled connections running below ground, keeping themselves and the forest fed, and waiting to spawn the fruiting bodies and survive them. Mycelia are like the connections of everyday life, communal, mobile, quiet and holding it all together.

Stengers (2010), as well as decolonial anthropologists like Escobar (2008), Blaser (2010) and de la Cadena (2010), engage explicitly with culture–nature formations and relations of power within and between worlds, which Stengers refers to as cosmopolitics. However, the kinds of powers at work, including biopowers (e.g. the aforementioned *pachakutik*) may not be fully legible within modernist frameworks (Gutierrez Aguilar, 2014). Boaventura de Sousa Santos (2007) also addresses issues of coloniality, decolonial challenges and multiple vibrant worlds through the ‘ecology of knowledges’, calling out abyssal ecologies and hyper-dualities that do not stop at two but rather delete the existence of the Other. In different ways, such thinking helps to destabilize conventional thinking about culture–nature, especially as the latter still sometimes informs political ecology.

Tierra y Territorio [Earth/Land/Territory]

The claim and policing of territory based on ethnicity and identity are often interpreted as 'regressive', nationalist and identity-based 'Blood and Soil' politics by leftists. However, state, class and economic territoriality have also brought widespread death and destruction. Meanwhile, *Tierra y Territorio* are invoked by social movements from the Pampas of Argentina, the MST encampments of Brazil, along the Andes, through the Amazon, the rainforests of Mexico and Central America, and on to the First Nations Lands of Canada. The Northern Forest Peoples' Movement of Thailand, forest peoples' movements in Orissa (and elsewhere in India), and wider peasants' movements in such places as India, Indonesia and much of Southeast Asia likewise call for land, territory, food sovereignty and autonomy. Similarly, 'Pacific Climate Warriors' blocked the coal harbor of Newcastle, Australia in October 2014, citing protection of Pacific waters, islands and shoreline ecologies at the heart of their indigenous worlds.

People invoke networked and rooted territories of the Peoples' Commons in the streets of Madrid, Mexico City, Rio De Janeiro, New York City, Cairo and Ferguson, Missouri. Rural peasants' movements, urban rebellions and indigenous peoples' movements often explicitly invoke a relational politics, of living well together, of 'being differently' in relation (Rocheleau, 2015a). Even where the focus is more on political freedom, justice, equality and safety, 'autonomy' usually replaces 'self-determination' for many movements. Territory can mean a place of safety where one or a collective exercises autonomous control over the terms of being in that space. As in many indigenous movements, people may be more concerned about having control over what is done in their surroundings as territory, and how they can be themselves there, rather than having exclusive rights to land as property. For instance, in the frontiers of hydraulic fracturing (fracking) for gas in rural New York State, Pennsylvania and the US northeast, farmers, landholders and residents opposed to this activity invoke the principle of 'home rule' to prohibit it locally. Some lodge legal suits or have suits lodged against them in court (Simonelli, 2014). In both scenarios, territories of home (individual and collective) and common territories of circulation, encounter, expression and belonging are at stake. Territory is not just about locations of domination, extraction and first lines of defence; it is also about sites of refuge, security and autonomy over the conditions of being in place (whether in an individual's home or in a common space).

HOW DO THESE CONCEPTS GO TO GROUND (OR COME UP FROM IT) IN MY WORK?

My evolving theoretical position reflects not only years devoted to understanding new theories about natureculture, but also decades spent working with, learning with, and learning about rural people (mostly farmers, foresters and livestock keepers) in agrarian and forest landscapes. These people are embedded in social movements, popular organizations, NGOs, communities and, sometimes, development projects. They struggle to deal with savage inequalities of income and access to land, water and markets, not to mention formal political power. They face environmental destruction and

degradation, sometimes caused by their own constrained conditions, but more often by externally controlled development: mines, dams, logging, industrial agriculture, forest plantations, tourism and even ‘sustainable development’ projects.

The people I have worked with did not enter into or emerge from these encounters as victims, though many suffered grievous harm and loss. Many have prevailed as agents of their own futures and some as defenders of living worlds, through diverse responses to colonial and neo-colonial interventions: direct and organized resistance (Zibechi, 2012); indirect and everyday resistance (Scott, 1985); instrumental and selective assimilation; feigned compliance and subterfuge; or living differently. Those who prevailed did so by managing to continue being and becoming themselves, individually and collectively, in spite of the flood of production and conservation interventions imposed on them. To complement the discussion above, I present stories of theoretical imperatives and insights derived from shared learning and experiences in four times and places: Sierra region of the Dominican Republic (1979–81); Machakos District Kenya (1983–93, 2002); Zambrana-Chacuey, Cotui in the Dominican Republic (1992, 1996, 2006); and Chiapas, Mexico (2005–14).

La Sierra, Dominican Republic

I began practicing political ecology without a title or academic affiliation, as a research scientist doing a doctoral dissertation in rural land use and watershed management in the Central Mountains of the Dominican Republic (1979–81). Most of my work consisted of rigorously documenting physical damage at three scales (soil degradation, erosion and low yields in highland farms; sedimentation and flash floods in small streams; and disruption of water flows along three major rivers). My greatest insights in understanding the data came from interviews with farmers and through nearly two years of conversation, collaboration and participant observation as a member of a Dominican rural conservation and development project. My closest colleagues were formally trained in agronomy, forestry and engineering, or alternatively as farmers with little formal education, yet all were astute observers and actors in political landscapes across scales.

The best explanation of the data rested on the political economy of land, agriculture, knowledge and development in the Sierra. Landholding patterns and patron–client relations explained the lack of difference in stream degradation between watersheds with large extents of shaded coffee and those with pastures, field crops, eroded slopes and landslides. Indeed, management of both watersheds was mainly in the hands of large landholders who opened up new forest, in one case to produce cheap starch on steep fragile slopes for the combined migrant and resident workforce in their coffee plantations, and in the other case to illegally fell and sell timber as well as to expand cattle production. What drove deforestation in both cases were the decisions and practices of larger and more commercially oriented landholders who in one case hired local smallholders, paying them partly in food grown on steep slopes, while in the other case employers paid workers in cash (derived from illegal timber sales). I also found a window into another world (beyond my dissertation focus) when I interviewed women whose farming work was labeled ‘helping’ and whose agricultural and resource management knowledge and logic were not recognized by their own men or by the

extension and development personnel promoting agricultural technologies, or even by me until I sat down and listened to them (Rocheleau, 2015b).

What I came to see was a production system shaped largely by inequality, patron–client relations and pressure to produce (for profit or home use) at the expense of environmental ‘externalities’. Large and small landholders were, in turn, affected by structural constraints at national and international levels. I was beginning to see, but not yet to address, the chasm between local and ‘scientific’ knowledges, men’s and women’s knowledges, and the logic of ‘conservation and development’ versus livelihoods and living landscapes. What was clear was the role of complex social relations of power, across scales, shaping the material landscapes and watersheds of the Sierra.

Ukambani, Kenya: Home of the Akamba

A postdoctoral fellowship took me to Kenya in 1983, allowing me to address land-use alternatives and community-based research and development methods. I worked on land-use alternatives for Kenyan smallholders at the International Council for Research in Agroforestry (now World Agroforestry Centre) in Nairobi. National and international scientists developed research methods as well as agroforestry technologies for smallholders to combine trees, field crops and livestock in ways that diversified products, conserved soil and water, saved labor and increased yields. There was also an opportunity to work on gender and class relations in farm communities where we maintained small, informal long-term research efforts, as well as in places where we ‘dropped in’ to help plan research with scientists and local communities. Dealing with women as producers and knowers, and gender as an issue, followed from my prior learning in the Dominican Republic. It was also simply a matter of being rigorous about agroforestry in sub-Saharan Africa, where women provided 80 percent of agricultural labor and an even higher percentage in the Akamba community where I worked most. This ‘community’ consisted of five villages with a population of roughly 5000 clustered around a common market center (Kathama) in Machakos District.

Oral histories described previous generations as mobile, circulating communities of agropastoralists rooted in the territory of Ukambani (which included Machakos and Kitui districts in 1983). The colonial occupation removed the Akamba, especially in the more central and well-watered Machakos District, from their territories, relegating them to a small fraction of the driest agricultural land, gathered in dense populations around newly created towns and marketplaces. By 1983 there were landholding and broader class differences between smallholders, yet these paled in comparison with the differences between all of them and the colonial, and eventually individual and corporate owners of large ranches and plantations nearby.

The issue of local knowledges, as well as locally situated global knowledges, followed on the heels of gender, class and colonial status, as people shared their distinct ethnic and locally based strategies, logics and stores of knowledge that guided their production and resource management choices. As they had described former patterns of movement, so they described new kinds of circulation being inscribed in the landscape, from military service on a global scale to employment of men in urban centers and distant frontiers who returned home weekly, monthly or annually. The new movements, constrained by colonial and later capitalist regimes, also extended to migration of entire

families to dry agricultural frontiers where they hoped still to graze cattle on common lands. New patterns of local livestock movement relied on negotiating illegal entry into state forests and rangelands to let cattle forage on seed pods and shrubs during the dry season. The choice to move to dry agricultural frontiers in Machakos and Kitui District, as opposed to districts with more rain and better soils, reflected an imperative to reside in Ukambani. As people spoke of migration, and where they would and would not live, I began to see networks of circulation and settlement rooted in the Akamba ethnic territory.

With the drought of 1984/5 women and men across age groups sought to keep family and livestock alive. They combined gendered knowledge from before with contemporary experience to develop household and community survival strategies and practices. These ranged from vitamin A therapies based on using processed *Solanum nigrum* ('deadly nightshade') leaves to experiments with alternative tree fodder for cattle, and increased mobilization of women in group work on government conservation sites to assure receipt of relief food, when it would eventually arrive. This impressed upon me respect for local and gendered knowledges, as encompassing politics and social relations as well as agriculture, botany, medicine and nutrition (Rocheleau, 2001).

To understand how and what women of different generations learned about land, forests, rangelands, soils, crops, streams, rivers and animals, as well as how they connected to all of these, I asked women to recount relevant experiences from their youth as oral history. Ndungwa, a political figure and leader of the most traditional women's group in the locality, began and ended with her wedding day, followed by a short postscript. I was unprepared for this 'deviation' from my topic and tried to derail her from this track, but to no avail. She was not deterred, for which I am grateful. In reviewing my notes, I realized that her wedding day was a watershed moment with respect to both her family situation and ecological location. She was explaining to me how she became attached to her current land, a relationship mediated by marriage, networked and rooted in place (Rocheleau, 2015b).

The wedding encapsulated several dimensions of her life, from the animals in her father's compounds and the well-watered land where he farmed and grazed his cattle, to the women who prepared her for the ceremony. They would drop out of her life dramatically as her new family would be her husband's. On that day of transition, they washed her in fresh cow's milk and oiled her skin and hair with cow fat until she gleamed. They dressed her in garments of cowhide pounded into soft leather and they sang all the while of her beauty, and of the wealth of her father, over 200 head of cattle, part of it bride price paid by her husband and his family. And they sang of *his* wealth, an army officer whose home was in the drier valley below.

She entered her new family home, began to grow crops and keep livestock, and bear children. She fast-forwarded about 12 years to when her first daughter was old enough to help her mother-in-law. She negotiated permission to follow her husband to the army garrison in Machakos town. There she learned to speak Swahili, read and write, be a leader, and form a liaison with the colonial state. She loaned me her certificate of leadership training to copy and wore a recent leadership medal for a photograph, happy to document her success. The rest I knew: she acquired the connections and knowledge needed to make herself a political force as a women's leader and eventually a political party official in her home place. She negotiated with chiefs, sub-chiefs and district

officers on behalf of the women in the five villages that made up the sub-location where she lived, and reigned for decades as someone to be reckoned with. She still kept livestock, grew crops, and added an agroforestry project, a group-tree nursery and planted trees into the mix. I too became part of her network.

What she described to me about her wedding day was the composition and re-centering of her network, from father's to husband's territory, and the construction of a rooted network that would center on her, as a widow, mother and grandmother, landowner, farmer and livestock keeper. She managed a women's group that did 'men's work'. They constructed dams and terraces with picks and shovels, made bricks for men to construct 'modern' houses, and built entire traditional structures (of mud, dung, sticks and straw) previously built by men and women together. She and her group weeded croplands, built a tree nursery, treated seeds, raised seedlings and planted trees (some later used for housing).

Ndungwa was a political authority among women and a force *for* women from her community to the district level. When necessary, she participated in the official dis-organization of women's groups who refused to be used any longer to do all the work for the community, and a corrupt state, from roads to school buildings and from dams to wells. It was a pruning and re-rooting of women's group networks into smaller units helping each other as neighbors and friends on each other's farms, never more than five so as not to become an illegal group. Thus dis- and re-organized, they helped each other free of state oversight and labor capture (Rocheleau, 2015b).

The wedding was also about pruning, as she shed parts of her girlhood network, and transplanted, re-rooted and expanded that network in new land on new terms, and built a family, farm, influential women's group and circle of influence beyond the community. After that day of the wedding story, it took me another ten years to see that, and to name it, when I encountered Latour's version of actor networks that combined land, people, other living beings, artifacts and technologies. Sometimes it takes a convoluted journey and similarly convoluted texts and labels for modernist-molded minds to comprehend the complex connections and disconnections of living worlds.

Zambrana-Chacuey, Dominican Republic

In 1992 I returned to the Dominican Republic to write a case study of a successful agro- and social forestry collaboration between a peasant federation and a progressive sustainable development NGO. My mandate was to produce a gender-focused study for training foresters and development professionals to integrate women and gender equality into sustainable development and resource management. Laurie Ross, Julio Morrobel, Ricardo Hernandez and I chose to work with a federation rooted in the land struggle movement and liberation theology. The Rural Federation of Zambrana-Chacuey was among the strongest surviving groups nationally in 1992. It was part of the larger Confederación Mamá Tingó, named for a revered woman leader (born Florinda Muñoz Soriano) assassinated in 1974 for organizing peasant resistance to land seizures by a wealthy landowner.

The Federation was a networked organization that emerged from a social movement network. It was engaged in a multi-year research and development partnership with ENDA-Caribe, part of an international sustainable development NGO based in Senegal

and connected to a diverse network of ethnobotany, agroforestry and sustainable agriculture NGOs and alternative development organizations. Our work was thus embedded in a context of nested and overlapping organizational and social movement networks rather than one centered on a single, one-dimensional hierarchical structure, even as it embraced a multitude of actors involved in many kinds and degrees of connection.

This context required a different understanding of power. Major actors wielding structural power from above included the state forest authority then notorious for selective, aggressive and corrupt enforcement of forest laws. National and multinational companies sought land for citrus and pineapple production (through direct purchase and contract farming, respectively). Large-holder farmers included old landed families vying for land, markets and influence, as well as newcomers whose wealth reportedly flowed from drug trafficking. So there were intersecting fields of power emanating from multiple, and partially networked, hierarchical organizations, operating sometimes in concert and other times not. Now, I see intersectional and complex identities among powerful state, commercial and criminal actors as well as prominent landholders. So while we assessed gendered relations of power within households, communities and organizations, we also found the feminist construct of intersectional identities relevant to powerful actors in bastions of masculine privilege.

Beyond power *over*, another side of power was wielded by the Federation: power *with* (solidarity and collective power from below) and power *against* (resistance to power from above). Members located themselves simultaneously in multiple nested relations with different associations within the Federation (farmers, women's and wood producers' groups), organizations within the Catholic Church, political parties, families, businesses, markets and employers (e.g. gold mining company, orange and pineapple companies, large landholders, government agencies, NGOs, donor development projects). Intersectional identities and multiple affinities abounded. Relationships reflected a diversity of complex positions and types of power. Such complexity gave rise to contradictions and surprises. For example, an iron rule against party politics *within* the Federation coexisted with the expectation that members who belonged to the governing party would mediate and intercede with government officials on behalf of the Federation. A woman who once led the Federation belonged to the right-wing political party, yet had also engaged in clandestine meetings to plan land occupations and resistance strategies when her party was in power. Later, when the Federation was legal and acting publicly, she openly advocated for the Federation when her party came to power again. While this stymied me at first, I came to see her as being a *campesina* [farmer] and a Federation member first, but also a midwife and herbalist, traditional priestess, Catholic Church leader, business woman, farmer, mother and grandmother, and active political party member.

Looking at the complex relationships of people within and between organizations and institutions, we can speak of power between, power alongside, power in spite of, power from within, and power from without and power in convergence. The power to connect or disconnect, to prune one's network or end relations with another, revolves around often uneven terms of connection and quality of relations. Connections may be positive, negative or neutral, and voluntary, involuntary or externally coerced by a third

party. Relations can be based on dependence, independence and interdependence (Rocheleau and Roth, 2007).

Perhaps the biggest surprise was not that we found gendered landscapes and ecologies (after all, we had expected to), but that they were best defined as assemblages (as Latour describes networks combining ‘social’ and ‘natural’ domains of life in contingent forms). Think Lego® or colored blocks of various shapes that can be combined in multiple ways to constitute distinct items. Each block is part of the network, and each functional connection is a link in a ‘single’ item – though that item is neither permanent nor the only possible outcome. Alternatively new items can be formed without direct intent, drawn together into ‘meshworks’ over time through relational development (Escobar, 2008; Ingold, 2011). For example, a tree with edible seeds, a bird, a second tree that serves as perch or nesting place, and a small clearing beneath that tree, where bird droppings carry intact seeds, all serve to create an association of species, a pattern that recurs in the forest, an item of sorts that was not created with explicit intent or external agency.

So in Zambrana-Chacuey we found repeating patterns (specific associations) of wild and domesticated tree species as well as local and exotic tree species, co-occurring with specific land-use units (pasture, patio garden, coffee and cocoa stands, cropland, woodlots and riparian forests). These in turn combined with specific types of livestock, wild animals, household composition, livelihoods, technologies and land-use practices. These new combinations we called ‘emergent ecologies’ (Rocheleau et al., 2001), similar to what scientists call novel ecosystems or what Latour labels assemblages. Gender dynamics of land use and landscape management also featured here since women generally managed patio gardens that were the site of highest tree species richness (i.e. number of species) in close competition with the riparian forest, and substantially more diverse than the planted forests of shaded coffee and cocoa. And women’s species-rich patio forests constituted a polka dot pattern of high tree species diversity, forming part of a patchwork regional agroforest rooted in the dispersed, irregular territory of Federation members (Rocheleau, 2011).

The socially networked political process that enabled creation of this landscape is also reflected in a complex nesting of opposite types and terms of relations. Federation members engaged in organized collective action to obtain or retain small plots of private property to enable a dignified and secure life in a community of smallholders. The significance of the resulting landscape and livelihood formations is likewise paradoxical. In Zambrana-Chacuey, the seeds of the forest (past, present and future) are cradled in rural farmers’ homesteads, at the heart of their gendered culture, economy and politics, and hence are only as resilient or fragile as they are. So the forests, families, landscapes and communities of the Federation are entwined in assemblages that have been invisible, or at least illegible through the standard lenses of scientific forest ecology, sustainable development and political economy, but are nonetheless invaluable to their stated objectives.

Territories of Being, Differently, in Chiapas, Mexico

I was invited in 2005 along with colleagues to visit Chiapas, specifically a Zapatista community in the Lacandon rainforest, to explore shared interests in sustainable and

socially just landscapes and livelihoods. We spent a week there with a group of families, sleeping in their one-room school, and walking through their farm and forest landscapes, getting to know each other. We talked about our respective histories, hopes and possible futures.

In the schoolhouse one child's painting depicted a multitude of snails moving over land through a mountainous landscape of forests and cornfields, with one snail sporting a black mask and smoking a pipe, representing Subcomandante Marcos: the then spokesperson and consciously constructed icon of the Zapatista Army of National Liberation (Marcos, 2002, 2014). When I asked about it they explained that it had to do with being small, humble and of the earth, about building and moving together, a movement remaking the world. Here was evidence of a different pedagogy *and* ontology at work in the Zapatista communities of northeastern Chiapas.

Before leaving, we attended the birthday party of our host's daughter, who had turned eight. The compound was aflutter with life and music and brightly colored dresses and cowboy boots and plenty of people we hadn't seen before. There was coffee, food and dancing, and lots of laughter and conversation. The party brought together friends and families united by shared experiences but also separated by politics. The simultaneity and multiplicity of complex identities, the entwined, even tangled, threads of rhizomatic relationships were interwoven through the event, as people rallied around common histories and family ties, despite the sometimes dramatic political differences. They had separate schools and shops as well as contrasting ideas about the future of their lands and communities. This was a divided community that still had points of commonality sufficient to maintain relationships across differences.

Our visit also involved sharing ideas with Zapatista civilian authorities about community forests and agroforestry. They invited us back to see what people in the communities might be interested in trying. We agreed to return and explore these issues the following year. By January 2006 the national election campaign was in full swing and the Zapatistas, who neither supported nor participated in them, had launched the 'Other Campaign', a non-party caravan moving throughout the country, holding meetings about the specific concerns of the people they encountered. This campaign created headlines while affording safe spaces for speaking and listening across party and other lines. The stories of 'Others' thus emerged, including miners, indigenous farming communities, entire cities facing unwanted development and environmental destruction, and coastal fishers being evicted to make way for resorts. Marcos and other caravan members always listened and brought the communities into conversation with the Zapatistas' experiences and visions. The caravans and their celebrated occupants would continuously appear and disappear, bringing to mind the child's picture of snails on the move. And then, four months into a planned six-month cycle of rhizomatic encounters across the country, the caravan came to an abrupt halt.

As we prepared to return, we heard that the Zapatista leadership council had declared a red alert throughout Zapatista territory in Chiapas, reflecting that an attack by the Mexican army might be in the offing. The alert followed a brutal attack by thousands of police on flower sellers and farmers in Atenco on 4 May 2006 for their solidarity with flower sellers in nearby Texcoco as well as their prior successful resistance to the expansion of the Mexico City Airport. The raid left one dead, dozens of women raped and assaulted, and hundreds more beaten (many severely) and detained. This raid also

occurred one week after a visit to the area by the Other Campaign. With the campaign suspended and the alert invoked, Marcos led a 6000-strong march into Atenco the day after the police raid.

The attack sent shock waves through the country's social movements. The Zapatistas recalled their Other Campaign people, asked volunteers to leave their communities and peace camps and closed the five *caracoles* (districts, literally 'seashells') – much as a snail might draw into and close its shell when threatened. It also brought to mind the self-pruning network that Escobar (2008, citing Stuart Kaufman and Marilyn Strathern) describes when discussing how networks often needed to cut back on connections in certain times and places. What had seemed so vibrant, open and expansive was suddenly closed, at least on the surface. The communities were quiet and did not receive visitors. They held internal consultations, assessing their options while charting a path forward. In October 2006 a new cycle of international encounters began, but of a more horizontal nature and hence less focused on leaders and intellectuals. The first encounter of Zapatista people with peoples of the world occurred in Oventik (*Caracol II*) at the end of that year, with many other communities following a few months later. But the communities re-opened on new terms, particularly via the *encuentros* [meetings] that focused on connecting members of movements, and culminated in the women's *encuentro* at the end of 2007. The result was a new way of seeing territory (see also Solnit, 2008).

Before first visiting Chiapas I imagined Zapatista territory to be a polygon of land controlled by new autonomous governments, with a central governing and social center for each of the five *caracoles*. In reality it was a rhizomatic tangle of living threads running through broader territory. Territorial extent was defined by where threads could and did run, not only in safe, fully occupied areas, but in places that needed crossing in order to connect people and places. It was an archipelago of people, plants, animals and practices joined by the rhizomatic threads of shared dreams. Jan de Vos (2002) titled one volume of his history of the Selva Lacandona (Lacandon Rainforest) region 'a place to plant dreams'. It seemed to me that the Zapatistas had gone a step further, releasing their rhizomatic dreams to run free over land, under ground, through the internet and face to face.

The Zapatistas and other social movements were not alone in pursuing networked and rhizomatic territorial strategies. Outsider-propelled tourism 'development' plans would remake the region in a way designed to appeal to international tourists. Here are imposed territorialities involving many actors, including the World Bank, UN Habitat, Mexico's national, state and local government, financial investors, paramilitaries, contractors, and international and national conservation NGOs. In a network reminiscent of a Lombardi (2003) diagram, these actors exercise 'power over' through an intricate network of hierarchical and more fluid horizontal relationships (see also Bobrow-Strain, 2007). Drawing on my political ecology perspective, I seek to understand such rhizomatic imperialism as well as the Zapatistas-led rhizomatic liberation territorialities that I experienced first hand in 2005 for the first time (Rocheleau, 2015a). Indeed, an approach based on ideas of roots, networks, meshworks, rhizomes and territory enables simultaneous insight into multiple political-ecological patterns and power dynamics in a place such as Chiapas but elsewhere too.

CONCLUSION

Still, there is one nagging question that lies just beneath the surface with respect to ideas about networks, roots, rhizomes, territories, assemblages and multiple ontologies, as discussed in this chapter. Many insights derived from the more arcane and difficult mental acrobatics of social theory are required to get modernist minds on to the same page as many indigenous and peasant groups (Ingold, 2011). Hence political ecologists need to carefully examine and recognize the role of indigenous and activist thinkers as experts and often originators of theory rather than merely objects of social theories. The same can be said about political insights. My own sense of the importance of ‘being, differently’ is tied up with observations, conversations and readings of indigenous activists in Chiapas and concepts such as ‘*In lak’ech*’ (or living well). Likewise, possibilities for non-violent resistance based on being ourselves, becoming more ourselves or recovering ourselves is ultimately about ‘all our relations’, as Winona LaDuke (1999) puts it in her book title. And it involves going beyond resistance, ‘to re-exist’ (Olivera, 2014). I would say that too happens in relations above and below ground, entwined between horizontal flows of connection, as well as the constant interplay of de-connection, re-connection and negotiations with hierarchies.

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7. A time for Gramsci

Alex Loftus

Michel Foucault noted, astutely, that Antonio Gramsci is a figure more commonly cited than actually known or encountered (Buttigieg, 1992: xix). Indeed, Gramsci is so closely associated with the concept of hegemony – a term almost universally understood – that there seems little need to read his own writings on the subject. Nevertheless this situation would appear to have changed somewhat within political ecology, where space has now opened up for a much more thorough evaluation of Gramsci’s potential contribution to understandings of the politicized environment (Ekers et al., 2009; Ekers et al., 2013). This new-found interest builds on a lengthier engagement with the spirit, if not always the letter, of Gramsci’s writings within the subfield over the last two decades (Mann, 2009; for a rare example of an earlier engagement in both ‘spirit’ and ‘letter’, see work by Donald Moore, 1993, 1996, 2005 on Zimbabwe). There are important reasons why this engagement has occurred and why it might be considered something other than a passing fad. First, within the anglophone world, the partial translation of a full critical edition of the *Prison Notebooks*, as well as a series of important debates (originally conducted in Italian and in German), has enabled a more consistent engagement with the rhythms and timbre of Gramsci’s work. An approach described by its proponent as the philosophy of praxis can be seen as far richer than its original characterization as a ‘codeword’ for Marxism; and debates have been liberated from the constraints of thematic selections and linguistic barriers (Ives and Lacorte, 2010; Thomas, 2009a; Haug, 2000). Second, both within and outside the sub-discipline, there has been something of a rejuvenation of historical materialism. Fuelled in part by attempts to grapple with the causes and consequences of the most recent financial crisis (Harvey, 2010), but also receiving sustenance from debates and dialogues with queer theory (Floyd, 2009), anti-colonial approaches (Bannerji, 2011) and feminism (Katz, 2001), historical materialism seems to be in rude health. Third, blindspots within political ecology have been addressed in a more sustained manner and Gramsci has been seen as a crucial ally within such a project. Thus concerns over the lack of an adequate theorization of ideology (Loftus, 2013) and the need to confront processes of politics and post-politics in relation to environmental questions (Swyngedouw, 2010) suggest that Gramsci may have more than just a theory of hegemony to offer analyses of political ecologies in a range of locations.

After a brief introduction to Gramsci’s overall approach, this chapter will go on to review past and present work within a Gramscian political ecology (Ekers et al., 2009). The chapter will show that such work opens up exciting terrains for future research within the subfield of political ecology at the same time as providing a particularly resilient foundation on which to ground political ecology. Rather than representing a faddish turn, I will argue that engaging with Gramsci helps to ground studies of the

politicized environment within a non-reductionist historical materialism that attends to the many determinations of environmental concerns. As with other contributions to this collection, my approach to political ecology is not limited to the production of environmental knowledge within the global North, but is rather shaped in a relationship of dialectical pedagogy with a range of conceptions of the world. Again, Gramsci is a crucial ally in such a project: although often positioned within a canon of Western Marxism (Anderson, 1976), Gramsci refuses to fit neatly within such a classificatory system. ‘A product of the west’s most remote periphery, and of conditions which, half a century later, it became fashionable to call “Third World;” Gramsci remains, as Tom Nairn (1982: 161) refers to him, ‘a barbed gift of the backwoods’.

THE PHILOSOPHY OF PRAXIS

Brought up in relative poverty within what was, at the time, the peripheral, peasant-based economy of Sardinia, Gramsci moved to the industrial heartland of Turin in his late teens. Gramsci is, of course, best known for having been the jailed leader of the Italian Communist Party. His 33 *Prison Notebooks*, smuggled to Russia by his sister-in-law, are known for their development of the concept of hegemony, the peculiar mixture of consent and coercion through which moral and intellectual leadership is exercised within advanced capitalist societies. Gramsci’s close association with the concept of hegemony has often led to a neglect of the coordinates of his overall approach; hegemony is, however, best understood within these broader coordinates. Perhaps the defining feature of Gramsci’s Marxism is the attempt to develop and define what he refers to as a philosophy of praxis. Although in early selections from the *Prison Notebooks* ‘philosophy of praxis’ was interpreted as a codeword for Marxism that might avoid the watchful eye of the prison censor (Hoare and Nowell-Smith, 1971), more recent approaches have firmly rejected such an understanding in order to demonstrate the distinctive shape that Gramsci gives to Marxism (Thomas, 2009a; Haug, 2000).

In Notebook 11 – one of the so-called ‘special notebooks’ in which Gramsci’s writings reach a new pitch and precision – the interned communist writes that ‘the philosophy of praxis is absolute “historicism”, the absolute secularisation and earthliness of thought, an absolute humanism of history’ (Gramsci, Q11, §27; 1971: 465). Peter Thomas (2009a) elaborates on each of these themes and demonstrates the acute attention that Gramsci pays to Marx’s *Theses on Feuerbach* in his ‘singular and consistent concern: the attempt to elaborate a political theory which would be adequate to give expression to – and, just as importantly, to shape and guide – the popular and subaltern classes’ attempts to awaken from and to assume social and political leadership’ (ibid.: 159). Having grown up in Sardinia before moving to Turin, Gramsci was deeply attentive to the manner in which subordinated groups – whether the peasantry in Sardinia or the factory worker in Turin – framed their ‘conceptions of the world’ in relation to practical activity. Whether working on the production lines in the Fiat factory or patiently constructing a stone *nuraghi* (ancient megalith) in rural Sardinia (Berger, 2013), Gramsci recognized that sensuous engagements between human and non-human are essential to the emergence of ‘common sense’. Such

common sense articulates with and is transformed by the handed-down understandings of the world produced by science, folklore, philosophy and so on. Thus Gramsci calls for an inventory to be constructed of these received, sedimented forms of knowledge, prior to a critique of common sense, while, nevertheless, recognizing that such a critique must build on the rational kernel within existing common sense. Thomas (2009a) describes the approach as a form of ‘dialectical pedagogy’ in which Gramsci seeks ways of making common sense ‘coherent’, measured not on some external scale that seeks to assess the ‘logic’ of a particular conception, but rather as the ability to integrate theory and practice in a way that heightens both. In short, Gramsci looks at everyday practices in order to understand how such practices create reality and simultaneously give rise to particular ways of knowing. Seeing how these ways of knowing articulate with what are often contradictory conceptions of the world – transforming them in the process – suggests, to Gramsci, the basis for a new conception of the world emerging from the revolutionary self-understandings of subordinated groups.

The distinctive manner in which Gramsci theorizes hegemony (and Gramsci, acknowledging the much longer body of thought on the concept, claims that Lenin is the pre-eminent theorist of hegemony) should be viewed in relation to the philosophy of praxis. Thus, if leading social groups are to exercise effective leadership, they need to consider how to achieve an appropriate balance between consent and coercion. The effectiveness of bourgeois moral and intellectual leadership within advanced capitalist societies should be seen as the successful achievement of a historical bloc through the simultaneous suppression of dissenting social groups and the raising of already existing conceptions of the world, viewed in relation to specific practices. In order to overturn an existing historical bloc, subaltern groups (and the organic intellectuals who remain a part of these groups) should seek to build on actually existing practices in order to achieve a fundamentally new conception of the world. The philosophy of praxis is central to this process: thus ‘it is along this line [the philosophy of praxis] that one must trace the thread of the new conception of the world’ (Gramsci Q11, §27; 1971: 465).

EARLY GRAMSCIAN CONTRIBUTIONS

Political ecologists’ engagements with Gramsci have clearly been shaped and influenced by the broader context in which his ideas have been received and have circulated. My discussion is limited by my knowledge of political ecology within the anglophone world, although it is probably fair to assume that Gramsci might also have exerted a slight influence on quite different formulations such as Alain Lipietz’s reading of political ecology within France. Anglophone debates have been constrained by the lag time in translating Gramsci’s writings. Although an early selection of the *Prison Notebooks* appeared in 1957, a far more substantial selection was translated and published in 1971. Shaped in part by the Communist Party of Great Britain’s attempts to redefine itself along the lines of Euro-communism, the selection exerted a powerful influence over fledgling disciplines such as Cultural Studies, although it received far less attention within emergent work in Radical Geography, which adopted a more

explicit critique of political economy, drawing largely from Marx. Within Environmental Studies more broadly, Gramsci was occasionally drawn on in the 1980s and 1990s to buttress an argument about hegemonic modes of environmental governance, but his approach was often seen to be antithetical to nature-based concerns because of its 'culturalist bias' (Foster, 2000: 244–5) and lack of sensitivity to materialist concerns. For political ecology, it was only with the publication of the ground-breaking collection *Liberation Ecologies* (Peet and Watts, 1996) that Gramsci's importance to the subfield came to be considered in any real depth. Perhaps unsurprisingly, the most significant engagement came not from a geographer but from an anthropologist, Donald Moore. Moore conducted historical ethnographic research in Zimbabwe's Eastern Highlands and from this research sought to apply a 'Gramscian perspective on environmental resource struggles' (1996: 127), situating the struggles that he observed 'within the *cultural* production of landscape and resources' (ibid.: 138; italics in original). At the heart of Moore's approach is an effort to make sense of the emergence of consciousness on an ideological terrain (see the latter part of this chapter). Thus, if political ecology is an approach that seeks to advance understandings of agents' efforts to access resources within a politicized environment (Bryant and Bailey, 1997), Gramsci provides a crucial bridge. Moore contributed to both the initial *Economic Geography* collection in 1993 that formed the backbone to *Liberation Ecologies* and to the first edition of the book. By the time of the second edition in 2004, however, Moore's chapter was no longer included and no reference to Gramsci is made in the collection. Fleeting references are made to Gramsci in Robbins's (2012: 62–3) account of political ecology and also in Castree's (2014) excursus on nature, but both present a rather thin account of Gramsci as a theorist of resistance (Robbins, 2012) and of ideology (Castree, 2014). Foucault's writings on 'governmentality', often read through a Marxist lens, would appear to be one of the central frames of the second edition of *Liberation Ecologies*, even though Michael Watts has claimed that Gramsci's spectral presence remained within all three editions of *Liberation Ecologies* (Personal communication; the 'third' edition of the text being Peet et al., 2010). It is nevertheless surprising that Gramsci never features prominently within Watts's own writings. Whether the waning of Gramsci's fortunes, after political ecologists' very brief flirtation, should be judged against the waxing of Foucault's is perhaps a moot point; however, perhaps, as Mann (2009) suggests and as Watts's comments confirm, a certain spirit of Gramsci remained. Spirits are, however, notoriously difficult to pin down and, notwithstanding Moore's central contribution, it is only with subsequent efforts that a clearer picture of a Gramscian political ecology has begun to emerge.

In emphasizing Gramsci's lingering influence, Mann's (2009) broader argument states that political ecology 'should be Marxist' if that Marxism is read as Gramscian and not Engelsian. Mann's contribution forms part of an edited collection of the journal *Geoforum* on 'Gramscian political ecologies'. Against Richard Day's (2005) claim that 'Gramsci is dead' (a death, Day argues, that is to be welcomed by those turning their backs on an era of vanguardist social movements struggling to achieve 'hegemony', as opposed to the 'horizontalist' newest social movements), the editors claim that 'Gramsci lives' and that the time is ripe for a far more sustained engagement with the philosophy of praxis. Aside from the opening editorial, six substantive contributions grapple with: what Gramsci brings to political ecology; the blindspots within the

subfield; and the value in thinking and working with a philosophy of praxis. Inadvertently, perhaps, one of the defining features of this engagement with Gramsci was an effort to challenge the kind of critique advanced by Foster (2000) concerning the ‘culturalist’ leanings of Gramsci. This challenge has required considering in much greater depth the concept of nature that Gramsci advanced. In stark contrast to Foster’s position, authors claimed that Gramsci demonstrates a nuanced reading of the co-production of nature and society and, if read alongside his other contributions, this reading might be taken forward within a reinvigorated political ecology. One of the key resources in this early effort to make sense of the concept of nature in Gramsci is Benedetto Fontana’s (1996; republished in Ekers et al., 2013) contribution to the journal *Philosophical Forum* in which he identifies five different understandings of nature:

These are 1) nature as undifferentiated nature; 2) nature envisioned as ‘second nature’; 3) nature as the irrational, as instinct and impulse (which need to be transcended and transformed); 4) nature as chaos or disorder; and 5) the (potential) overcoming of the domination and conquest of nature. (Fontana, 2013: 124)

If Fontana is correct to detect these five conceptions of nature, then Foster’s claim that Gramsci’s Marxism (along with that of Lukacs, Korsch and others) ‘blocked’ his path to an ‘ecological materialism’ seems a peculiar one. Against a purely ‘culturalist’ reading of the *Prison Notebooks*, political ecologists have thus (drawing to a lesser or greater extent on Fontana’s original contributions) gone on to show how Gramsci developed a far more nuanced treatment of nature – a treatment that might open up the possibility of a political ecology – than vague references to ‘Western Marxism’ would seem to suggest. Nevertheless, these five conceptions of nature are not without grave problems. First, they appear shot through with contradictions. It seems difficult to reconcile how nature can be both ‘undifferentiated’ and ‘chaos or disorder’. Second, how might either of these conceptions be reconciled with the claim that nature is envisioned as ‘second nature’?

Subsequent engagements with Gramsci’s concept of nature have sought to address what authors perceive as gaps within both Gramscian thought and political ecology more broadly. Joel Wainwright (2013) thus explores the connections between Gramsci’s theorization of ‘conceptions of the world’ and his understandings of nature, leading Wainwright to a critique of the theorization of nature–society relations within political ecology. In a similar call to that made by Mann, he appears to call for a political ecology that is more ‘Gramscian’. Other analyses have sought to emulate the historical ethnographic approach put to work by Moore. Thus Loftus and Lumsden (2008) focus on struggles over the shape of the post-apartheid political settlement in South Africa and Karriem (2009, 2013) focuses on the rise of the landless workers’ movement, the Movimento dos Trabalhadores Rurais Sem Terra (MST) within Brazil. Elsewhere authors have placed a Gramscian political ecology in tension with other approaches such as Foucault’s (Ekers and Loftus, 2008), focusing on the role of water and infrastructure in the production and reproduction of relations of power. Asher and Ojeda (2009) focused on the manner in which nature comes to be enrolled in processes of state formation within Colombia, bringing to light Gramsci’s theorization of the

‘integral state’. And Perkins (2011) has sought to demonstrate the emergence of neoliberal hegemony within forestry practices.

As I argued at the start of the chapter, this growing body of work has been nourished by the revitalization of historical materialism (Thomas 2009a), the increased availability of Gramsci’s writings to an anglophone audience (and debates that have taken place outside the anglophone world) and also a recognition that Gramsci speaks to sets of concerns that lie at the heart of a political ecological approach. Nevertheless, one has to question whether the turn to Gramsci is whimsical or a move that will be more lasting – speaking to the concerns of political ecologists for years to come. In what follows, I will argue that there are profound reasons to believe that Gramsci has something unique to contribute to political ecology and that the philosophy of praxis should continue to inform future work within the subfield. I will make this argument by focusing initially on Gramsci’s overall approach, the philosophy of praxis. Next, I will turn to Gramsci’s understandings of nature and how these articulate with his understandings of space. And finally, I will argue that Gramsci provides a missing theory of ideology for political ecologists that can foster understandings of how apolitical ecologies are produced and struggled over. I will conclude by demonstrating why this is now a time – and a space – for Gramsci.

GRAMSCI, NATURE AND THE PHILOSOPHY OF PRAXIS

To be able to get to grips with how Gramsci’s writings might influence work within political ecology, I would argue that we need to understand the philosophy of praxis as a distinctive method. As noted earlier, Gramsci frames the philosophy of praxis around an absolute humanism, an absolute historicism and an absolute immanence (Gramsci, Q11, §27; 1971: 465). At least two of these framings would seem to pose some serious problems for political ecologists, with an absolute humanism suggesting an anthropocentric worldview and a historicist approach suggesting a teleological view of human history that represents a similarly hubristic position (for an early critique of Gramsci on these grounds, see Althusser, 1970). Nevertheless, and somewhat ironically, I will argue that, by framing the philosophy of praxis around these principles, Gramsci actually provides some of the firmest methodological principles on which political ecology, also understood as a method, might be constructed. This seemingly contradictory claim requires some explanation. I will begin with a focus on Gramsci’s absolute humanism.

Far from the hubristic conception of the triumph of the human subject that has been so roundly critiqued within recent post-humanist writings (Badmington, 2000; Lorimer, 2009; for the take-up of post-humanism within work directly or indirectly shaped by debates within political ecology, see Castree et al., 2004; Latour, 2009; and Bennett, 2009), Gramsci’s absolute humanism points to a set of principles that are avowedly anti-essentialist and recognize nature as a co-producer of the ‘person’. In Notebook 10, Gramsci poses the rather large question ‘What is man?’ Rejecting the suggestion that the human is an identifiable, isolated subject and instead arguing that the human should be understood as a set of processes or relationships, Gramsci continues by building directly on the sixth of Marx’s *Theses on Feuerbach*. In this brief note, Marx (1974: 323) writes that ‘the human essence is no abstraction in a single individual. In its

reality it is the ensemble of social relations'. Equally as opposed as Marx was to the reduction of the human essence to a singular, ahistorical essence, Gramsci, nevertheless, goes somewhat further:

one must conceive of man as a series of active relationships (a process) in which individuality, though perhaps the most important, is not, however, the only element to be taken into account. The humanity which is reflected in each individuality is composed of various elements: 1. the individual; 2. other men; 3. the natural world. (Gramsci, Q10II, §54; 1971: 352)

He goes on to argue that social relations and 'natural' relations are not simply juxtaposed, with humans belonging to a society that 'interacts' externally with an abstract nature. Instead, socio-natural relations are brought into being through practical activity and through labour. Implicit in Gramsci's writings of what makes up the human is a sense of the active processes through which socio-natures are made.

In considering this active, labouring individual, Thomas (2009a: 396–405) notes a surprising lack of references to 'the subject' within the *Prison Notebooks*, commenting that Gramsci instead seems to refer to the 'person' or persona. This 'person' can be understood as a historically produced character that transforms according to the socio-natural relations. She is formed actively, through work and technique – within a given historical and geographical moment. For political ecology the lesson is simple: the subjects of politicized environments are actively produced through their interactions with those environments. Socio-natures, political ecologies, call them what you will, are products of an act of co-production between 'society' and 'nature', categories that cease to have any meaning within such a dialectical reframing (for a slightly different framing, see claims by Wainwright, 2013, cited above).

The second moment in Gramsci's method is his absolute historicism. Historicist forms of Marxism have come under assault from both theoretical anti-humanists, such as Althusser (1970) – who associated it with a teleological understanding of an unfolding history in which the heroic subject of humanism appears as the central actor – and also, closer to home, from geographers (Soja, 1989), for whom historicism implied a privileging of time as an active moment over space. Gramsci's absolute historicism bears none of these features and can instead be read as a nuanced account of the manner in which historically and geographically specific practices come to influence the making of reality and the epistemological frameworks that come to be associated with those realities (Kipfer, 2013). This is a profoundly 'de-naturalizing' move that demonstrates how socio-natures and ways of thinking about socio-natures have changed through time and can be changed in the future.

Finally, Gramsci's absolute immanence represents the Sardinian's critique of speculative forms of thinking. It is a call to build from the realities out of which political ecologies are produced and reproduced. To take Gramsci's own phrase, absolute immanence concerns 'the absolute secularisation and earthliness of thought' (Gramsci Q11, §30; 1971: 465); it is about those fleshy, messy realities of provisioning a household with water, of working a rice paddy or of gathering firewood. Above all, within Gramsci's absolute immanence lies the recognition that conditions of possibility for conceiving (and making) those fleshy, messy realities differently are to be found within them and not within the protected worlds of the academic community, the

environmental technocrat or the government agent (Loftus, 2012). Absolute immanence refers to Gramsci's immanent critique of everyday life. Together with an absolute humanism and an absolute historicism, Gramsci's call for an absolute secularization and earthliness of thought provides political ecologists with a firm set of principles from which to analyse political ecologies in a range of locations. I will now turn in more detail to where I argue that these contributions lie.

POLITICAL ECOLOGY REDUX: SPACE

Although space has been a central concept or keyword (Harvey, 2006) within the discipline of geography, it has not always been as prominent within the subfield of political ecology. When practised by geographers, political ecology has often been consigned within an academic division of labour to those who are more interested in nature–society relations. Nevertheless, an understanding of the production of space and of unequal relations across space is fundamental in making sense of political ecologies. Relations between the global North and the global South are clearly crucial to the processes shaping access to resources in different locations; but they are also one of the bases for unequal power relations shaping environmental knowledges. Similarly, if new forms of solidarity are to be sought within politicized environments, the grounds on which such solidarities might be produced requires an understanding of the relational production of space (Featherstone, 2013). Featherstone's work is exemplary here as he demonstrates the emergence of solidarities within the New Left in Scotland, always understood in relation to an outward and progressive sense of place. Although not neglecting the vital contributions from geographers in a longstanding series of debates over how to theorize space, Gramsci, I would argue, provides a new set of resources that places particular emphasis on the relational production of town and country under historically and geographically specific conditions, as well as the potential emergence of forms of solidarity between subaltern groups.

In the most comprehensive account of Gramsci's 'spatial historicism', Stefan Kipfer (2013) emphasizes how Gramsci's historicism is articulated through a nuanced account of spatial relationships before demonstrating how fundamental these relations are to the communist project that the latter articulates. Gramsci's importance as a spatial theorist (Jessop, 2005) has been emphasized in some earlier accounts, which have drawn on his early training in spatial linguistics and his interest in the movement and transformation of language; but in Kipfer's (2013) writing, the importance of Gramsci's approach to both theorizing the city and, importantly, to rethinking urban political ecology becomes far more evident. Kipfer (2013) concludes his chapter with an analysis of the 2011 revolutions in North Africa in order to demonstrate that the revolutions cannot be reduced to 'urban revolutions', but are instead complexly determined articulations within differentially urbanized landscapes, reaching across deep socio-spatial divides.

Perhaps the most obvious reference point in considering Gramsci's 'spatial historicism' is the late pre-prison writing on 'Some aspects of the Southern Question' (Gramsci, 1978), although for Kipfer (2013) this spatial historicism is articulated throughout – and developed further within – the *Prison Notebooks*. Although incomplete, and one of the last of Gramsci's writings before his incarceration, 'Some aspects

of the Southern Question' is, perhaps, one of the most explicitly geographical of Gramsci's essays. Foreshadowing Moore's (1996: 127) more recent attempts to situate environment and resource struggles 'within the *cultural* production of landscape and resources', Gramsci provides some early thoughts on the development of hegemony within the geographically disparate Italy of the early twentieth century, where peasant and industrial worker have been naturalized as political foes. Gramsci opposes the naturalization of such identities and any political strategy that relies on the mobilization of such myths. Castigating the Italian Socialist Party for its Orientalism *avant la lettre* (Short, 2013), he writes of how "science" was used to crush the wretched and exploited; but this time it was dressed in socialist colours, and claimed to be the science of the proletariat' (Gramsci, 1978: 444). Gramsci is explicit in his rejection of environmentally determinist and socially constructed views of the Southern peasantry (ibid.: 444). Vehemently opposed to the naturalization of identity and to the racist implications of environmental determinism, Gramsci instead sees identity as forged through relational, historically and geographically specific practices, seeing hope for new solidarities between North and South through quotidian practices of meeting and corresponding that 'illuminated, for an instant, brains which had never thought in that way, and which remained marked by them radically modified' (ibid.: 448). As political ecologists seek to make sense of how struggles over nature become enrolled in and emerge from the production of space, as well as looking at how new forms of solidarity (Featherstone, 2013) might emerge to challenge the unjust production of space and nature, Gramsci provides fundamentally important resources.

POLITICAL ECOLOGY REDUX: NATURE

If there is a denaturalizing move at the heart of Gramsci's writing on 'Some aspects of the Southern Question', this impulse continues throughout his work. Robbins (2012) in a now-classic statement on political ecology positions the subfield against explanations of environmental problems that find their basis in 'natural causes'. Against such 'apolitical ecologies', Robbins positions 'political ecologies'. Thus, rejecting the disempowering and gloomy theorizations of, for example, Thomas Malthus, whose whole approach was aimed at tempering the revolutionary optimism of those such as the Marquis de Condorcet (who played a leading role in the French Revolution in 1789), Robbins sees political ecologists as activist scholars viewing the world as open to change: political ecology is hatchet and seed, a critical framework with a normative base. Through historicizing (and spatializing) the production of identities, the production of nature, space and the human 'person', Gramsci provides an implicit foundation through which such a political – as opposed to apolitical – ecology might be animated.

In the earlier discussion of Gramsci's note 'What is man?', I demonstrated that implicit in Gramsci's approach is a theory of the mutual co-production of human and non-human that is mediated by praxis. Conceiving of a world somehow separate from human activity, or a human activity neither mediated nor influenced by the environment of which it is a part, would be impossible for Gramsci. Thus:

one could say that each of us changes himself and modifies the complex relations of which he is the hub. In this sense the real philosopher is, and cannot be other than, the politician, the active man who modifies the environment, understanding by environment the ensemble of relations which each of us enters to take part in. If one's own individuality is the ensemble of these relations, to create one's personality means to acquire consciousness of them and to modify one's own personality means to modify the ensemble of these relations. (Gramsci Q10II, §54; 1971: 352)

Again, Marx's *Theses on Feuerbach* are central to this philosophy of praxis. Thus, referring to the third thesis, Gramsci writes that 'if the environment is the educator, it too must in turn be educated' (Gramsci Q11, §22; 1978: 435). As seen here, Gramsci's is a profoundly dialectical approach (albeit a different understanding of the dialectic from that to be found in Blaikie and Brookfield, 1987) in which nature and society are conceived as part of a broader ensemble of mutually determining interrelationships. In Loftus and Lumsden's (2008) work, this dialectical relationship is explored through the historical political ecologies of one post-apartheid informal settlement in Durban (South Africa) in order to demonstrate the material production of distinct ideologies and the conditions of possibility for revolutionary change within the politicized environment.

POLITICAL ECOLOGY REDUX: IDEOLOGY

If Robbins sees political ecology as an approach that moves against explanations rooted in 'natural causes', the latter are implicitly viewed as an ideological framing of environmental issues. Thus political ecology serves to undermine 'ideologies of nature'. From Harvey's (1974) critique of the population-resources question as part of the 'ideology of science' to more recent writings on the 'social construction of nature', there is a significant branch of political ecology – albeit an undertheorized one – that seeks to target such ideologies. Again, Gramsci has much to offer here. Nevertheless, given that Gramsci is often first encountered as a theorist of ideology, it is somewhat paradoxical that so little attention is paid to what that theory of ideology actually is. Indeed, given the range of uses to which Gramsci puts the term within the *Prison Notebooks*, it is, at times, hard to discern precisely what the main conception of ideology might be. Thomas (2009a) claims that Gramsci uses 'ideology' in more ways than Marx and Engels, who, as Williams (1983) notes, seem to have somewhat contradictory uses of the term. Perhaps the predominant distinction that Gramsci makes between 'ideology' and 'philosophy' is, surprisingly, not a qualitative distinction but a quantitative one. Ideology is thus defined not by the 'incorrectness' of a particular way of thinking, nor is it concerned with false thoughts; instead, ideology is best understood as a fragmented, at times contradictory, set of ideas. The movement from ideology to philosophy and politics therefore requires working towards greater coherence of a particular conception of the world. Gramsci's treatment of 'common sense' is crucial in gaining a better understanding of this movement. Although often scathing of the parochial and insular conceptions of the world that emerge within the fragmented terrain of common sense in a manner that echoes political ecologists' own critiques of the romanticization of indigenous knowledge forms, Gramsci also recognized that

common sense was simultaneously informed by scientific, religious, philosophical and folkloric forms of thought. Importantly, however, Gramsci recognized that within these contradictory ways of viewing the world there was a kernel of what he referred to as ‘good sense’, which is intimately related to forms of practice. Rather than seeing the relationship between good and bad sense as qualitative, Gramsci sees it as quantitative and related to the degree of coherence (not understood in a ‘logical’ sense; see below). If the kernel of good sense is to be built upon by subaltern groups, it requires first compiling an inventory of the many contradictory conceptions that comprise common sense – in short, Gramsci urges a historicization of knowledge forms. Within ‘Some aspects of the Southern Question’, one witnesses a similar move as Gramsci begins to unpick the prejudices existing between Northerner and Southerner, always recognizing how these prejudices are open to change. Through his absolute humanism, Gramsci recognizes that ‘the human essence is no abstraction inherent in each single individual’ (Marx, 1974: 323); rather, it is the ‘ensemble’ of social (or more accurately socio-natural) relationships. And through his absolute immanence, or rather the absolute secularization and earthliness of his thought, Gramsci privileges the kernel of good sense that emerges from historically and geographically specific practices.

Advancing from such a position requires building towards a more coherent world-view. As Thomas (2009a) has noted, coherent and incoherent are not defined on the basis of logic within Gramsci’s *Prison Notebooks*. Coherence, something that Gramsci privileges in the development of a politics capable of revolutionary transformation, is, in contrast, to be understood as the ability to fuse theory and practice. Thus coherence involves raising the philosophy of praxis to a new height. The identification of theory and practice is understood in a particular way within Gramsci’s writings and ‘becomes the critical art of finding... the adequate theoretical form of a practice, capable of increasing its capacity to act, on the one hand, or, on the other hand, the adequate form of a theory, capable of increasing its capacity to know’ (Thomas, 2009b: 33). A Gramscian political ecology can thereby be seen as an effort to find the adequate theoretical form of practices of co-production, at the same time as an effort to find the adequate theoretical form capable of increasing our capacity to know and understand politicized environments.

CONCLUSION: A TIME AND A SPACE FOR GRAMSCI

I have something of a stake in seeking to convince you that ‘now is a time for Gramsci’ within political ecology. Having written on this topic, and co-edited a book on Gramsci, it is far from surprising that I want you to read Gramsci and to develop his work within the field. However (and you know what’s coming, I’m sure), there are far more profound reasons for taking such an approach seriously. First, whichever definition of political ecology one seeks to build on, it is clear that Gramsci’s approach seeks to speak quite directly to the concerns of those who view the environment as criss-crossed with – and produced out of – power relations between people and between people and those environments of which they are a part. Second, much work in political ecology has been implicitly or explicitly Marxist. The critique of political economy that is taken forward within political ecology has, more often than not, been

informed by Marx. Gramsci provides one of the most nuanced and most profound readings of Marx's method. This is why one such as Mann (2009) argues that, if political ecology is to be Marxist, it should be simultaneously Gramscian. Third, Gramsci's philosophy of praxis helps to lift political ecology from the academic silo to which it could be confined, in order to ensure it becomes a praxis-based approach, capable of achieving meaningful change within the world.

As Mann argues, Gramsci's approach is far from alien to political ecologists. It accords closely with the interests and concerns that have shaped the emergence of the subfield. Closer attention to Gramsci's work, however, enables this approach to be heightened, sharpened and radicalized. Working with and against Gramsci, political ecologists might seek to build on quotidian practices of sense-making that challenge the dominant relations out of which the world is structured. The masthead of *L'Ordine Nuovo* ['The New Order'], the newspaper of the Italian Socialist Party, is perhaps over-quoted but it remains a fitting point on which to conclude. Capturing brilliantly the critical and the normative approaches that run in parallel through political ecology and that are referred to by Robbins (2012) as a hatchet and a seed, Gramsci drew sustenance from the call for a 'Pessimism of the intellect and an optimism of the will'. Such wilful optimism on the back of a genuine appraisal of the sources of injustice out of which politicized environments are produced is a brilliant starting point for any political ecology worth its salt.

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8. Integrating science and politics in political ecology

Tim Forsyth

This chapter contributes to the *International Handbook* by reviewing debates about how ecological science and politics interact. Many discussions about political ecology adopt fixed models of either ecology or politics in discussing their possible connections. Instead, I argue that political ecology – as an intellectual inquiry – needs to reject such ‘fixed’ thinking by analyzing how politics and ecology are made together, rather than assume that either politics or ecology arises from the other.

The chapter starts by showing how much current discussion about environmental policy places science and politics in different boxes. It then summarizes why these approaches are misplaced in that they simplify ecological explanations in ways that reduce the effectiveness or inclusiveness of environmental policy. It then reviews some alternative approaches to political ecology that allow ecological science and politics to be understood together.

The debate about climate change ‘denialism’ provides an important illustration of this chapter’s broader argument. Many environmental activists and scientists argue that climate science is beyond politics, while climate change deniers claim that the science is above all politically motivated. Yet political ecology needs to avoid either position precisely in order to show how science and politics co-evolve. An effective political ecology, therefore, considers which kinds of policy processes generate specific sorts of scientific knowledge about climate risks simultaneously, while acknowledging diverse social viewpoints on this topic. The field also needs to demonstrate why it is damaging to claim that science and politics are somehow separate phenomena.

This *International Handbook* demonstrates that ‘political ecology’ means different things to different people around the world and across multiple disciplines. This chapter argues that, while recognizing difference, scholars should nonetheless always consider how politics and ecology mutually shape each other, rather than assuming that either of these terms is fixed. In so doing, they will be best placed to address urgent environmental problems without pre-fixing either facts or norms.

SEPARATING SCIENCE AND POLITICS

It is clear today, and as this volume also demonstrates, that ‘political ecology’ means many different things to different people. This may reflect different theoretical or methodological proclivities as well as different academic cultures where the research field has taken root. Yet at the heart of political ecology lies a series of tensions about how politics and ecology speak to each other. Most discussions of ecology are based on some assumptions about how the natural world operates. But is it possible to have an

ecological science that is not also influenced by politics? And does ecology lose authority if it seeks to influence politics?

Scientific Rigor

For many analysts and activists, the answer has been to demonstrate strong boundaries between science and politics. Michael Cutajar (2001: 1), a previous executive secretary of the United Nations Framework Convention on Climate Change, commented that ‘the science has driven the politics ... if the science is to continue guiding the politics, it is essential to keep the politics out of the science’. Similarly, land-use scientists have argued:

If science is the search for facts and truth, then policy is the struggle over ideas ... science and policy are separate domains with distinct and very different forms of legitimization and, therefore, different ways of producing and defining useable knowledge. (Garvin, 2001: 448; see also McNie, 2007)

And sustainability scientists have argued that strong boundaries need to be maintained between the two worlds of science and politics:

If an impermeable boundary emerges at the interface [of science and politics], no meaningful communication takes place across it. However, if the boundary is too porous, personal opinions mix with validated facts, science gets mixed with politics, and the special value of research-based knowledge fails to materialize. (Clark et al., 2011: 1)

For these analysts, scientific knowledge needs to be protected from political influence in order to maintain the trust placed in the rigorous analysis offered by science.

Ecology as Politics

Meanwhile, other analysts have argued that ecological science, by its very nature, needs to be communicated to politics. For example, Eugene Odum, author of the benchmark textbook *Fundamentals of Ecology* (1953), claimed a ‘new’ ecology could ‘endanger the assumptions and practices accepted by modern societies’ by restraining individualistic behavior and making individuals more aware of the impacts of their behavior (Odum, 1964: 15). Another ecologist, Paul B. Sears (1964), called ecology the ‘subversive subject’ because it challenged dominant human behaviors, and aimed for a better quality of life in relation to the status quo. These analysts did not claim that ecology was influenced by politics, but that ecology should speak to politics.

These views have been seen most recently in the debate about climate change policy, and the attacks on climate science by so-called climate change deniers. Al Gore’s film, *An Inconvenient Truth* (2006), about anthropogenic climate change presents science as a form of truth that society needs to listen to in order to reform itself. Peter Jacques, an analyst of environmental politics, has argued ‘climate science offers an imminent critique of industrial power, Western modernity, and the ideals of Western progress’ (Jacques, 2012: 15). Jacques compares climate change deniers with Holocaust deniers as he establishes a theory of how the ‘organized deflection of accountability is driven

by a movement aimed at defending an ideology' (ibid.). Jacques acknowledges that climate science – as Sears noted – is a 'subversive' subject, and therefore cannot avoid being politicized. But, unlike climate change denialism, climate science has been subjected to 'scrutiny ... corroboration and revision' (ibid.: 11).

As this chapter goes on to argue, politicizing climate science does not imply denying the existence of anthropocentric climate change, or the need to address it. Rather, there is a need to acknowledge how society influences the generation and legitimization of knowledge that informs ecological debate – in other words, a 'political' ecology.

INTEGRATING SCIENCE AND POLITICS

Various social scientists argue that science and politics cannot be separated in the ways listed above. These views are not intended to imply that environmental science cannot be trusted, or that policymakers should not listen to environmental science. Rather, social scientists argue that environmental policy will be more useful if it acknowledges how science and politics are connected.

At the heart of this challenge is the long-standing debate within social science and philosophy about the relationship of facts and norms. Commonly, many policymakers or scientific advisors seek to justify normative decisions by asking 'what are the facts?' Social theorists, in contrast, have often argued that social norms drive the generation of facts. The examples above illustrate these tensions. On the one hand, the land-use scientists wish to highlight the rigor of science by claiming it is free of political influence. This position emphasizes facts as free from politics. On the other hand, the analysts who see environmental science as 'subversive' also emphasize a factual basis for political norms. In all of this, political ecology analyses of facts and norms do not seek to take sides with different norms. Instead, they aim to indicate which facts support different norms (and vice versa) and who are the winners and losers when analysts claim that facts and norms are not connected.

The Problems of Positivism

A key part of integrating science and politics is to consider what is understood to be 'science'. Most quantitative ecological analysis adopts the principles of positivist science or, simply, positivism. Positivism has been used with great success to explain various phenomena or to achieve important outcomes in human history. It is a method designed to seek generalizations. But social scientists have questioned its appropriateness for various reasons.

First, positivist methods have changed over time, and therefore it is risky to assume that positivism itself is a universal or unchanging way of representing natural processes, as commonly assumed. For example, early positivism, such as work by the physicist Ernst Mach (1838–1916), looked for patterns in datasets. The Vienna School of Logical Positivism in the 1920s advanced this approach by seeking to verify observed patterns by using other datasets. Karl Popper (1902–1994) went further by arguing that theories should be considered true until empirical tests were able to falsify them. Second, social scientists have questioned how far these approaches can make

generalizations based on the datasets involved. In particular, is it possible to make generalizations based on data when so many of the environmental problems that they aim to explain are themselves profoundly shaped by personal judgments or experiences? A third concern is that scientific progress – or the advance in understandings of the natural world – might not be driven by rational empirical testing, but by paradigm shifts driven by changing social and political trends that redirect scientific inquiry in new directions (Kuhn, 1962).

Science or Knowledge?

In any event, social scientists point out that much discussion of ‘science’ in public and policy debates does not always reflect recent scientific research. Instead, it is more useful to use the term ‘science’ to refer to knowledge that maintains political authority despite the existence of counter-evidence. For example, many public debates and policies are guided by fixed assumptions or beliefs that are not necessarily agreed upon by scientists, but which are held up as true or as unchallengeable within political debate. For social scientists, these unchallenged assumptions are an arena where facts and norms come together; or, where social norms generate the perceived need for facts, which in turn allow norms to persist.

One consequence of this perspective is that there is now a need to rethink the concept of scientific uncertainty. Many positivist researchers adopt a so-called ‘knowledge-deficit’ model that argues there is a need to resolve uncertainty about environmental risk by seeking more facts and information. Sociologists of scientific knowledge, however, have argued that public understandings of complex problems are driven more by the production of certainty – that is, by tacit agreements about which facts and norms are no longer publicly debated. Consequently, rather than focusing research on supposedly uncertain risks, there is a need to acknowledge that both certainty and uncertainty are controlled by social processes (Funtowicz and Ravetz, 1993; Jasanoff, 2004).

Redefining Facts and ‘Nature’

Moreover, existing notions about facticity and ‘nature’ need to be rethought because they have reflected social agendas that have given them significance in the past. Indeed, current scientific explanations of environmental change and risk might express the diversity and meaning of social experiences in simplistic or reductionist ways. These reduced explanations might place emphasis on specific changes in environmental properties, but avoid the social contexts that give these changes meaning.

For example, one famous political ecology dispute concerning climate change involved a profound disagreement between two very different think tanks during the early 1990s. The Washington, DC based World Resources Institute (WRI, 1990) produced an index that identified which countries were most responsible for anthropocentric climate change. This index used various data such as rates of fossil fuel use and deforestation, and argued that Brazil, China and India were among the top six countries responsible for climate change. This index, however, was criticized by writers based at

the Indian non-governmental organization (NGO), the Centre for Science and Environment (Agarwal and Narain, 1991). They argued that the index was misleading because it used only national data, rather than per capita use of fossil fuels. Also, the index took no account of historic rates of deforestation, which thereby avoided previous forest loss in developed countries. There was also no normative evaluation of reasons why fossil fuels were used, such as for basic needs or for high-consumption lifestyles. Accordingly, the Indian NGO report argued that the index used by the WRI presented 'facts' about the origins and responsibilities for climate change that actually avoided various normative debates about what fossil-fuel use is for, and who should benefit from it.

These sorts of debates have also been seen in discussions within the field of Science and Technology Studies (STS) about how 'nature' and 'society' have been divided over time in social representations, and by whom. Rather than using current assumptions about what is natural (or beyond human influence) and what is social (the realm of political debate), there is a need to see how these distinctions predefine policy discussions even as they allocate roles of responsibility and blame (Hajer, 2009; Latour, 1993).

POLITICAL ECOLOGY APPLICATIONS OF SCIENCE AND POLITICS

These debates over science and politics have been influenced by or affected research in political ecology in various ways, due to different views of the relationship between science and politics. Many earlier writings about political ecology adopted insights drawn mainly from Marxism or post-Marxism. Later approaches have considered the relationship of science and politics more overtly by drawing on ideas from science studies. This chapter argues that the latter approach is more fruitful in terms of elaborating a political ecology able and ready to intervene in the pressing environmental issues of the contemporary era.

The Mistaken Approach to 'Nature' under Critical Theory

Many early discussions of political ecology were influenced by debates about social and critical theory of the 1960s, rather than by analyses of how scientific knowledge and politics were connected. For example, Cockburn and Ridgeway's (1979) analysis of environmental activism represented political ecology as a social movement resisting global capitalism. Bunker's (1985) discussion of environmental degradation in the Amazon meanwhile illustrated how smallholders were marginalized under alliances of the state and international businesses. These debates were influenced by wider discussions within North American political science about the potential for ecology to be a 'subversive science', and the need to regulate individualistic self-interest. These ideas were also influenced by European debates in the 1960s about Critical Theory under the so-called Frankfurt School. These debates emphasized how human nature becomes oppressed under the instrumental (or unfeeling) logic of modern industrial societies, which assumed that individuals act in an economically rational and competitive way, without regard for communal benefits (Marcuse, 1964).

These themes were adopted in early discussions about ecology as a ‘subversive subject’. In a collection of papers in the journal *Bioscience* in 1964, René Dubos – the future co-author of the companion book to the 1972 United Nations Conference on the Human Environment, *Only One Earth* (Ward and Dubos, 1972) – argued that North American political science was reductionist because it focused on the actions of individuals vis-à-vis the state, rather than acknowledging ‘community’ (Dubos, 1964). Eugene Odum (1964: 15) then applied this metaphor to ecology: ‘*The new ecology is thus a systems ecology ... [it] deals with the structure and function of levels of organization beyond that of the individual and species*’ (emphasis in original). These early political approaches to ecology therefore tended to use the same logic to seek community action in the political sphere and physical connectivity within ecological systems – with the objective of seeking institutions or collective action that regulated damaging individualistic behavior. Indeed, this thinking also influenced later environmental scholars such as the Nobel laureate Elinor Ostrom (1990), whose key work theorized how to achieve environmentally friendly institutions of collective action as an alternative to the selfish actions of individuals.

Meanwhile, post-Marxist scholars in Europe portrayed ecology in terms of the ability to emancipate human societies from the oppressive influences of industrial modernity. This debate also fueled the growth of environmentalism as a ‘new’ social movement in Europe and North America during the 1960s, partly premised on concerns about the instrumentality of capitalism, science and technology. The critical theorist Herbert Marcuse (1964: 166, emphasis in original) famously wrote: ‘Science, by *virtue of its own methods* and concepts, has projected and promoted a universe in which the domination of nature has remained linked to the domination of man [sic] – a link which tends to be fatal to this universe as a whole.’

But ‘nature’ in this sense was meant to refer to the loss of vitality in life under modern industrial societies. This term, of course, has been used to refer to ‘wilderness’ as well (Neumann, 1998), but sometimes the underlying difference between ‘ecology’ and ‘a meaningful life’ can get blurred. For example, Al Gore (1992: 225) hinted at this double meaning in his book, *Earth in the Balance*, when he wrote: ‘we have become so successful at controlling nature that we have lost our connection to it’.

Instead, this chapter argues that a focus on facts and norms – adopting insights from Science Studies – can highlight how politics and ecology become intertwined. This approach does not suggest that people should not value ‘wilderness’ or worry about the environmental effects of modern industrial life. Rather, the objective is to illustrate how discussions of ‘nature’ or ecological science can contain social influences that can simplify understandings of environmental change, and even exclude social groups in potentially damaging ways.

Early Analysis of Cultural Theory

Building on insights from Science Studies, political ecology has adopted different approaches to explaining how social forces shape environmental science and facts. These approaches have developed over time, usually by scholars from the ‘developed’ world, but who have often conducted research in ‘developing’ countries. Some of the first discussions about Cultural Theory drew upon British sociology; later, more

poststructural analyses of narratives and discourse have drawn on French theorists, while also being adopted by some Southern scholars (e.g. Escobar, 1999).

While political ecology was developing in North America as an exploration of holistic links between humans and nature at large, led by analysts such as Sears and Odum, a different approach was adopted in England that focused on the social influences on environmental science as a political tool. The Political Ecology Research Group (PERG) was thus formed in Oxford in 1976 as an informal association of research scientists and students, and grew into a research organization focusing on the risks and analysis of new technologies such as nuclear power. This group included Brian Wynne, who has since published widely on social influences on science (PERG, 1979; Wynne, 1996).

Meanwhile, one other early approach – also developed in England – became known as Cultural Theory (Thompson et al., 1990). Cultural theorists identified four key voices (or worldviews) in society that would generate and then present facts as accurate in radically different ways. These groups were known as Individualist, Egalitarian, Hierarchical and Fatalist, and could be associated respectively with social actors such as businesses, activists, governments, and powerless citizens and workers.

The classic text here was *Uncertainty on a Himalayan Scale* (Thompson et al., 1986). It asked why most Western NGOs claimed there was a pressing environmental crisis in the Himalayan Mountains when estimates for deforestation in the region varied by a factor of 67 (even excluding apparent typing errors in reports on the subject). This book argued that these differences did not result from underlying complexity in rates of deforestation, but rather from the different worldviews of the people and organizations that collected and then presented these data. The point of this analysis was to argue that none of these representations was accurate – all contained elements of truth. Instead, there was a need to appreciate that all matters of environmental change are complex and uncertain, but that different actors will try to represent the problems as more certain than they are in order to justify their worldviews.

Cultural theorists thus argued that scientific uncertainty about environmental problems was the result of the knowledge made and generated by different worldviews in tune with the audiences who reproduce their work. Rather than asking ‘what are the facts?’, analysts should ask ‘what would you like the facts to be?’ Hence, according to Cultural Theory, the clash between climate change deniers and believers is a classic confrontation between actors adopting Individualist and Egalitarian positions. It would be futile to ask which side is correct, because both positions carry elements of accuracy and simplification. The clash between the WRI and the Centre for Science and Environment might similarly be represented as a conflict between an Egalitarian NGO based in the USA wishing to influence the (Hierarchical) US government, and an Egalitarian NGO based in the South seeking to represent less represented groups (who adopt Fatalist positions). Rather than asking which worldview is correct, policymakers should acknowledge that all viewpoints are inevitable in any society, and look at all truth claims critically. Adopting this form of analysis contributes to political debate by illustrating the cultural underpinnings of different ‘facts’ claimed about the environment. It tries to make environmental politics more democratic by demonstrating how scientific ‘facts’ reflect worldviews. But it also worries some activists precisely because it avoids taking sides on whether different environmental projections are true or not.

Environmental Narratives and Science and Technology Studies (STS)

Cultural Theory is thus a theory about societies disagreeing and how such disagreements ought to be ‘regulated’ in aid of policy advancement. Later approaches have instead sought to link science and politics by looking at the diverse historical contexts where social forces have acted to make science socially selective and unchallenged. These approaches have relied more on the poststructuralist writings of scholars such as Foucault and Latour, who have emphasized how social discourses or notions of ‘nature’ carry implicit politics.

A key part of these approaches is the analysis of environmental narratives or storylines. According to Hajer (1995: 64–5), ‘Storylines are devices through which actors are positioned, and through which specific ideas of “blame” and “responsibility” and “urgency” and “responsible behavior” are attributed.’ Narratives or storylines are therefore another form of unquestioned environmental ‘fact’, but they take the shape of commonplace beliefs and assumptions rather than specific data points.

Much research on environmental problems in Africa has illustrated environmental narratives. Desertification, for example, has been defined and redefined over years in ways that allow states to legitimize environmental policies that would otherwise be challenged. In the case of Morocco, scholars have argued that the government has represented desertification in ways that indicate ‘urgency’, ‘blame’ and ‘responsibility’ in order to consolidate its power and to resist decentralization to rural indigenous groups (Davis, 2005). Moreover, this use of ‘desertification’ has been made possible by alliances with scientific organizations such as the United Nations Environment Programme, which produce information about the human causes of desertification (Thomas and Middleton, 1994).

Similarly, research in Thailand has suggested that the government and some middle-class NGOs have used narratives about hydrology to promote a vision of landscape management that legitimizes state-led reforestation of upland areas as a means of increasing timber supply as well as water supply to the lowlands, while maintaining control over sites that once had insurgencies (Forsyth and Walker, 2008). These narratives often make statements about environmental cause-and-effect that are flatly contradicted by scientific research – such as the mistaken belief that reforestation at low altitudes is necessary in order to generate rainfall. But the persistence of these narratives despite the existence of contradictory evidence demonstrates how knowledge can be treated as unchallenged science because of local social influences.

The analysis of environmental narratives contributes to political debate by showing how political actors use or uphold truth claims in order to achieve wider political objectives. The dilemmas caused by narratives arise from the fact that they simplify the causes and effects of environmental problems – and therefore make environmental management more difficult than it might otherwise be – even as they tend to marginalize certain land users such as minority groups by blaming them for these problems and/or ignoring their needs. Political ecology research therefore aims to understand how narratives become ‘stabilized’ or held in place by alliances between different actors, and by indicating possible alternative scientific explanations and methods that are, it is hoped, more inclusive and useful. Sometimes it might be possible to reframe the ways that problems are understood in order to increase policy options

(Forsyth, 2008). For example, some development organizations have argued that the word ‘desertification’ itself wrongly implies that land is permanently damaged by human action. Instead, a possibly more useful term could be ‘drought proofing’, which instead focuses on the experience of the problem by more vulnerable people (Forsyth, 2003: 29). Another example is the influence of women’s social movements on the treatment of breast cancer in Europe and North America during the 1970s. Social movements including women were able to persuade hospitals to consider more diverse treatments for cancer than radical mastectomy (Batt, 1994).

These debates, however, are still evolving. The field of STS increasingly influences the analysis of environmental science and society, and hence the field of political ecology (Goldman et al., 2011). One STS framework is actor network theory (ANT), which has analyzed how the objectives and assumptions of scientific research attribute agency to non-human items. This approach to political ecology can demonstrate the social institutions and networks necessary for supposed truth claims about nature–society relations to appear universal, and how repeating these truth claims also upholds social structures (Whatmore and Hinchliffe, 2010). Another growing field for political ecology is the analysis of experts as socially legitimate communicators of authoritative knowledge, or the influence of expert organizations on the generation of knowledge (Beck, 2011).

APPLYING POLITICAL ECOLOGY TO CLIMATE CHANGE DENIALISM

The chapter now illustrates these debates by looking at how political ecology approaches can analyze the combined facts and norms within arguments about climate change denialism. In recent years, environmental activists have fought back against so-called climate change deniers by arguing that climate science is free from political influence, and should be listened to. Does a political approach to ecology undermine climate science? How should climate science be connected to politics? This chapter argues that a political analysis of scientific knowledge does not dismiss the underlying need to address climate change, but can help achieve more inclusive and useful climate change policies.

The Intergovernmental Panel on Climate Change (IPCC)

The IPCC is the world’s premier scientific network that produces authoritative knowledge on climate change. It does not conduct climate research itself, but its role is to summarize research as a basis for policymaking. Its role can be considered in various ways using political ecology approaches.

First, the IPCC can be considered in terms of its historical context, and how that context influenced the generation of authoritative knowledge. It was established in 1988 by the World Meteorological Organization (WMO) in cooperation with the United Nations Environment Program, with a formal mandate to provide policy-relevant information to decision-makers involved in the Conferences of Parties to the United Nations Framework Convention on Climate Change (UNFCCC). From the start,

though, the IPCC faced the challenge of inventing its own forms of procedural rules ‘from scratch’ (Hulme, 2010). Consider, for instance, how membership of this organization is decided. IPCC members are selected in two steps: (1) national governments have the right to nominate experts to the IPCC and to elect the chairman; and (2) the IPCC itself then selects specific experts in relevant fields to provide ‘expert’ input to its deliberations. Crucially, only government representatives have the right to participate and vote in Plenary Sessions of the IPCC – a vital power since this is where the main decisions about the IPCC work program are made and its reports approved. Government representatives also decide on the content and procedures of the assessment, as well as on governance structures. These procedures were originally agreed to gain support for the IPCC’s objectives from its various member states (Schneider, 1991). The IPCC’s manner of generating and legitimating knowledge, therefore, reflects these historical attempts to gain international support for climate change research (Beck, 2011; Hulme, 2009).

Second, the IPCC has also developed an historic understanding of risks posed by anthropocentric climate change through climate modeling. This approach has been based on, and in turn reinforced, a standard multi-scale frame of reference from the global to the regional level. Scientific results are broken down into different scales, while data collected are at a regional level before being fed into globally aggregated models (Edwards and Schneider, 2001; Edwards, 2010). Taken together, these discrete forms of analysis have ended up implying that the risks caused by anthropocentric climate change are best represented in terms of increasing concentrations of atmospheric greenhouse gases (so-called ‘additionality’). This mode of understanding risk might carry implications for social inclusion, as discussed below.

Third, the IPCC’s manner of communication has sought to demonstrate that it is free from politics by seeking to speak with one voice. Assessment reports are thus adopted by consensus, and are delivered as unequivocal statements to political leaders and the public. This mode of public reasoning is based on the assumption that ‘impartial’ procedures such as writing executive summaries and standardized rules can reconcile conflicting interests and values, and hence create a form of rational expert consensus. Indeed, it is suggested, it ‘will result in the aggregate in a more politically neutral assessment process’ (Reid, 2004: 9). Consequently, the IPCC clearly seeks to distance itself from allegations that it is politically motivated. This strategy has become more assertive in recent years after various well-publicized attacks were made on the IPCC by climate change deniers. For example, one notable attack occurred in 2009 when emails from the climate research centre of the University of East Anglia in England were hacked and then publicly used to claim scientists had manipulated data – claims that were unproven.

Political Analysis of IPCC Assessments

Some environmental scholars have claimed that applying political analysis to climate science or the IPCC is somehow the same as denying the existence of climate change (Jacques, 2012). This chapter argues that this misses the point. A political ecology analysis of how facts and norms combine, or how institutional practices inside the IPCC influence the generation of knowledge, can actually increase the relevance of

climate change science and policy for a wider range of people as well as for environmental risks. Analyzing political influences on knowledge about environmental problems is not the same as denying that problems exist (Forsyth, 2012).

One of the key purposes of a political ecology analysis of environmental science is to ask how different truth claims are supported by different social structures. In turn, which social groups or aspects of environmental risk are then excluded?

First, various political analysts have demonstrated how global models of climate change focus on the physical impacts of greenhouse gas concentrations such as radiative forcing (or how greenhouse gases absorb or reflect energy). While these properties are important, analysts have argued that these factors do not reflect how these changes are experienced as problems in context, or the role of social vulnerability in shaping the nature of risk (Demeritt, 2001). Some analysts have called the IPCC model of risk the ‘pollutionist’ approach to climate risk, which understands risk as a function of incremental greenhouse gas concentrations (Burton, 2009: 89). This approach contrasts with a ‘development’ approach that also considers local contexts of vulnerability and development planning (Schipper, 2006). The main criticism of the pollutionist approach is that it might reduce options for addressing the social causes of vulnerability to climate change. It might also misunderstand the ways in which the impacts of climate change are experienced as risky in different contexts.

Second, the public debate about the IPCC has enhanced the representation of climate risk in terms of the pollutionist approach. The criticisms of the IPCC after the leaking of emails increased the public demand that it should demonstrate that global warming trends are continuing (Beck, 2011). Public debates like these often imply that the risks associated with climate change should be equated with increasing warming rather than with other aspects, such as climate variability or underlying social vulnerability. Meanwhile, critics such as Jacques (2012) have also invoked the spirit of 1960s Critical Theory by arguing that climate science, in essence, criticizes the model of Western modernity. These statements, however, risk alienating developing countries that see industrialization as a means to reduce social vulnerability. Indeed, by equating the problems of anthropocentric climate change with generalizations about Western modernity and/or with simple statistical proof of apparent warming trends, various damaging simplifications and exclusions are created. On the one hand, doing so reduces the scientific assessment of diverse aspects of climate risks, thereby seriously narrowing and perhaps distorting the scientific rigor of the IPCC process, opening it to public criticism. On the other hand, it also threatens to undermine international cooperation on climate change policy if it is seen to oppose industrialization – something that is sacrosanct to many countries, not least in the developing world.

Acknowledging Politics and Science

Instead, a political ecology perspective might seek to demonstrate the politics of different claims about ecology. This kind of analysis would show the political influences on how different statements are made, and how statements of scientific certainty can exclude alternative policies or perspectives.

Various themes discussed in this chapter are relevant. In the language of Cultural Theory, climate change deniers adopt the Individualist worldview (which resists the

regulation of individual action). Analysts who claim that the risk of climate change justifies radical new policies are, by the same token, Egalitarian. Both carry narratives of blame and responsibility. Various simplifications and exclusions arise from each that make climate change policies difficult to accept in developing countries or potentially irrelevant to the needs of people most vulnerable to climate change.

Accordingly, a political ecology approach to the combination of facts and norms would ask which facts and norms are excluded from current debates. Political ecologists have already identified ways in which current assessments of climate risk ‘should be done with a deeper awareness of the social, economic, cultural, and political factors that frame their actions, incentives, opportunities, and limitations for action’ (Christoplos et al., 2009: 3), and that ‘adaptation always has, and arguably should, refer to more than just responses to climate change’ (Sabates-Wheeler et al., 2008: 53).

This approach also implies diversifying what is meant by climate risk. Rather than focusing on incremental greenhouse gas concentrations – with concomitant emphasis on the mitigation or adaptation to those gases – new approaches seek to consider how both mitigation and adaptation can be combined to address various aspects of risk. Actions can include livelihood diversification as a form of risk avoidance, forms of social safety nets or integrating climate change policies with disaster risk reduction (Ayers and Forsyth, 2009; Pelling, 2010). Various development organizations have indeed tried to diversify the model of risk proposed by the IPCC or other policy avenues promoted through the UNFCCC. The Climate Change, Agriculture and Food Security (CCAFS) section of the Consultative Group on International Agricultural Research (CGIAR), for example, reframes climate change policy by rejecting old visions of mitigation and adaptation to risks posed by atmospheric greenhouse gas concentrations. Instead, it seeks to integrate mitigation and adaptation through actions such as reducing synthetic fertilizer use and enhancing the intensification of agriculture for food-insecure people. These approaches to climate change policy transparently engage with social norms as a guide to generating new facts, rather than presenting environmental science as a non-political and non-negotiable basis for policy.

CONCLUSION

As this *International Handbook* demonstrates, the term ‘political ecology’ has immense appeal across different research communities and perspectives. Yet, despite the name, a great many discussions tend to talk about politics or ecology without discussing how these terms are linked or by simply adopting a predefined model of how politics connects to ecology (and vice versa).

This chapter argued that political ecology needs to consider the relationship between science and politics more transparently in order to make environmental science and policy more useful and effective. A key concern here is to appreciate that analyzing the political influences on (and of) environmental science is not the same as denying environmental problems. One does not have to be a climate change denier to acknowledge that the dominant models of climate risk generated by the IPCC can have significant simplifications and social exclusions. This does not imply that the IPCC is at fault or guilty of manipulating data – this would be misleading and unproductive.

Rather, it is to acknowledge that all environmental knowledge has social and political influences on how it is generated and consumed, and that political analysis must understand these influences. A politics of ecology, therefore, has to move beyond the common tendency to represent environmental science as either proof of norms or separate from norms. Instead, it has to demonstrate the ways in which facts and norms are connected through processes that simultaneously reinforce and exclude combinations of facts and norms (Jasanoff, 2004). Doing this may result in more diverse, more useful and more socially meaningful forms of environmental policy than has hitherto been the case.

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9. Postcoloniality and the North–South binary revisited: the case of India’s climate politics

Shangrila Joshi

In 1990 the Delhi-based Centre for Science and Environment (CSE) published *Global Warming in an Unequal World*, arguing that pressures on India and China to accept climate change linked mitigation responsibility were an example of environmental colonialism since the impact would be to perpetuate an unequal status quo (Agarwal and Narain, 1990). Instead of focusing on potential increased consumption by the Indian and Chinese citizen, the authors argued that Western environmentalists should focus instead on hyper-consumption by developed countries. Turning the argument for intergenerational justice on its head, they asked, ‘whose future generations are we seeking to protect, the Western World’s or the Third World’s?’ (Agarwal and Narain, 1990: 18).

These issues remain highly relevant today in the context of ongoing debates over states’ differentiated responsibilities to mitigate climate change. Surprisingly, Anglo-American political ecology has tended to ignore them. Indeed, critical human geography as a whole has tended to dismiss rather than engage with an explicitly North–South dimension to politics, literature and inequity, even as the South in and of itself remains a key focus (but see Power, 2006; Simon and Dodds, 1998; Slater, 2004; Sundberg, 2007). This blind-spot is related to three factors.

One is an apparent tendency among scholars to avoid research questions in which their own privileges and tacit complicity in maintaining core–periphery power differentials might be challenged (beyond, that is, the now customary inclusion of a paragraph or two on scholarly positionality in publications). Yet the climate crisis has created an unprecedented opportunity to challenge the differential privileges and responsibilities of people (including scholars) in both North and South. In particular, and regardless of class, residence in the North dramatically increases a person’s contribution to climate change when seen globally. Hence, rather than dismiss North–South framings of difference as inaccurate binary categories in global climate politics, Northern scholars should pursue instead self-reflexive critical engagement with the subject.

Then there is the growing prominence once again of class-based analyses in critical scholarship. When class is the dominant framing, Southern elites are blamed for the plight of subaltern groups. While this may be partially true, a full picture here also requires consideration of the elites’ positioning in a global context. After all, such a blame game might lead Northern academics to thereby position themselves as ‘saviors’ of subaltern groups in relation to ‘predatory’ Southern elites (Spivak, 2010). Clearly left unaddressed in such a ‘White Knight’ narrative is an ongoing and often quite great power differential between Southern and Northern elites (including scholars). In this way, Northern scholars become (however unintentionally) complicit in the maintenance

of North–South material and discursive differences that come uncomfortably close to the neocolonial strategies of Northern hegemonic powers that they otherwise condemn.

Finally, the practice of challenging binaries has become *de rigueur* in critical scholarship, partly inspired by Said (1978), and partly as an extension of the customary dismissal of Enlightenment thinking. But binary ‘othering’ is not only an act performed by dominant groups. It is also a strategy of resistance for the (relatively and absolutely) marginalized. Indeed, binaries help people to make sense of difference: ‘no identity can ever exist by itself and without an array of opposites, negatives, oppositions’ (Said, 1994: 52). Thus, to understand how binaries may inform socio-natural representational practices (and for what purposes) is therefore an important topic crying out for sustained political ecology analysis.

This chapter thus argues that the North–South binary is a valid frame of reference for inquiry within political ecology (and postcolonial geography generally). I make this argument in relation to contemporary international climate politics using India’s climate politics as a case study. I conclude by urging political ecologists based in the North to self-reflexively engage with a North–South framing of climate politics as an ethical–political project, even while affirming the need for further research by scholars from and/or based in the South on this important topic.

BRINGING THE NORTH–SOUTH BINARY BACK IN

The term ‘postcolonial’ has been the subject of much debate but here refers to a condition marked by the aftermath of colonialism, neocolonialism and diverse forms of resistance to them in the postcolonial era (Said, 1994; Gandhi, 1998). Central to postcolonial theorizing is engagement with colonial legacies that emulate and reproduce older inequalities.

A key contribution of postcolonialism has been to challenge colonial binary representations of First–Third World or North–South due to their implicit acceptance of Western exceptionalism and superiority (Doty, 1996; Said, 1994). Another contribution has been to critique Western theories of modernist development as being mere neocolonial and neoliberal devices (Nash, 2004). Recently, some geographers urged postcolonialism to pay greater attention to global capitalism, thereby moving beyond a ‘politics of recognition’ to a ‘politics of distribution’ in order to challenge global inequalities (McEwan, 2003).

A geographical approach to postcolonial theorizing – emphasizing the mutual constitution of the discursive/symbolic and the material – is seen to be a necessary part of ‘a revived political and ethical project’ and hence a corrective to a hitherto predominantly textual and culturally oriented literature (McEwan, 2003: 341). Further, postcolonial geographies are meant to represent the distinct ways in which legacies of colonialism unfold in different places, so as to counteract a single grand narrative about postcolonialism. Thus postcolonialism is understood as a ‘*geographically* dispersed contestation of colonial power and knowledge’ (Blunt and McEwan, 2002: 4; italics in original). However, an explicitly North–South dimension tends to fall by the wayside as postcolonial geographies *in* postcolonial places tend to prevail. There is a danger here,

though, that the South might simply become an intellectual playground in which Northern academics conduct marginality studies (Gandhi, 1998).

The validity of a North–South binary is also challenged due to ‘internal colonialism’ (Blunt and McEwan, 2002) and ‘ultra-imperialism’ (Sidaway, 2002) – which in different ways ‘undermine’ the utility of North–South binary thinking. Here again, Southern elites are seen to be a key obstacle to eliminating inequality. Such argumentation renders problematic state-centered articulations of difference while fetishizing marginality studies. But this stance has serious implications. Branding some Southern individuals and groups as ‘elite’ robs them of their own claims to subaltern status in other (i.e. North–South) contexts. This, in turn, seems to eliminate analytical purchase on the question of how (elite-ruled) Southern states often seem to have less power in global governance than Northern counterparts.

This is not a direction in which political ecology (and postcolonial geography) ought to go. After all, and however heterogeneous, the ‘South’ (and its constituent states) is a category that powerfully represents the common experiences of people and countries victimized by a colonial past that are still economically vulnerable in the world system as part of its long-term legacy (Anand, 2004). Crucially, there is an important form of identity politics here whereby claiming victimhood is a means to try to increase bargaining power. Such politics is not new. Thus calls for a New International Economic Order (NIEO) in the 1970s by the then ‘Third World’ were made on similar grounds (Bhagwati, 1977; Najam, 2004), albeit to no avail. The ‘North–South climate impasse’ is an opportunity to revisit these demands today (Roberts and Parks, 2007: 7). Focusing only on the colonial representation of the North–South binary (to thereby then reject such thinking as patronizing or paternalistic) means that ongoing material inequities in power and resource access are not assessed. Indeed, as Jacobs (1996) observes, the colonizer’s negative constructions of the colonized ‘other’ are often later appropriated and renegotiated in counter-colonial efforts – something meriting scholarly scrutiny on political and ethical grounds.

If one objective of postcolonial critique is to reveal the complicity of Western knowledge production with Western power (Blunt and McEwan, 2002; Sidaway, 2002), then the claim for instance by one Northern scholar that ‘a critical geopolitics is one that refuses the spatial topography of First World and Third World, North and South’ (Toal, 1994: 231) – lately reiterated by another Northern academic (Barnett, 2007) in the context of climate geopolitics – should also be scrutinized. Here, Western knowledge does indeed seem complicit in preserving the status quo. For, in denying the North–South dichotomy, these scholars lend strength to the assertion – akin to that of the Bretton Woods institutions in relation to NIEO proposals – that more and less powerful countries do not correlate with this binary, and hence that the material wellbeing of Southern poor can be addressed without challenging global political–economic structures that favor the North.

POSTCOLONIALIZING THE ATMOSPHERIC COMMONS

All of this should be of fundamental importance to political ecologists as discursive processes surrounding postcolonial identity construction have specific materialities

linked to unequal power relations (Escobar, 1995; Peet and Watts, 1996). One example here concerns climate politics where constructed national identities – ‘developing’ versus ‘emerging’ – have important material consequences regarding whether a country must assume the financial burden of mitigation. Struggle over the Kyoto Protocol (KP), along with its associated categories of countries regarding mitigation responsibility for climate change, therefore constitutes an excellent case for political–ecological analysis of evolving North–South politics.

Negotiations over burden-sharing are tantamount to a struggle over access to the atmospheric commons. Unregulated discharge of greenhouse gases (GHGs), particularly during the last 150 years from activities mostly associated with the North’s Industrial Revolution and its aftermath, now threaten to push the climate past the brink of what scientists refer to as dangerous anthropogenic interference with the earth’s climate system (UN, 1992). Scientific awareness of this phenomenon originates in the early 1980s (IPCC, 2007), but it was only with the 1992 Rio Summit that international efforts to address climate change were institutionalized via the United Nations Framework Convention on Climate Change (UNFCCC).

The UNFCCC institutionalized a binary distinction between countries (Annex I versus non-Annex I countries that roughly coincided with the North–South binary) to differentiate mitigation responsibility. The UNFCCC was succeeded in 1997 by the KP, which served to add legal bite to earlier voluntary commitments. Subsequent negotiations sought a post-Kyoto climate deal that would do away with its binary categories. Yet intense bargaining from non-Annex I countries (i.e. the South) led to an extension of the KP until 2020. During negotiations, non-Annex I negotiators sought to keep the focus on Annex I country responsibilities while Annex I negotiators instead emphasized the need for wider burden-sharing in a post-Kyoto era explicitly targeting emerging economies.

The US role here was a key one. As the only industrialized country to not ratify the KP, it had long opposed the Annex I/non-Annex I divide. The 1997 US Senate Byrd–Hagel resolution that forbade the USA from accepting an emissions cap without similar commitments from India and China was only the most graphic example of this opposition. The transition from the Republican Bush administration to the Democrat Obama administration did not lead to an altered approach. Leaked internal correspondence revealed that the latter’s media strategy leading up to and during the 2009 UN Copenhagen Climate Change Summit was based on differentiating between developing countries so as to impose legally binding mitigation commitments on emerging economies (Vidal, 2010). Beset by economic recession, other industrialized Northern countries came to support this argument. Indeed, Western media coverage of climate negotiations customarily portrays the emerging economies (especially China and India) as key contributors to climate change. Such portrayals coincide with the Orientalism and neo-Malthusian fears inherent in the new wave of US environmentalism that has accompanied awareness of the climate crisis (Ziser and Sze, 2007). Emerging economies that threaten US geopolitical interests become a scapegoat. The USA thereby deflects responsibility for climate change away from itself, placing it firmly at the feet of elite and middle-class Chinese and Indian consumers.

Here, political ecologists should heed Roos and Hunt’s (2010: 10) call to scholars based in the USA, a country that is ‘the biggest consumer of our natural resources, the

largest producer – and exporter – of waste in all its forms, the most insistent defender of capitalism and the greatest propagator of cultural (post) imperialism’, to ensure that ‘our critical methods [do] not reproduce our failure with the Kyoto Treaty’. Since climate negotiations concern access to and struggles over a key natural resource – the atmospheric commons as a sink for GHG emissions – political ecology is an ideal framework within which to assess this problematic, even if the global scale has not been a common focus to date (Kim, 2009). Still, two major concerns in political ecology are relevant here: a focus on the politics of access to and control over resources engendered by unequal power relations (Bryant, 1998); and a normative orientation towards redistributive justice and ecological sustainability derived from a radical ethical position (Bryant and Jarosz, 2004; Ekers et al., 2009; Jarosz, 2004).

Why have political ecologists more often than not ignored detailed analysis of unequal power relations between North and South in struggles over the environment (thereby all but leaving this topic to political scientists working in the adjoining field of global environmental politics; see Dauvergne, 2013)? Most compelling here is the idea that political ecology has fallen prey to the ‘local trap’ – the tendency to privilege studies at the local scale based on *a priori* assumptions about the desirability of justice and sustainability considerations at this scale (Brown and Purcell, 2005), with global dynamics thus relegated to a secondary ‘contextual’ focus. Rejecting the local trap, the present chapter thus examines North–South climate politics using an Indian case study to shed light on the significance of the North–South framing.

INDIA’S CLIMATE POLITICS

India today embodies a hybrid identity combining the political–economic clout of an emerging economy with ongoing widespread poverty. It faces many of the same development challenges as other poor Southern countries, but India’s sheer economic size and (unevenly distributed) wealth bestows on it greater authority, voice and agency in the international forum than those countries. In climate negotiations, its position is to emphasize the vast and still entrenched differences in power, material privileges and GHG emissions between the average citizen in more and less powerful states across the North–South divide. This position rests on core themes of historical responsibility and per capita equity, reflecting the UNFCCC principle of common but differentiated responsibilities and respective capabilities. India’s 2008 National Action Plan on Climate Change thus attributes responsibility for climate change to ‘accumulated greenhouse gas emissions in the atmosphere, anthropogenically generated through long-term and intensive industrial growth and high-consumptive lifestyles in developed countries’ (PMCCC, 2009: 1). Elsewhere I assess in more detail India’s framing of North–South climate politics and the implications of articulating international environmental justice within this framework (Joshi, 2013, 2014), but here I stress key aspects that clarify the value of engaging with an explicitly North–South political ecology of the global commons.

North–South Representational Politics

As noted, North–South politics has been predicated on calls for international distributive economic justice as institutionalized in the NIEO (Bhagwati, 1977; Doty, 1996). Although vetoed by the North, a desire to subvert the North-biased status quo persists. Global environmental change, particularly in relation to ozone thinning and global warming, has provided an opportunity to reassert a politically charged discourse about North–South inequities. In the past, ‘Third World’ intellectuals and leaders condemned Northern narratives of the ‘limits to growth’ and the ‘tragedy of the commons’ as being little more than vehicles for neocolonialism in environmentalist guise. Such critique emphasized the need instead for a distributive economic justice in North–South politics (Castro, 2010). These themes have persisted – from the 1972 UN Stockholm conference, through the 1992 Rio conference and ozone negotiations, and up to current battles over responsibility for mitigating climate change.

India’s participation in climate negotiations must be understood in this context. Its climate actions constitute a postcolonial politics involving carefully crafted representational practices with clear material ramifications. Notable here is North–South binary talk. Thus, by insisting that India is still a ‘developing country’ – and hence to be exempted from any emissions cap – Indian negotiators engage in a binary ‘othering’ process that has largely hitherto been understood to be the domain of Northern groups.

Two observations are germane here. One is that binary ‘othering’ is not only a ‘colonial’ strategy (that is, something tied to what Northern [ex-]colonizers do), but also a ‘counter-colonial’ one (hence a strategy that the Southern colonized also use). Indian climate politics thus demonstrates how the colonial gaze can be returned by postcolonial actors using colonial representational practices as well as the ‘disruptive power of hybridity’ as counter-colonial strategies (Jacobs, 1996: 14). A ‘hybridizing strategy’ of embodying multiple and even contradictory identities exploits instabilities of power by working with the dominant discourse to beat the ‘masters’ at their own game (Kapoor, 2008). Thus Indian officials utilize binary representational practices to self-identify with the developing world in climate negotiations, thereby taking advantage of the ‘strategic essentialism’ (Spivak, 1993) of the South. Viewing ‘essentialist notions of identity’ as strategic social constructs that can be made by hegemonic *and* marginalized groups (Jacobs, 1996: 162) poses a serious challenge to understanding these identity categories as simple colonial binaries.

Second, dominant groups adopt new ways of binary differentiation to try to re-inscribe their power, reflecting the adaptive and indeed arbitrary nature of (post)colonial identity construction (Doty, 1996; Kapoor, 2008). In climate negotiations, this is reflected in tireless and somewhat successful US attempts to employ a divide-and-rule strategy of questioning the developed–developing binary on the one hand (mirroring scholarly critique), and creating a new binary distinction between more and less advanced developing countries on the other. The USA also engages in ‘racial othering’ (Jacobs, 1996) of emerging economies (e.g. China, India) that it perceives as economic and geopolitical threats (Ziser and Sze, 2007). This sometimes takes the form of paternalism ostensibly directed at corruption in these countries, as emphasis on monitoring, reporting and verification in climate negotiations reflects. Resistance strategies are therefore in dialectical relation to the ‘tenacious and adaptive power’ of

colonial discourses that seek to continually reinvent and re-inscribe the status quo (Jacobs, 1996: 14).

From Elites to Emerging Economies: Critique and Complicity

Seen in this light, scholarly dismissal of a North–South binary is at best simplistic and at worst disturbingly complicit with Northern hegemony (as evinced here in terms of US climate politics). The ability of a Northern scholar to pronounce invalid the North–South framing is after all a privileged point of view, enabled by the ability to employ a panopticon (Toal, 1994) through which such privilege is made to disappear. Such privilege fits uncomfortably well with an imperial agenda (Said, 1994). And paradoxically, even as binary constructions are critiqued, scholars are themselves unable to escape such thinking. For, one of the key anti-binary arguments summoned is that a North–South framing is guilty of ‘Third Worldism’, that is, appropriation by Third World elites of North–South discourse to pursue their own interests (Berger, 2004; Norberg-Hodge, 2008). However, in making this argument a new binary is constructed, dividing ‘Third World’ subalterns and elites.

True, such Third Worldism may be a real phenomenon. And yet, to accept this argument is also to thereby divert attention from large-scale inequities in resource access that persistently reflect a North–South binary. In this way, perhaps unintentionally, Northern scholars can become complicit by turning a blind eye to systems of power and privilege that they are part of and clearly benefit from. Recall how Third Worldism assumes that the Third World elites use North–South rhetoric *only* to further their own interests – and that they do not represent or speak for the interests of the subaltern, who are, after all, most climate-vulnerable in countries such as India. Now, if the ‘real’ subaltern cannot speak in a way that can be heard by hegemonic groups, and Third World elites who would speak on their behalf cannot be trusted to do so, then we have a predicament! It then seemingly falls to the Northern intellectual to rescue the ‘real’ Southern subaltern from her or his own elite. Not only does this assumption help entrench Northern hegemony on knowledge construction; it also equates marginality with absolute marginality only (i.e. essentializing subaltern as only the poorest of the poor), thereby eliminating consideration of relative marginality. The focus is on hearing the ‘real’ subaltern – the worst and hence most deserving victim of Northern colonization – at the expense of Southerners who might emerge from this condition to develop their own voice – only to be branded as an ‘elite’ whose arguments are then invalid and ‘unauthentic’.

Extrapolating this logic to the global context, India and China today have a relatively stronger voice than other developing countries in international negotiations, but branding them as ‘emerging economies’ attempts to silence them in their efforts to speak for the South vis-à-vis a still hegemonic North. Such a reclassification is indeed unfortunate for them because, as a ‘developing country’, they can claim the right to freely develop under UNFCCC provisions, while enabling them to confront Annex I countries’ lack of accountability in addressing climate change by playing the victim card. But if they cannot claim the right to identify themselves as such – because they are now branded as contributors to the problem rather than its main victims – their claims to challenge the North–South status quo become much less ‘valid’.

Postcolonial theory emphasizes the dangers associated with using elites or ‘emerging economies’ as scapegoats. Thus Spivak (2010: 64) emphasized the importance of acknowledging Northern scholars’ ‘complicity in the muting [of the subaltern] ... Our work cannot succeed if we always have a scapegoat.’ She warned too of the risk of ‘foreclosing of the necessity of the difficult task of counter-hegemonic ideological production’ by academics (ibid.: 27) ‘by making one model of “concrete experience” *the model*’ (ibid.: 28), in this case treating grassroots social movements in the South as the *only* authentic form of resistance to neocolonialism (Norberg-Hodge, 2008). Such conclusions are enabled by ‘the unrecognized contradiction within a position that valorizes the concrete experience of the oppressed, without being so uncritical about the historical role of the intellectual’ (Spivak, 2010: 28). The ‘irretrievably heterogeneous’ character of the ‘colonized subaltern subject’ (ibid.: 38) here can be extended to include Southern elites.

While seeking to ‘hear voices of resistance [from] people otherwise silenced by hegemonic relationships of power’ (McEwan, 2003: 346), critical scholars can be strangely complicit in the silencing of voices that *are* ‘emerging’ from absolute poverty. Political ecologists must be aware of such dangers while being willing to reflexively engage with a wider array of (socio-economic) voices from the South. Championing of a North–South framing of global inequality should not therefore be dismissed *a priori* as an opportunistic discourse of Southern elites. This means, for instance, recognizing the right of the Indian intellectual elite to claim subaltern status in global negotiating contexts vis-à-vis Northern counterparts in a context of ongoing North–South inequities, while acknowledging their desire and interest of representing the ‘real’ subaltern in negotiations. Such unique positionality must not be dismissed, even as it comes with important obligations – for instance, since the Indian government rejects a national emission cap based on low per capita GHG emissions, it should be held accountable to such scale jumping, notably in terms of promoting the economic advancement of its poorer citizens who ‘contributed’ to such data.

Ecological Debt

A different criticism is that postcolonialism is sometimes too historical for its own good. Thus scholars are concerned that its preoccupation with the past may get in the way of examining contemporary aspects of postcoloniality (Bell, 2002). Yet contemporary political claims for reparation necessarily have to draw on the colonial past (Jacobs, 1996). The idea of ecological debt is a case in point.

The call for the payment of ecological debt is in effect a plea for justice in the form of reparations owed by Northern countries that have benefited from inequitable flows of resources from Southern countries during and after colonialism (Goeminne and Paredis, 2010). This demand reflects past and continuing disproportionate encroachment on environmental space without compensatory payment or recognition of other countries’ entitlements to that space (Martinez-Alier, 2002).

It is thus a historically based discourse centered on ecologically unequal exchange that favored a more powerful North over a less powerful South (Martinez-Alier, 2002; Srinivasan et al., 2008), something echoed in Latin America’s ‘coloniality’ literature (Alimonda, ch. 11 this volume). There are normative questions raised here too about

the long-neglected 'physical-ecological' aspect of international relations as well as associated demands for global environmental justice (Goeminne and Paredis, 2010). Not surprisingly, the 'rhetoric' of ecological debt is swiftly dismissed by Northern negotiators and media as 'distracting and unconstructive' (Parks and Roberts, 2010: 141). More surprising, perhaps, is that some political ecologists dismiss it on the grounds that it is not sufficiently informed by understanding of local vulnerability and adaptation despite acknowledging 'the multi-level nature of the political ecology of climate change' (Adger et al., 2001: 700).

Such criticism is surely misguided. Ecological debt is an important concept precisely because it rejects the widely held idea (at least in the North) that North-South transfers are a form of 'charity'. In contrast, the Indian government asserts that funds received by developing countries, including India, for mitigation and adaptation to climate change are an 'entitlement not aid' (MOEF, 2009: 41). Viewing transfers in this way is important because of the paternalistic interventions, monitoring and surveillance that typically accompany foreign aid (Doty, 1996; Kim, 2009). This is evident in discourses surrounding 'good governance' and aid-related surveillance reflective of Northern assumptions about the inherently corrupt and/or incompetent character of Southern states. These sorts of issues have not been seriously explored in political ecology, notwithstanding pioneering work on 'development' (Escobar, 1995).

A Two-way Politics of Scale

Embedded in India's deployment of the North-South binary in climate negotiations is a politics of scale. In emphasizing per capita rights to the atmospheric commons and then extrapolating these rights to rationalize why the Indian state should not have an emissions cap, Indian negotiators are thereby jumping scale. In addition, Indian negotiators are keen to utilize the North-South framing due to its effectiveness in drawing attention to the North's historical responsibility for environmental damage, thereby scaling up the South as a 'region' (Dodds, 1998).

This can be seen as a response to Northern scalar politics implied in an environmental agenda in which problems such as climate change are seen as being caused by humanity at large (Bookchin, 1990). The human population is thereby homogenized in its contribution to a problem that is by definition 'global'. Hence all humans (and countries) must help address it. Yet not all humans and/or countries have contributed equally. Worse, by rescaling the issue from the global to the individual level, this Northern discourse directly feeds into neo-Malthusian fears about countries with large populations being the 'biggest' contributors to climate change. Not surprisingly, then, while all emerging economies come under pressure in Northern media, particular opprobrium attaches to most populous India and China (Davenport, 2014).

Because GHG contributions can be categorized differently, climate politics is notably a discursive and scale-related struggle that seeks to emphasize one categorization over another. Take for instance the relative contributions of the USA, India and China. The USA is today still far ahead of India and China when considering both cumulative contributions and per capita emissions. Yet when considering only current total country emissions, China has now overtaken the USA, and India is not far behind. Not surprisingly, the USA emphasizes current and future total country emissions, whereas

China and India emphasize cumulative and per capita emissions. The latter can also draw on climate science, which recognizes the long life-span of GHG emissions (IPCC, 2007).

These dynamics not only affirm how scale is ‘socially constructed, historically contingent and politically contested’ (Neumann, 2009: 399); they also confirm that ‘scale is the means through which ecological (and related social and economic) *change* is *made* political’ (Rangan and Kull, 2009: 30, italics in original). Indeed ‘scale can shape the “truth” of an event’ (Jacobs, 2001: 734). Conflicts over the choice of interpretive scale are thus inherently connected to evolving power geometries, both of which are integral to struggles over access to and control over limited resources (Rangan and Kull, 2009).

Right to Development

India’s deployment of the North–South binary in climate politics is also part of a wider assertion of a right to development. Underlying this position is adherence to a once intellectually fashionable modernization theory that situates India ‘at an early stage of development’ (PMCCC, 2009: 1). Now, postcolonial geographers and political ecologists are critical of both capitalism and associated (North-based) modernization thinking, seeing them as obstacles to social justice (McEwan, 2003; Nash, 2004; Sachs, 2002; Sidaway, 2002; Neumann, 2009; Wainwright, 2010). Such critique is compelling but must nonetheless be situated in historical context – after all, European colonization was instrumental in creating today’s socially unjust world by exacerbating the impact of industrial capitalism (Blaut, 1993). North–South climate politics is therefore inherently tied to this historically contingent process of development of capitalism and modernization (Chakrabarty, 2009) – and a rejection of them both now would thereby cut off any chance for the formerly colonized (i.e. the South) to retrieve at least some of the unequally distributed benefits that indisputably emerged from the process but which have overwhelmingly accrued to the colonizers (i.e. the North).

In a different context, Bebbington (2004) and Rangan (2004) caution against a cursory dismissal of modernization discourse in favor of (Northern) romanticized portrayals of indigenous movements as ‘alternatives’ to development, insisting that the way in which Southern marginalized groups make use of modernizing discourses is what matters. These groups may utilize the tools and techniques of their oppressors to protect their interests (Bebbington, 2004). This is at the core of Homi Bhabha’s notion of hybridity – resistance as appropriation of colonial identities and discourses by the colonized (Kapoor, 2008). The idea ‘that politics, while always contaminated by hegemonic representations and institutions, can nonetheless be undertaken from within (the margins of) the hegemony’ (Kapoor, 2008: 149) speaks to subaltern agency. It also points to spaces of possible subversion of colonial domination by using the colonizer’s tools (Jacobs, 1996). Denying the subaltern the opportunity to coopt and become a part of such hegemony may simply perpetuate the subaltern condition (Spivak, 2010).

Dismissing the ‘right to develop’ argument (Norberg-Hodge, 2008), therefore, risks condoning Northern affluence while denying similar aspirations to the South. Take the case of the much-fêted radical German scholar Wolfgang Sachs (2002), who decries the (populous) South’s pursuit of modernization both because the earth’s limited carrying

capacity will not allow it and because such a quest simply hastens Southern elite integration into global capitalism. Consequently, 'the demand for justice and dignity on behalf of Southern countries threatens to accelerate the rush towards biospherical disruption, as long as the idea of justice is firmly linked to the idea of development' (Sachs, 2002: 30). Instead, he urges both North and South to pursue ecologically benign pathways to social improvement.

Sachs's analysis is an excellent example of how Northern environmentalism can perpetuate Northern exceptionalism and a paternalistic attitude towards the South. It tacitly accepts an unequal North–South status quo, since it is easier to prevent humans with less power from embarking on new emission-generating activities than for those with more power to depart from their already high-emission-generating activities. Indeed, Sachs (2002) believes the South must pursue only non-industrial decentralized development. There is a clear contradiction – not to mention hypocrisy (Simon, 2007) – involved here when a scholar residing in a Northern industrialized country and living a life of relative privilege (with accordingly enlarged GHG emissions) makes such pronouncements. For, even as the South is encouraged 'not to make the mistakes' that the North did, most Northern scholars continue to live lives of relative privilege made possible by the very system of industrialized development they condemn. This serves only to perpetuate 'the ostensive imbalance between responsibility for the damage and obligation for repair' (Castro, 2010: 35) of the climate system.

Further, by suggesting that industrialization-as-development has been thrust on the South by rapacious Northern corporations, commentators such as Norberg-Hodge (2008) also strip Southerners of agency insofar as it is assumed that they would not aspire to higher standards of living on their own. In India's climate politics, development indeed serves as what Ernesto Laclau calls a 'floating signifier' (cited in Doty, 1996) – a concept whose meaning is not fixed and therefore serves to enable a multifaceted and often ambiguous politics of resistance, particularly in contesting the status quo. Whether this politics leads to a counter-hegemonic outcome can be debated. The climate crisis has certainly prompted in India discourses that challenge hegemonic conceptions of pro-capitalist industrial development (Roy, 2012; Shiva, 2008). Yet it is also clear that this approach does not define India's climate politics, which is firmly based on equalizing opportunities for economic growth and industrialization between North and South.

Although much critique of modernization-as-development is based on its associations with the colonial 'civilizing mission' (Nash, 2004: 109), India's claimed right to development is articulated within an agenda that promotes national sovereignty, and therefore should be seen in a different light than development-as-aid promulgated by Northern NGOs. Similarly, and in criticizing the post-developmental ethos of renouncing the very idea of development as a 'totalizing and hegemonic discourse' due to its (neo)colonialist history, Rangan (2004: 373) argues that contemporary Southern grassroots movements striving for greater equity and access to resources often seek to work with, not against, state-legitimized discourses of development.

CONCLUSION: EXPANDING THE SCOPE OF GLOBAL POLITICAL ECOLOGY

'Can the spatial discipline of geography move from its positioning of colonial complicity towards producing postcolonial spatial narratives?' asks Jacobs (1996: 163). This chapter offers a clear response: a North–South framing of climate politics provides a compelling postcolonial spatial narrative with which political ecologists ought to engage. While this is not the preferred scale of analysis for many scholars, I nonetheless insist that the multifaceted nature of the ongoing climate impasse positively cries out for political ecology analysis that may in turn have implications for global climate policy. Contemporary climate politics provides an excellent opportunity to examine the ways in which colonial power is being challenged and/or re-inscribed through contestations surrounding North–South binaries. At the same time, scholars must be aware that, in examining climate politics, they are embedded too in an unequal status quo – to the extent that some may even be complicit in the perpetuation of North–South inequalities when ostensibly critical analysis becomes unintentionally aligned with positions taken by hegemonic Northern states.

A new direction for political ecology is thus urgently needed. First, there is need for greater and more complex engagement with postcolonial theory, particularly related to reflexivity and the question of how to avoid complicity with unequal power relations. A postcolonial political ecology of the atmospheric commons must be self-reflexive in the sense that scholars undertaking such an analysis must be cognizant of how their class and geopolitical positions may contribute to perpetuating inequality. Without this, well-meaning analyses may simply become hypocritical and complicit with the status quo.

Second, and for their analyses to have a chance of positively informing climate negotiations, political ecologists must engage more with a North–South literature largely within the purview of international relations (Hurrell and Sengupta, 2012). It will hence need to go beyond the dismissive approach that some work in critical geopolitics takes, seeking instead to find ways to work with state-centered approaches that underpin climate negotiations. This will clearly require a move beyond the 'local trap' to thereby engage more systematically in research at the interstate level (Kim, 2009).

Finally, political ecology as a field of study must make more room for perspectives from non-traditional/non-white positions (Kim et al., 2012). It is surely troubling that critiques of a North–South approach to climate negotiations come predominantly from Northern writers who thereby dismiss from serious consideration the perspectives of many Southern counterparts. By incorporating non-traditional/non-white bodies and intellects more proactively into political ecology, the field will thereby also be encouraging scholarship that challenges wider and deeply entrenched core–periphery dynamics in a North–South-shaped epistemic world in which non-white Southern bodies hitherto have largely been confined to the role of subordinate 'native informants' for Northern and usually white scholars.

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10. Depoliticized environments and the promises of the Anthropocene

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Political ecology has developed as a multifaceted research agenda over the past four decades, influenced by diverse critical theoretical perspectives that all aim to relate environmental and ecological processes to socio-economic and political dynamics. Despite heterogeneous epistemological perspectives ranging from Marxism to post-structuralism and beyond, political ecologists share the view not only that the ‘political’ matters in grasping and influencing trajectories of socio-ecological change and transformation, but also that ‘physical’ and ‘biological’ matter politically. This is felt to be particularly acute in an academic and policy environment that tends to ignore or disavow the political conditioning of physical processes. Nonetheless, relatively little attention has been paid to what precisely constitutes the ‘political’ in political ecology, and how it ought to be understood and rendered operational.

This chapter thus argues that there is an urgent need to consider the ‘political’ more thoroughly in light of the twin forces of the depoliticization of environmental matters and deepening understanding that socio-political processes co-shape geological and ecological processes. Here, I explore the political nature of the environmental conditions we are in, discuss the contours of the process of depoliticization in its current post-politicizing form and attempt to re-center political thought and practices at the heart of political ecology. I propose a series of theoretical tools as well as philosophical debates that political ecology must engage with in order to develop a better grasp of these epoch-making changes.

WELCOME TO THE ANTHROPOCENE: CELEBRATING THE END OF NATURE

In 2000, Nobel-prize-winning atmospheric chemist Paul Crutzen introduced the concept of the Anthropocene as the name for the successor geological period to the Holocene (Crutzen and Stoermer, 2000). The Holocene started about 12 000 years ago and is characterized by the relatively stable and temperate climatic and environmental conditions that were conducive to the development of humanity. Until recently, human development had relatively little impact on the dynamics of geological time. Although disagreement exists over the exact start of the Anthropocene, it is indisputable that the impact of human activity on the geo-climatic environment became more pronounced from the Industrial Revolution onwards, leading to a situation in which humans are now widely considered to have an eco-geologically critical impact on the earth’s bio-physical system (Chakrabarty, 2009; Clark, 2011). The most obvious example is the

accumulation of greenhouse gases like CO₂ and methane (CH₄) in the atmosphere, and the changes this induces in climatic dynamics. Others are the growing homogenization of biodiversity as a result of human-induced species migration, mass extinction and biodiversity loss, the manufacturing of new (sub-)species through genetic modification, or the geodetic consequences notably linked to large dam construction, mining and changing sea levels.

We are no longer objects of nature, but have become subjects in the co-evolution of socio-ecological systems (Norgaard, 1994). This raises the specter of the obligation to consider what sort of environments we wish to live in, how to produce them, and with what consequences. It calls for a new modernity that fully endorses human/non-human entanglements and takes responsibility for them (Latour, 2007). We know that environmental catastrophes are already here, that profound geo-climatic changes and other environmental transformations are already such that they are inimical to the continuation of life in some places and for some humans, and this will undoubtedly get worse as anthropogenic change accumulates (Wynne, 2010). ‘The Production of Nature’ – an expression that perhaps sounded quixotic until a few years ago – is now firmly on the agenda (Smith, 1984). Nature as the externally conditioning frame for human life – an externalization that permitted the social sciences and humanities to leave the matter of nature to the natural sciences – has ended. This end of nature and the inauguration of a socio-physical historical nature forces a profound reconsideration and re-scripting of the matter of nature in political terms. The question is no longer about bringing environmental issues into the domain of politics as before, but rather about how to bring the political into the environment. However, philosopher Alain Badiou (2008: 139) argues that the growing consensual concern with nature and the environment should be thought of as ‘a contemporary form of opium for the people’. As Slavoj Žižek (2008a: 53–4) adds: ‘[R]eplacing the declining religion, it [ecology] takes over the old religion’s fundamental function of having an unquestionable authority that can impose limits.’

This seems, at first sight, not only a scandalous statement (conflating ecology with religion in a perverse twisting of Marx); it also flies in the face of evidence that politics matters environmentally. Yet I take Badiou’s statement seriously here and consider how today the elevation of environmental concerns to the status of global humanitarian cause operates as ‘a gigantic operation in the de-politicization of subjects’ (Badiou, cited in Feltham, 2008: 139). Ulrich Beck (2010: 263) concurs:

In the name of indisputable facts portraying a bleak future for humanity, green politics has succeeded in de-politicizing political passions to the point of leaving citizens nothing but gloomy asceticism, a terror of violating nature and an indifference towards the modernization of modernity.

I thus explore the paradoxical situation whereby the environment is politically mobilized, yet this articulated political concern suspends the proper political dimension. I also examine how the elevation of the matter of the environment to a global public concern is both a marker of and constituent force in the production of depoliticization. Indeed, the dominant techno-managerial environmental policy frame

inaugurates particular forms of depoliticization. And it is precisely this thesis that renders engaging with ‘the political’ in political ecology of central importance today.

THE DEATH OF NATURE: EMERGENT NATURES

The death or the end of nature has been announced before (e.g. Merchant, 1980; McKibben, 1989; Giddens, 1991; Wapner, 2010). Such a proclamation does not imply a de-materialization of human life, the apogee of modern ‘man’s’ quest to sever links to nature. Rather, humans and non-humans are ever more entangled through myriad interactions and transformative processes (Latour, 1993). The death of nature signals instead the demise of particular imaginings of nature, of a set of symbolic inscriptions that inferred a singular nature, at once external and internal to humans and human life.

Timothy Morton (2007: 14) calls nature ‘a transcendental term in a material mask [that] stands at the end of a potentially infinite series of other terms that collapse into it’. He distinguishes between three interrelated places or meanings of nature in our symbolic universe. First, as a floating signifier, the ‘content’ of nature is expressed through a range of terms that all collapse in the name of nature: DNA, elephants, mineral water, the Andes, hunger, markets, desire, CO₂, greed, competition and so on. Such metonymic lists are inherently slippery, showing a stubborn refusal to fixate meaning. As Žižek (1991) proclaims, ‘Nature does not exist!’ His Lacanian perspective insists on the difference ‘between [a] series of ordinary signifiers and the central element which has to remain empty in order to serve as the underlying organizing principle of the series’ (Žižek, 2000: 52). Nature constitutes exactly such a central (empty or floating) element whose meaning can be gleaned only by relating it to other more directly recognizable signifiers. Nature becomes a symbolic tapestry, a *montage* of meaning, held together with quilting points (*points de capiton*). For example, ‘biodiversity’, ‘eco-cities’, ‘CO₂’ or ‘climate change’ can be thought of as quilting points through which a matrix of meanings of nature is articulated. These points are not merely anchoring points; they refer to a ‘beyond’ of meaning, a certain enjoyment expressed as fantasy – notably, the desire for an environmentally balanced and socially harmonious order (a perspective here that draws on Žižek’s reading of Lacan; see Žižek, 1989; Lacan, 1993, 1997). There is always a remainder or excess that evades symbolization – what Lacan calls the Real – a performative leftover that cannot be symbolized.

Second, Morton (2007: 14) argues, nature has ‘the force of law, a norm against which deviation is measured’ – as when nature is summoned to normalize heterosexuality but render queerness unnatural, or to see competition between humans as natural but to view altruism as a product of ‘culture’ (or vice versa), or when a particular climatic condition is normatively posited as ideal but other conditions as undesirable. Normative power inscribed in nature is invoked as an organizing principle that is transcendental and universal, allegedly residing outside the remit allocated to humans and non-humans alike but that exercises an inescapable performative effect and leaves a non-alienable imprint. Here, nature is a given: a solid foundational (or ontological) basis from which to legitimize acts and that can be invoked to anchor normative judgments about ecological, social, political or economic processes. Consider how the

vision of a stable climate is elevated to a ‘public good’ both by the British parliament and by the UNHCR: ‘[T]he delivery of a stable climate, as an essential public good, is an immediate security, prosperity and moral imperative, not simply a long-term environmental challenge’ (cited in Hulme, 2010: 270).

Third, nature invokes for Morton multiple fantasies and desires: dreams of a sustainable nature or a balanced climate, the desire to make love on a beach warmed by a setting sun, fear of nature’s revenge if we keep pumping CO₂ into the atmosphere, and so on. Nature is invoked here as the stand-in for other repressed, disavowed or foreclosed longings and passions – the Lacanian *objet petit a* around which we shape our drives and that disguises the lack of ground on which to base our subjectivity (Žižek, 1999a). Such fantasy is displayed in calls to restore a true (original but now lost) humane harmony by retro-fitting the world to ecological balance, or in the longing for a nature that functions as the big ‘Other’ guiding us to redemption. From the latter perspective, nature becomes the ‘external’ terrain that offers the promise, if attended to properly, of achieving harmonious life (Stavrakakis, 1997), but also from which disaster emanates if we perturb its proper functioning.

These uses of nature imply simultaneously an attempt to fixate its unstable meaning while presenting it as a fetishized ‘Other’ that reflects our displaced deepest fears and longings. The concept of nature thus functions ideologically – foreclosing thought, disavowing the inherent slipperiness of the concept, and ignoring the multiplicities, inconsistencies and incoherencies of its symbolization (Morton, 2007: 24). It is a matrix of heterogeneous and fluid meanings that is invested with *jouissance* – enjoyment promised but forever postponed. For Žižek, any attempt to suture the meaning of empty signifiers is political gesture. Disavowal or refusal to recognize the political character of such gestures, while attempting to universalize and suture the situated and positioned meanings inscribed metonymically in nature, lead to depoliticization, to rendering nature politically mute and socially neutral (Swyngedouw, 2007). Disavowal of the empty core of nature by colonizing its meaning, by staining it with inserted meanings subsequently generalized and homogenized, is the political gesture *par excellence* of depoliticization – nature beyond the political, hence beyond public dispute (e.g. Swyngedouw, 2013a). Such symbolizations also disavow the Real of natures: the heterogeneous, unpredictable, occasionally catastrophic, acting out of socio-ecological processes in the Anthropocene. These un-symbolized natures haunt in their ‘excessive’ acting out: droughts, tsunamis, oil-spills, recombinant DNA, globalizing diseases, disintegrating polar ice caps, among others.

Latour (1993) also would abandon the concept of nature, suggesting instead a world of socio-natural quasi-objects. There is neither nature nor society outside the cultural and discursive practices that produced this binary. Rather, the imbroglis of human and non-human things that proliferate in and constitute the world consist of continuously multiplying nature–culture hybrids that stand between nature and culture: for example, greenhouse gases, Dolly the cloned sheep, dams or electromagnetic waves (Latour, 2005). They are simultaneously social/cultural and natural/physical, and their coherence (i.e. relative spatial and temporal sustainability) is predicated on assembled networks of human and non-human relations producing a relatively stable constellation (Swyngedouw, 2006). Nature is always already social (Jankovic, 2000) – involving assembling, disassembling and reassembling the rhizomatic networks through which things,

bodies, natures and cultures become enmeshed and through which relatively stable quasi-objects are seen (Castree, 2003; Braun, 2006). Here too is an attempt to re-politicize the 'environment', as quasi-objects enter the public assembly of political concerns.

Natural scientists echo such criticism. Levins and Lewontin (1985) notably argue that nature is filled in by scientists with a set of universalizing meanings that ultimately depoliticize nature while facilitating particular mobilizations of 'scientifically' constructed nature (Lewontin and Levins, 2007). In contrast, they insist that the biological world is relationally constituted through contingent, historically produced, infinitely variable forms in which each part (human and non-human, organic and non-organic) is intrinsically connected to wider relations comprising the whole (see also Deleuze and Guattari, 1994; Conley, 1996; Herzogenrath, 2008). Levins and Lewontin thus reject a simplistic, reductionist, teleological and ultimately homogenizing view of nature – arguing that there is no trans-historical and trans-geographical transcendental natural state of things, conditions or relations, but rather various different historical natures, relations and environments subject to continuous, occasionally dramatic, and rarely (fully) predictable changes. Expressions such as 'it is in the nature of things' explain nothing, since individuals and environments are co-produced and co-evolve in historically contingent, diversified, locally specific and often unaccountable manners (see also Harvey, 1996). Evolutionary biologist Stephen Jay Gould (1980) concurred here, viewing evolution as a truncated, punctuated, occasionally catastrophic and revolutionary but, above all, contingent process. There is no safety in nature – it is unpredictable, erratic, moving spasmodically and blind. And there is no final guarantee in nature on which to base human practices, dreams or aspirations.

Due to growing global awareness of 'the environmental crisis', the inadequacy of our symbolic representations of nature is more acute as the Real of nature is symptomatically discerned via diverse ecological threats (e.g. global warming, new diseases, biodiversity loss, pollution). Such spectral and uncanny appearance of the Real unsettles received understandings of harmonious nature, nurtures trauma, while forcing transformation in the signifying chains that attempt to provide 'content' for nature while at the same time exposing the impossibility of fully capturing the Real of nature (Žižek, 2008b). Thus the natures we see and work with are necessarily imagined, scripted and symbolically charged as nature. These inscriptions are always inadequate, leaving an excess or remainder, while maintaining a distance from co-produced natures that are complex, chaotic, often unpredictable, radically contingent, historically and geographically variable, risky, patterned in endlessly complex ways and ordered along 'strange' attractors (Prigogine and Stengers, 1985). Hence there is no nature that requires salvation in the name of either nature itself or humanity, and nothing foundational here that needs, demands or requires sustaining. The debate and controversies over nature and what do with it, in contrast, signal rather our inability to engage in directly political and social strategies about re-arranging the socio-ecological coordinates of life, the production of new socio-natural configurations, and the arrangements of socio-metabolic organization (i.e. capitalism) that we inhabit. Next, I elaborate on this by viewing climate change policies and arguments as depoliticizing gestures, predicated upon a growing concern for a nature out of kilter.

THE CLIMATE AS OBJECT CAUSE OF DESIRE

Irrespective of how individuals and groups view nature, consensus has emerged over the seriousness of our socio-ecological predicament (Swyngedouw, 2009). Both the IPCC reports and Al Gore's evangelical *An Inconvenient Truth* garnered the Nobel Peace prize – a telling illustration of how climate matters are now a global humanitarian cause (Giddens, 2009). There is a virtually unchallenged consensus on the need to be 'environmentally' sustainable if disaster is to be avoided – a sustainability defined as reducing and stabilizing CO₂ content in the atmosphere (Boykoff et al., forthcoming). Here, environmental problems are generally staged as threatening to human survival while being sustained by 'ecologies of fear' (Davis, 1999) on the one hand, and populist gestures on the other. The discursive matrix through which contemporary meaning about the environmental condition is woven is one quilted by the invocation of anxiety and danger, even the specter of ecological annihilation (or, at the very least, damaging socio-ecological conditions for many people soon). 'Anxiety' is the crucial trope through which many environmental and other biopolitical narratives are woven (Badiou, 2008). Cultivated 'ecologies of fear' are, in turn, sustained by a set of phantasmagorical, often apocalyptic imaginations (Katz, 1995; Swyngedouw, 2013b): endemic resource shortages, hurricanes whose intensity is amplified by climate change, scorched land as the geo-pluvial regime and the spatial variability of droughts and floods shifts, icebergs disintegrating around the poles, causing sea levels to rise, alarming reductions in biodiversity, devastating wildfires or tsunamis, and spreading 'killer' diseases like ebola or avian flu. These imaginaries contrast with equally disturbing images of a society still piling up waste, pumping CO₂ into the atmosphere, deforesting the earth and so on. Many people today seem to have an unquenchable thirst for dystopian imaginaries. Our ecological predicament is sutured by a series of performative gestures signaling an overwhelming, mind-boggling danger – one that may undermine the coordinates of everyday life, disrupting the foundations of all we take for granted. Yet, despite knowing that the ecological catastrophe is already here, we fail to take nature seriously, to think and act as subjects inscribed in dynamic natural processes.

Still, the attractions of apocalyptic imaginaries are not to be gainsaid, and display various characteristics. Symbolically, they are extraordinarily powerful in disavowing or displacing social conflict, thereby foreclosing a proper political framing. Thus presentation of climate change as a global humanitarian cause produces a depoliticized imaginary – one that does not revolve around choosing one trajectory over another, one that does not articulate specific political programs or socio-ecological projects. Such mobilization without political issue led Badiou to declare, 'ecology is the new opium for the masses', whereby promising a benign retrofitted climate exhausts the horizon of our social and political aspirations and imaginations. Solutions then follow: techno-managerial and behavioral transformations organized within a liberal-capitalist order beyond dispute will 'retrofit' the climate. These transformations become dystopian when the Malthusian specter of overpopulation is fused with climate concerns – with newborns (perversely) identified as the main culprits, a view supported by the likes of David Attenborough, Jane Goodall, James Lovelock and Crispin Tickell (Population Matters, 2010; see also Baeten, 2009). The techno-managerial eco-consensus maintains

that we must change radically, but within the contours of the existing situation – ‘the partition of the sensible’ (Rancière, 1998) – so that nothing really has to change!

The negativity of climatic disintegration finds its positive injunction in a fetishist invocation of CO₂ as the ‘thing’ around which our environmental dreams, aspirations and policies should crystallize. The ‘*point de capiton*’ for the climate change problematic is CO₂, the *objet petit a* (i.e. that something ‘which sets our desire in motion’: Žižek, 1997: 39; see also Stavrakakis, 2000) that simultaneously expresses our climate fears and provides a referent around which desire for a better socio-climatic world is woven, but one that simultaneously disavows radical change in our socio-political coordinates. The fetishist disavowal of the complex relations through which environmental changes unfold finds its completion in the double reductionism to this singular socio-chemical component (CO₂). The reification of complex processes to a thing-like object-cause in the form of a socio-chemical compound around which our environmental fear/desire crystallizes is indeed further inscribed with a particular social meaning and function through its enrollment as commodity in capital circulation and market exchange (Bumpus and Liverman, 2008; Liverman, 2009). The procedure of pricing CO₂ reduces the socio-spatial heterogeneities and complexities of ‘natural’ CO₂ to a universal singular, obscuring – in Marx’s (2004: 162) view of commodity fetishism – that a commodity is ‘a very strange thing, abounding in metaphysical subtleties and theological niceties’. Commodification renders homologous, say, the pumping of a ton of CO₂ into the atmosphere by a coal-fired plant in the UK on the one hand, and sinking one ton of CO₂ through planting trees by a Brazilian community on the other. While the socio- and political-ecological framings of these two processes are radically different and incommensurable, monetizing CO₂ renders them fully interchangeable and commensurable.

The commodification of CO₂ – primarily via the Kyoto Protocol and offsetting schemes – triggered a derivatives market of climate futures and options (Lohmann, 2010). On the European Climate Exchange (2010), for example, trade in CO₂ futures and options grew from zero in 2005 to pass the 3 billion tons mark in June 2010; 585 296 contracts were traded during that month alone, with prices fluctuating from over €30 to less than €10 per ton over this period. The price collapsed following the 2008 meltdown as economic growth in the Global North stalled. CO₂’s inscription as commodity (and financial asset) is dependent on its insertion in a complex governance regime centered on managerial and institutional technologies that reflect reflexive risk-calculation, self-assessment, interest-negotiation and intermediation, accountancy rules and accountancy-based disciplining, detailed quantification and benchmarking of performance. This regime is politically choreographed and instituted by the Kyoto Protocol (only marginally amended subsequently) and related, extraordinarily complex institutional configurations. The consensual scripting of climate change imaginaries, arguments and policies reflects a particular process of depoliticization, defined by Žižek and others as post-politicization that is instituted in what Colin Crouch and Jacques Rancière term ‘post-democracy’.

POST-POLITICAL AND POST-DEMOCRATIC ENVIRONMENTS

Žižek (1999b, 2006a) and Mouffe (2005) define post-politics as a political formation that forecloses the political. Post-politicization reduces political terrain to the sphere of consensual governing and policy-making centered on technical, managerial and consensual administration (policing) of environmental, social, economic or other domains. These efforts remain within the realm of existing social relations. ‘The ultimate sign of post-politics in all Western countries’, Žižek (2002: 303) argues, ‘is the growth of a managerial approach to government: government is reconceived as a managerial function, deprived of its proper political dimension’. Today’s consensual times thus eliminate a genuine political space of disagreement. Under a post-political condition, ‘[e]verything is politicized, can be discussed, but only in a non-committal way and as a non-conflict. Absolute and irreversible choices are kept away; politics becomes something one can do without making decisions that divide and separate’ (Diken and Laustsen, 2004: 15). Difficulties and problems, such as re-ordering the climate or re-shaping the environment, which are generally staged and accepted as problematic, need to be dealt with through compromise, managerial and technical arrangement, and the production of consensus. Key here is ‘the annulment of dissensus ... the “end of politics”’ (Rancière, 2001: §32; see also Swyngedouw, 2009).

Climate governance and the policing of environmental concerns are pivotal arenas through which post-political consensus is constructed, when ‘politics proper is progressively replaced by expert social administration’ (Žižek, 2005: 117). The post-politicizing environmental consensus is thus radically reactionary, forestalling the articulation of conflicting or alternative trajectories of future environmental dynamics. There is no contestation over the givens of the situation, over the partition of the sensible; there is only debate over technologies of management, timing of their implementation, arrangements of policing and the interests of those whose voices are recognized as legitimate. In this post-political era, adversarial politics (of the left/right variety or of radically divergent struggles over imagining different socio-environmental futures, for example) are considered hopelessly out of date. Disagreement and debate are still possible, but operate within a model of elite consensus and agreement (Crouch, 2004), subordinated to a managerial–technocratic regime (Jörke, 2005; Blühdorn, 2006). Disagreement is allowed, but only about the choice of (eco-)technologies, the mix of organizational fixes, the detail of the (eco-)managerial adjustments, and the urgency of their timing and implementation, not with respect to the socio-political framing of present and future natures.

Thus environmental and other politics are reduced to the sphere of the police, to the domain of managing, governing and polic(y)ing through ‘participatory’ procedures within a given hierarchical structure. Consensual policy-making in which the stakeholders (i.e. those with recognized speech) are known in advance and where disruption or dissent is reduced to debates over the institutional modalities of governing, the accountancy calculus of risk, and the technologies of expert administration or management, announces the end of politics, annuls dissent from the consultative spaces of policy-making, and evacuates the properly political from the public sphere.

RENDERING CONSENSUAL CLIMATE CHANGE

Climate governance is a key domain through which the post-political is forged – one that disavows dissensus and prevents agonistic disagreement over alternative socio-ecological futures. The climate change conundrum is not only portrayed as global, but is constituted as a universal threat. We are all potential victims: humanity as a whole (in both a material and philosophical manner) is invoked and called into being. However, the ‘people’ here are not constituted as heterogeneous political subjects, but as universal victims, suffering from processes beyond their control. As such, the argument cuts across the idiosyncrasies of often antagonistic human and non-human ‘natures’ and their specific ‘actings out’, silences ideological and other constitutive social differences, and disavows democratic conflicts about different socio-ecological configurations by distilling a common threat to nature and to humanity (Hulme, 2008).

The nature–society dichotomy and the causal power of nature to derail civilizations are thereby reinforced. Neil Smith calls this ‘nature washing’:

Nature-washing is a process by which social transformations of nature are well enough acknowledged, but in which that socially changed nature becomes a new super determinant of our social fate. It might well be society’s fault for changing nature, but it is the consequent power of that nature that brings on the apocalypse. The causal power of nature is not compromised but would seem to be augmented by social injections into that nature. (Smith, 2008: 245)

While the part-anthropogenic process of the accumulation of greenhouse gases is readily acknowledged, the related ecological problems are externalized. CO₂ becomes the fetishist stand-in for all climate change calamities; it therefore suffices to reverse atmospheric CO₂ levels so as to return to a climatic status quo *ex ante*. An extraordinary techno-managerial apparatus is thus under development, ranging from eco-technologies of diverse kinds and Promethean geo-engineering proposals (Royal Society, 2009; Szerszynski, 2010), to complex managerial and institutional configurations aiming to produce a socio-ecological fix that simultaneously ensures that nothing fundamental changes in socio-ecological structures. Stabilizing the climate is thus a precondition for life as we know it to continue.

Consensual discourse ‘displaces social antagonism and constructs the enemy ... the enemy is externalized or reified into a positive ontological entity [excessive CO₂] (even if this entity is spectral) whose annihilation would restore balance and justice’ (Žižek, 2006b: 555). The enemy is conceived as an ‘intruder’ who has ‘corrupted’ the system. CO₂ stands here as the classic example of a fetishized and externalized foe that must be defeated. Problems are not due to unevenly distributed power relations, rampant injustices or a fatal flaw in the ‘system’, but are blamed on an outsider (Žižek, 2006b: 555). Hence the solution is to deal with the ‘pathological’ phenomenon, the resolution for which resides in the system itself. The ‘enemy’ remains socially empty, vacuous and homogenized; it is a thing not socially embodied, named and counted. While a proper politics would endorse the view that CO₂-as-crisis stands as the pathological symptom of the normal – one that views excesses as inscribed in the normal functioning of the system – the dominant policy architecture insists that this state is excessive to the system, while prophylactic qualities are assigned to the mobilization of the very inner

dynamics and logic of the system that produced the problem in the first place (privatization, commodification and market exchange of often fictitious CO₂).

Climate consensus is conjured in the ‘name of the people’, but supported by a ‘neutral’ scientific technocracy that elevates, often without much political mediation, ‘matters of fact’ into ‘matters of concern’, while advocating a direct relationship between people and political participation. Thus consensual governing takes the form of stakeholder participation or forms of participatory governance that operate beyond the state and permit self-management, self-organization and self-disciplining (Dean, 1999; Lemke, 1999; Swyngedouw, 2005) under the aegis of a non-disputed liberal-capitalist order. Such tactics do not identify a privileged subject of change (like the proletariat for Marxists or women for feminists), but instead invoke a common predicament, as well as the need for humanity-wide action, via multi-scalar cooperation. There are no internal social tensions or conflicts. Yet it is precisely this constitutive split of the people based on recognition of radically differentiated social, political or ecological desires that calls the proper democratic political into being.

The ecological problem does not invite transformation of the existing socio-ecological order, but instead calls on elites to act so that nothing really changes. Such consensus is inherently reactionary, an ideological (or imaginary) support structure for securing the *status quo*. It is inherently non-political and non-partisan. A Gramscian ‘passive revolution’ has thus occurred whereby elites acknowledge the climate conundrum (thereby answering calls to take the issue seriously) and move quickly to convince us that not only can capitalism solve this riddle, but that it can conjure a sustainable climate by making the one it co-produced over several hundred years go away.

Post-political climate governance does not solve problems; it moves them around. Consider how the nuclear option is portrayed as a realistic option to secure a sustainable energy future that addresses both CO₂ and peak-oil concerns (despite Fukushima). Thus, escaping the CO₂ quagmire involves replacing ‘excessive’ CO₂ with another socio-natural imbroglio, U235/238 (and its socio-natural trans-uranium elements). The nuclear ‘fix’ is increasingly presented (undoubtedly to be later implemented) as a key means to save climate and capital – yet hardly arousing hope for an ecologically sound society.

Worse, no proper names are assigned to a post-political consensual politics. Post-political populism involves a politics of not naming in the sense of giving a definite or proper name to its field of action. Vague concepts like climate change policy, biodiversity policy or ‘sustainability’ replace proper names in politics. Yet, for Rancière (1995), these are precisely what constitute genuine democracy – a space where the unnamed, uncounted and unsymbolized become named, counted and symbolized. Climate change has no positively embodied political name or signifier; it does not call a political subject into being, or rather there is no political subject inaugurating its name. In contrast to signifiers that mark a positively embodied content vis-à-vis the future (e.g. socialism, communism), an ecologically and climatologically different future world is captured in a pure negativity without promise of redemption or a positive injunction that ‘transcends’/sublimates negativity, and without a proper subject. Yet gazing on tomorrow thus permits a recasting of social, political and other issues today as future conditions to be retroactively re-scripted as a techno-managerial matter.

Poverty, ecological problems or socio-ecological inequities will eventually be sorted out by dealing with CO₂ today. As demands are expressed (reduce CO₂) that remain particular, post-politics forecloses universalization as a positive socio-environmental project. The environmental problem does not posit a positive and named socio-environmental situation, an embodied vision, a desire that awaits attainment, a passion to be realized.

FROM ENVIRONMENTALIZING POLITICS TO POLITICIZING THE ENVIRONMENT

Taking the environmental and climatic catastrophe seriously requires exploding the process of depoliticization marked by empty signifiers like nature or ‘sustainability’ while urging us to rethink the political. This is not to ignore the Real of natures: those diverse, multiple, whimsical, contingent and often unpredictable socio-ecological relations of which we are part. Rather, we must question the social legitimization of all manner of socio-environmental politics, policies and interventions in the name of nature or sustainability that necessarily forecloses a properly political frame through which such imaginaries become constituted and rendered hegemonic, while disavowing the constitutive split of the people by erasing the spaces of democratic agnostic encounter. The above re-conceptualization urges us to accept the extraordinary variability of natures, insists on the need to make ‘a wager’ on natures, forces us to chose politically between this or that nature, invites us to plunge into the relatively unknown, expect the unexpected, accept that not all there is can be known and, most importantly, endorse the violent moment that is inscribed in any socio-environmental intervention.

The ultimate aim of political intervention is to change socio-environmental ordering. Like any intervention, this is inevitably a violent act, erasing some of what is there already to erect something different. Political interventions thus re-choreograph socio-natural relations, always splitting consensus while producing inegalitarian outcomes. Intervening in socio-natural orders constitutes a political act *par excellence* – one that can only be legitimized politically and not (as now) through an externalized legitimation based in fantasy (whether ‘nature’ or ‘enlightened’ techno-science). Any such act reorders socio-ecologies, reconfigures uneven socio-ecological relations, often with unpredictable consequences. Such interventions signal a totalitarian moment involving the temporary suspension of the democratic – the latter understood as the presumed equality of all in a space that nurtures dissensus (Wilson and Swyngedouw, 2014). The dialectic between the democratic as a political given and the totalitarian moment of policy intervention as the suspension of the democratic must be endorsed. While the democratic political, founded on a presumption of equality, insists on difference, disagreement, radical openness and exploring multiple possible futures, concrete environmental intervention is necessarily about closure, definitive choice, a singular intervention and hence at least some exclusion and silencing. The democratic political process dwells, therefore, in two spheres simultaneously: ‘the political’ and ‘the police’ (the policy order) (Rancière, 1995). The (democratic) political is the space for the enunciation and affirmation of difference, for the cultivation of dissensus, for asserting the presumption of equality of all before the (inevitably) inegalitarian polic(y)e order.

The latter is thus necessarily a violent act of (temporary) foreclosure of the democratic political, of taking one option not another, of producing one sort of environment (and socio-natural relations) not others, of rendering hegemonic one metonymic chain not another. And, legitimization here cannot be based on pressing nature into discursive service. The production of socio-environmental arrangements implies fundamentally political questions, and must be addressed and legitimized in political terms. Politicizing environments democratically, then, becomes an issue of enhancing the democratic political content of socio-environmental construction by means of identifying the strategies through which a more equitable distribution of social power and a more egalitarian mode of producing natures can be achieved. This requires reclaiming proper democracy (and public spaces for enunciating agonistic dispute) as a foundation for more egalitarian socio-ecological arrangements, the naming of positively embodied ega-libertarian (the fusion of equality with freedom; see Balibar, 2010) socio-ecological futures that are attainable. In effect, egalitarian ecologies are about demanding the impossible and realizing the improbable: exactly the challenge posed by the Anthropocene. The politicization of the environment is thus predicated on recognition of the indeterminacy of nature, the constitutive split of people, the unconditional democratic demand of political equality, and the real possibility for inaugurating different socio-ecological futures that express democratic presumptions of freedom and equality.

CONCLUSION

This chapter developed a tentative theoretical framework designed to re-center the ‘political’ in political ecology. This move is essential in terms of charting an underexplored, yet vitally important terrain of and for political ecology. While multifaceted critical theoretical and empirical analyses have propelled political ecology forward as a vibrant, dynamic and important research field over the decades, it nonetheless runs the danger of repeating the deadlock that characterizes other critical theoretical perspectives. This deadlock refers to the condition whereby our substantive critical theorizations and empirical analyses provide formidable insight into the political, socio-economic and cultural processes of non-egalitarian access to, as well as transformation and distribution of, organic and non-organic matter, but are rather unsuccessful in articulating these insights with emancipatory political theorizations and strategies. There is an urgent need to traverse this deadlock of politically impotent forms of critical political-ecological theorizations. A possible way out – as suggested in this chapter – is to engage more centrally with the nature of ‘the political’ in political ecology, with an eye to moving from a still predominantly socio-ecological (albeit critical) perspective to a thoroughly politicized one. In sum, one of the great challenges facing political ecology in the future is foregrounding what is precisely *political* about ecology, a challenge that has become more acute as the Anthropocene inaugurates the end of a nature outside the political.

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PART III

GOVERNANCE AND POWER

11. Mining in Latin America: coloniality and degradation

*Héctor Alimonda**

To speak of a Latin American political ecology is to confront questions about the specificity of regional identity. Possible answers must be located in the long historical relationships between societies and natures that characterize this part of the world. Perhaps more than elsewhere, political ecology analyses in Latin America require links to environmental history.

Central here is the project of coloniality – complex political, economic, cultural and ecological processes that have long defined ‘Latin America’. This project severed myriad historical and cultural processes occurring in the region (themselves marked by warfare and oppression), even as it subordinated natures and societies to alien logics based on the frenetic accumulation of economic resources. Key European states wielded real and symbolic power both at the macro level (territorial and administrative reorganization according to imperial production) and at the micro level (power over nature as well as over humans). Indeed, the coloniality project in Latin America was the necessary counterpart to the modernity project in Europe (and later the USA), as scholars from the region have pointed out for decades (e.g. Furtado, 1969; Cardoso and Faletto, 1970; Lander, 2000). Of course control over people and nature was never complete everywhere. Further, coloniality was not the only story in such a large-scale drama – as, for example, five centuries of social miscegenation, hybridization and resistance attest.

And yet this chapter argues that not only is coloniality key to understanding the evolution of society and nature in Latin America; the specific activity of mining (and its associated impacts) is fundamental to the constitution of Latin American coloniality – indeed, the exploitation of minerals in the region is vital to the very genesis of modernity. As Machado Aráoz (2011: 141) suggests, ‘maybe, more than any other activity, the historical evolution of modern mining is intrinsically linked to the emergence, constitution and the political vicissitudes of colonialism/coloniality, the dark counterpart and recurrently denied of the Modern Order’. As such, this chapter focuses on mining in the region to thereby understand larger political ecologies of socio-natural transformation – beginning with a historical overview before assessing contemporary dynamics.

MINING AND THE BIRTH OF COLONIALITY

The appropriation of precious metals was the driving force of the Spanish conquest. Large-scale robbery first centred on gold, beginning what Marx called ‘the modern biography of Capital’. However, this changed during the sixteenth century as the

Spanish Crown sought firmer control over its colonies. On the one hand, after the chaotic scramble for riches that marked the early colonial years, it attempted to rein in the power of rapacious *conquistadores*, who were undermining Crown authority. Hence the New Laws (*Leyes Nuevas*) of 1542 tightened control over them by establishing rules for 'good' governance of conquered territories and indigenous communities. On the other hand, the Crown conceived of colonial space as an articulated set of social, political and economical scales, which in South America centred on silver production in El Cerro Rico (the rich mountain) in Potosí (today in Bolivia) and as put into action by the Virrey [Viceroy] of Peru, Francisco Álvarez Toledo in 1570.

The development of silver mining following discovery of the Zacatecas and Guanajuato deposits in the Virreinato [Viceroyalty] of Nueva España (today Mexico) and the Cerro Potosi deposits in the Virreinato of Peru (today Peru, Bolivia, Ecuador, Chile, Argentina, Paraguay and Uruguay) was more than a story of one economic activity – indeed, even a leading activity in the then world economy. This is because the massive production of silver was nothing less than the production of a money commodity, precisely the only type of commodity not exhausted by consumption. As a currency of empire, silver (as with gold) enabled all other commodity exchanges, permitting standardized commodity pricing, as well as the accumulation of economic surplus. The implications of this money commodity were far reaching. Transported from the Americas under strict supervision first to Spain and then throughout Europe, precious metals facilitated economic accumulation in Western Europe, in turn prompting the transformation of social and economic structures – in short, a move towards 'modernity'. They also had a decisive impact on geopolitics – enabling European states to see off the Muslim threat in the Mediterranean and beyond, thereby allowing them to establish lucrative commercial bases in Asia. International European hegemony from the sixteenth century was thus predicated on colonial rule in Latin America.

The historical political ecology of mining is above all, then, a story about silver (especially as gold mining declined in the sixteenth century) and, in what follows, I mainly focus on 'Peruvian space': that territory covered by the Virreinato of Peru. Silver mining involved major territorial and administrative reorganization, as life was restructured around the requirements of this precious metal – in fact, the very creation of Peruvian space with its more or less 'important' regions and transport routes was a necessary by-product of silver exploitation. Virtually the sole significant export of the region, silver was the thread linking this immense territory to the imperial metropolis and world economy. The importance of such silver geographies is not to be gainsaid. Thus the mining was centred on Cerro Potosí, which, at 4500 metres of altitude, had then one of the biggest urban agglomerations in the world: Potosí counted 120 000 inhabitants in 1573, rising to 170 000 in 1650, before hitting 200 000 in 1700 – equivalent to the size of London and other major European cities. In contrast, the Virreinato capital of Lima had only 15 000 inhabitants by 1600 – hence very much in the shadow of the region's silver metropolis (Assadourian, 1983: 127–254).

The quest for silver also required strict control over people's lives. Thus the New Laws sought to discipline descendants of the *conquistadores*, as the Crown (supported by the Catholic Church) thereby regulated exploitation of indigenous people. In this, the Crown and Church were keen to avoid a repeat of the demographic collapse visited on the Caribbean population as a result of brutal gold collection practices introduced by

the *conquistadores*. Yet those Laws also established an exploitative labour system of mining colonialism in which indigenous communities were regrouped in officially sanctioned villages where their control and evangelization were easier. This system meant residents had to pay taxes to *encomenderos* (patrons) and work in the Potosí mines (*mitas*) – the latter took up to 14 000 workers per year from 16 provinces of the Virreinato (as well as 2000 African slaves per year).

The Potosí network also featured the production of ancillary materials (notably copper and mercury) involving the same work regime. For example, mercury was produced in Huancavelica, in the Peruvian *sierra*. Whether at the silver mines or at connected sites of production, oppressive labour conditions were matched by environmental despoliation. There was large-scale water contamination associated with toxic production techniques such that Potosí was surrounded by poisonous lagoons. Then there was an intense need for wood both at the production sites and by the local population (for heating, cooking and building materials). The result was massive deforestation in nearby Andean forests (Dore, 1994: 33–54).

Ironically, this Peruvian space, which was central in reshaping the world system of the time, was physically quite isolated. There was only one exit route at the port of Arica, where silver was shipped to Spain. Accordingly, diverse activities developed in the Peruvian hinterland to supply essential goods to Potosí: mules from Salta and Tucuman, *yerba mate* (green tea) from Paraguay, coca from the Andean valleys and jungle, textiles from Quito, wheat and wine from Chile, and so on. Yet after 1650 Potosí silver production began to decline such that this whole system began to disintegrate.

Meanwhile, the Portuguese were busy constructing their own political ecology of natural resource production in the immense Brazilian landmass. Drawing on their experiences elsewhere, the Portuguese first focused on extracting Brazil wood (*pau-brasil*), a commodity in great demand in the European textile industry. They also grew interested in sugar, given the seeming potential for plantation agriculture in the colony, and as early as in 1540 one producer was operating in Bahia. Unlike in the Spanish colonies, however, the Portuguese experienced great difficulties in subjugating local people, such that, to obtain the requisite labour force, they introduced African slaves – thereby transforming Brazil's political, economic and cultural dynamics.

Still, the Portuguese envied Spain's access to precious minerals. Hence, early on, expeditions scoured the continent for 'noble' deposits. Success came in 1690 when gold was discovered not far from Rio de Janeiro, with production in full swing there by 1713. Sizeable diamond deposits were also discovered nearby. Between 1700 and 1800, state records show that 1000 tonnes of gold were removed, but with at least an equivalent amount probably escaping official control. Similarly, 2.4 million carats of diamonds were officially registered, but with an untold amount also smuggled.

As with the Spanish colonies, the production of precious minerals prompted territorial reorganization in the Portuguese colony. A Virreinato was created and pre-existing hereditary captaincies were cancelled, as the Crown and its appointees tightened their grip on Brazil. The capital was moved from Bahia to Rio de Janeiro, even as special mining zoning was established (Minas Gerais), with its capital at Ouro Preto and vital transport roads to the port of Paraty. Mass migration complemented this process, providing a pool of free and non-free labourers. It is estimated that 450 000

Portuguese subjects moved to Brazil in the eighteenth century alone, thereby developing a relatively stable and 'loyal' population in the interior. This influx was mostly spontaneous, its unplanned nature prompting conflict between mining entrepreneurs (*garimpeiros*), indigenous peoples, African slaves and Crown officials. While the last sought to regulate social behaviour in the mining districts, they did nothing to alleviate environmental devastation there: more than 4000 square kilometres of the Atlantic forest were felled, even as there was intensive water and land pollution (Dean, 1996: 108–33).

MINING DURING INDUSTRIAL IMPERIALISM

Mindsets and practices developed under Spanish and Portuguese rule persisted long after these conquerors had left. Thus, while the nineteenth century brought a new international economic order based on the predominance of industrial capitalism and an associated division of labour, freshly independent Latin American countries remained profoundly shaped by neocolonial relations. Throughout the region, agricultural and mining export economies were the norm. Indeed, they were elaborated as new means of transportation and communication (e.g. steam-driven iron ships, the telegraph, railways) as well as new means of organizing nation-states (e.g. complex bureaucracies, land and social surveys) transformed Latin America.

From gold and silver, attention turned to other natural resources now in demand in industrializing Europe and the USA. These were the 'poor' minerals: iron, lead, tin, zinc, bauxite, among others (although extraction of commodities such as guano and saltpetre also played an occasionally prominent role). Yet the extraction of 'poor' minerals required large amounts of capital to fund the vast, complex and increasingly technologically driven operations involved. Thus, and although some mining was attempted by Latin American states, the bulk of the operations were usually owned and operated by large US corporations. Indeed, the spread of these corporations was a vivid example of the neocolonial Monroe Doctrine of 1823 in which the US government warned European powers away from the Americas – a US 'zone of influence'.

Once again, the coloniality of Latin America was part-and-parcel of the articulation of modernity elsewhere, with mining the golden thread connecting the two. Through the nineteenth and early twentieth centuries, the USA consolidated its control over the region's mining. Indeed, by the first half of the twentieth century, four US corporations alone controlled more than 56 per cent of world copper production (a strategic material of the electrical industry and, hence, underpinning industrial modernity), much of which came from gigantic mining establishments or 'enclaves' in Chile and Peru. These enclaves – the modern successors to Potosí's silver mines – combined the advanced technological capabilities of US-owned mines, poorly paid and oppressive conditions for workers, and extra-territorial powers that left the foreign owners in total control at production sites. Such enclaves included huge open-pit copper mines at Chuquicamata and El Teniente in the northern Chilean desert, as well as comparable mines in the south of Peru at Cuajone and Toquepala.

The development of these enclave economies fundamentally shaped the political, economic and ecological development of Latin America. They distorted the region's

development in a number of key ways. First, these enclaves generated immense income, most of which was directly repatriated (along with the 'poor' minerals) to industrial centres in the North, with royalties and the like providing only a modest official income to the producing countries. Second, foreign political influence over Latin American states radiated outwards from these enclaves, shaping a myriad of national policies ranging from private property laws to labour rules, from transport policies to military practices (e.g. crackdowns on 'unruly' labour, such as the massacres of Santa Maria de Iquique in Chile in 1907, and Rio Blanco in Mexico in 1906 – for some historians, the beginning of the Mexican Revolution). National elites aligned themselves with Western interests. Third, mining enclaves located in remote rural areas provided little or no benefit to local or even the national population; in economic terms, there were few if any multiplier effects from such a large infusion of foreign investment (Furtado, 1969; Cardoso and Faletto, 1970). Finally, the enclaves were centres of severe environmental degradation, as the mines transformed entire ecosystems. Thus control over water resources deemed essential for mineral processing was wrested from local communities even as water supplies were polluted, while the energy needs of the complexes led to pervasive deforestation as well as the construction of large dams for hydropower. These enclave political ecologies provided the template for much future economic development in the region.

The results were disastrous. Take the case of the Cerro de Pasco copper mine in the central highlands of Peru. Started in the early twentieth century through purchase of small locally owned mines that had existed for years, a US syndicate expanded operations – greatly benefiting from the extension of the railway to the area in 1904 connecting Cerro de Pasco to Lima. In 1922, the construction of a refinery and metal smelter in La Oroya polluted the air and ground for 80 kilometres from the production site, thereby ruining peasant livelihoods. The company bought so much land for its operations that it became the largest landowner in Peru, while dispossessed peasants were all but forced to become its workers. Self-interest led to certain pollution abatement practices – thus treatment of the smoke from the factories not only reduced somewhat air pollution; it also allowed the company to recover valuable particles of lead and zinc (whose value meant that such exports overtook copper exports). Such was the internationally significant nature of these developments at Cerro de Pasco that the mining enclave even found expression in culture, as evinced by a series of five novels written by the Peruvian Manuel Scorza. The complex was nationalized in 1974 under the name of CENTROMIN Peru and then privatized in 1997 as the US-owned Doe Run company took control (as part of a wider neoliberalization trend). Today, Cerro de Pasco is considered one of the most polluted areas in the world. At 3300 metres of altitude, it is the highest open-pit mine in the world, with a hole two kilometres wide and 400 metres deep, which was developed by destroying the old city and even now endangers the rest of the city centre of Pasco. Unable to resolve these problems, the Peruvian government has ordered an evacuation moving its 57 000 inhabitants elsewhere (Palacios Panéz, 2009: 133–54; Helfgott, 2013: 179–90).

These brutal enclave political ecologies have also spawned forms of resistance that, in their own way, have further deeply influenced development in Latin America. For one thing, the combination of an unprecedented concentration of mine workers and intense exploitation (poor pay and dangerous conditions) led during the twentieth

century in all major mining countries in Latin America (Mexico, Chile, Peru, Bolivia) to the establishment of nationally important unions. These mines served a role akin to that of large factories in the industrialized North – laboratories for union organizing and political action. The ultimate political expression of mining unionism occurred in Bolivia. In the April 1952 revolution, initiated by the Revolutionary Nationalist Movement, unionized miners were an essential part of the three-day battle that destroyed the pro-big-business army. Subsequently, the Bolivian Mining Corporation was created as part of the nationalization of large tin mining in the country, with the unions ensconced in a co-management role.

For another thing, foreign ownership of valuable mining enclaves became a perennial target of nationalist criticism as major political and economic changes swept through Latin America after 1930. In 1938, the post-revolutionary government of Lázaro Cárdenas nationalized the Mexican oil industry, creating the state company PEMEX – and thereby the backbone of that state's financial capacity. As with oil, national ownership of mining was seen as central to the implementation of state-run development projects and of a public policy reorientation linked to agrarian reform. So it was with the aforementioned Bolivian nationalization of large tin mining (and oil) in 1952. A similar story can be told of Peru, where the nationalist government of General Juan Velasco Alvarado conducted a military coup in October 1968 – seizing control, on the very first day, of the vital Talara oilfield owned and operated by Occidental Petroleum. Then there is of course the famous case of Chile, where the newly elected socialist government of Salvador Allende nationalized, on 11 July 1971, the gigantic copper open-pit mining complex owned by the US firm Anaconda Mining and Kennecott Copper. Part of a much wider political trend sweeping the world in which hitherto peripheral and natural-resource-dependent Southern states promoted economic nationalism, these Latin American nationalizations were designed to wrest economic control from outsiders, even as they promised a revenue bounty for hard-pressed states often keen to promote rapid economic development for their citizens.

MINING AND NEOLIBERAL COLONIALITY

The grand dreams and promises of those revolutionary times, often centred on the reconfiguration of control over mining enclaves, did not last long. The counter-revolution propelled by international capital was quick in coming and, given the ongoing centrality of Latin American mining to the economic prosperity of the North, it is hardly surprising that its first major manifestations were felt in the region, starting with the US-backed military coup in Chile led by General Augusto Pinochet of 11 September 1973. Since then, military violence and neoliberal policies have worked hand-in-glove to restore a system of coloniality. Again, mining is key here – leading the way in the restructuring of natures, cultures, ecosystems and bodies.

Using the 'Third World' debt crisis as leverage, the Northern-dominated World Bank mounted a campaign in the 1980s to render mining legislation in 70 countries around the world friendly to transnational capital (Rodríguez, 2013: 115). Latin America was a prime target here. All key producers were expected to improve the investment climate through a package of measures that included tax breaks, subsidies, export tax rebates,

unimpeded facility to remit profits and so on. Economic nationalism was abandoned as the mining sector served as an advance guard of neoliberalism – once essayed in this sector, it was thereafter rolled out in other sectors. Some countries, like Mexico, came to define the exploitation of the subsoil as a matter of national interest and priority – with immense ramifications as landowners and tenants were unable to resist moves by mining firms to turn fields into extraction sites. Poorer communities were especially vulnerable to such expropriation. Other countries, such as Argentina, prohibited state participation in mining altogether. This World Bank led campaign also sought to lock in pro-business policies in order to avoid transnational capital being held ‘hostage’ by future nationalist governments. Thus, to promote ‘legal certainty’, this new neoliberal regulatory regime demanded that states provide guarantees against nationalization of mining operations (as well as other sectors), with big fines to be imposed by US courts and/or the World Bank’s International Centre for Settlement of Investment Disputes.

Such neoliberalization was part of a wider economic globalization that prompted renewed demand for Latin America’s minerals. Thus aggregate global demand for consumer goods requiring mineral inputs was on the rise in the late twentieth and early twenty-first centuries even as the meteoric rise of certain sectors, notably computers and mobile phones, only enhanced this process with their insatiable demand for diverse minerals such as lithium. Growing fears about the future in an ‘age of uncertainty’ since 2008 have also meant that precious metals have become an important reserve of value as well as a prime source of market speculation. Thus, as ECLAC (Acquatella et al., 2013: 34) notes:

The persistent fiscal imbalances in the U.S. and Europe, the fears for inflation in emerging economies, and the weakness of the dollar and other currencies are the elements that explain the upward trend. To previous factors add a growing demand for gold and silver jewellery, especially from China and India, which are the largest consumers.

In 2010, for example, the Indian jewellery industry consumed 746 tonnes of gold – about the same amount as the total combined national gold reserves of Spain, Portugal and Greece in that year (Rodríguez, 2013: 111).

This trend can be seen in the movement of prices. Between 1990 and 2000 the prices of the major metals were stable, but in the early twenty-first century they have shot up. Based on the year 2000 (index 100), the values for 2010 were 400 for copper, 350 for iron, 200 for nickel and zinc, 350 for silver and 420 for gold (the price of the latter climbing further until in 2013 it reached its highest price). This increase is even more pronounced if the base index of 100 is taken as January 2008. For, only three years later, all of the metals mentioned above had acquired a value of 450 – in comparison, energy products (oil, natural gas and coal) had climbed to 350 (Acquatella et al., 2013: 33–5).

This astonishing rise is above all linked to Asian demand, especially that of China, which, to take but one example, consumes alone 40 per cent of world copper production today. At the same time, though, this trend highlights the vulnerability of the high-consumption industrial economies, such as Europe, which extracts from its territory only 3 per cent of the world’s minerals, or Japan, with virtually nil extraction. Ensuring the provision of strategic materials is thus a matter of great national security,

as evinced by Northern support for the aforementioned neoliberal reforms and freetrade agreements, as well as policies such as the EU's 2008 Raw Materials Strategy dedicated to overcoming vulnerability in the provision of 14 minerals (Rodríguez, 2013: 114).

Such mineral demand has underscored Latin America's role as the strategic mineral storehouse of the world. The figures are revealing. Thus, in 2010: Chile, Peru and Mexico produced 45 per cent of world copper and 32 per cent of its molybdenum; Peru, Brazil and Mexico produced 19 per cent of world gold; Peru, Mexico and Bolivia produced 31 per cent of the world's silver; Bolivia, Peru and Brazil were responsible for 20 per cent of global tin; Brazil, Venezuela and Mexico produced 23 per cent of the iron; and Brazil, Jamaica and Suriname produced 19 per cent of the world's bauxite (Acquatella et al., 2013: 27). The increasing geographical concentration of world minerals production in Latin America is mirrored by the sub-national concentration of production in a small number of mineral enclaves – thereby providing a unique set of political, economic and ecological dynamics.

On the one hand, the global mineral supremacy of Latin America is set only to grow in the future. The region contains many of the world's largest mineral reserves: at least 65 per cent of lithium, 49 per cent of silver, 44 per cent of copper, 33 per cent of tin, 26 per cent of bauxite, 23 per cent of nickel, 22 per cent of iron, and so on. Meanwhile, 13 Latin American countries are among the 15 largest mineral producers in the world, with Chile and Peru at the top. So pre-eminent is their role here that, if production from top Latin American producers is disrupted due to strikes or serious accidents, the price of the affected minerals soars on international exchanges. That pre-eminence both reflects and reinforces dramatic inflows of transnational capital into Latin American mining. Thus, between 1990 and 1997, investments in mineral exploration rose 90 per cent worldwide, but 400 per cent in Latin America; but by 2010, fully one-third of global mining investment went to the region, amounting to US\$180 billion (compared with only US\$25 billion in 2000) (Acquatella et al., 2013: 31–2).

On the other hand, states in Latin America have rushed to join this international mining boom in the name of 'development', irrespective of location or political ideology. With the possible exception of Ecuador, whose reformed constitution may hinder untrammelled mining, even 'progressive' governments justify their stance on mining by saying that revenues from it will produce the necessary resources for social investments. This keenness, when linked to the neoliberal policy reforms noted earlier, has meant that governments across Latin America have rushed to grant mining concessions. What David Harvey calls 'accumulation by dispossession' is the result – especially concerning indigenous lands. Thus Mexico has issued 5087 concessions on lands of indigenous communities who have not been consulted, covering 1 940 000 hectares or 17 per cent of the country's indigenous lands (Boege, 2013: 20). A similar story can be told of Brazil, where there are currently 4519 requests for mining exploration on indigenous land for gold, copper, cassiterite, lead and tin. The large mining company Vale alone has 211 requests for copper exploration, while the largest number of orders (664) for gold, cassiterite and lead concentrate on the lands of the Ianomani nation, covering 55 per cent of its territory. Elsewhere, the Xikrin and Baú indigenous reserves in the state of Pará have exploration orders covering 100 per cent and 93 per cent of their territories respectively. While such Brazilian mining on

indigenous lands is not a foregone conclusion, given the complex bureaucratic procedures involved, the opening of Brazil to world (and increasingly Chinese) business under successive 'progressive' governments would suggest that it is only a matter of time before large-scale mining follows in the footsteps of this avalanche of exploration requests (Nogueira, 2013: 25). Meanwhile in Peru in December 2012, mining concessions accounted for a massive 20 per cent of the national territory, and 49 per cent of these concessions overlapped with lands of peasants communities (Cooperación, 2013: 249–62); in 2003, Chile had mining concessions across 10 per cent of its land surface, while in Ecuador in 2004 that figure was over 16 per cent; most extreme of all, though, are Colombia and Panama, where 50 per cent and 45 per cent respectively of their national territories are under mining concessions. Such a large-scale land grab is arguably unprecedented as big mining seeks to 'reformat' an entire continent – yet, as evinced by the increasing intensity and ubiquity of conflict, local residents and workers are not giving up without a fight.

TERRITORIES OF RESISTANCE

The nature of the enclave political ecologies described in this chapter has shaped how the oppressed have fought back. While much of this history, as highlighted above, has been a saga of ruthless exploitation of workers, since the late twentieth century it has also and perhaps above all become a story of the destruction of nature and cultural territory (Dore, 1994).

The shifting nature of oppression and resistance reflects fundamental changes to the world of mining imposed by transnational capital. Notable here is the progressive substitution of capital for labour as more and more of mining is automated. The effects have been revolutionary. For one thing, firms employ fewer and fewer staff members such that, even in Peru, one of the world's leading producers, only 2 per cent of its workforce is employed in the sector today – and this figure includes the more labour-intensive small and medium mining outfits. For another thing, the transformative power of the new mining technologies is such that it is the destruction of nature and surrounding human cultures that is to the fore now, rather than the exploitation of miners.

The resulting violence against nature is unprecedented. Gone are the days of a network of tunnels and caverns full of thousands of miners – now whole mountains are simply blown up and the resultant matter immersed in colossal chemical solutions that require huge amounts of water where minerals are removed through leaching. At the end of this operation, there remain huge craters and contaminated watersheds – poisoned for the long term. The scale of such catastrophe can be seen in the contemporary example of the Caballo Blanco gold project in the Mexican state of Veracruz. This project first involves widespread clearance of biologically diverse forest, with some trees 3000 years old. Then, the plan is to excavate a huge pit that is 400 metres deep and with a diameter of one thousand by 400 metres. The throughput is estimated at 119 million tonnes of material, of which only 35 million tonnes is of the desired type – so about 70 per cent of the material is cast aside as *tepetateras* (waste rock). The leaching process meanwhile is to consume 3000 cubic metres of water per

day for 10 years, inevitably upsetting pre-existing watershed uses. There are also all the highly toxic inputs needed in such mining: two million litres of diesel per month, 35 thousand tonnes of explosives, 7.5 tonnes of cyanide, 300 000 litres of hydrochloric acid and so on. As with so many other open-pit mining sites in Latin America, the environmental scars will be enormous, and for one goal: 'the volume of gold collected would be less than one cubic meter ... To recap: it reduces a hill that contains 119 million tonnes to one cubic meter of gold' (Boege, 2013: 20).

Such mining is also a violence perpetrated on human communities that live in the affected areas. Distant communities can be affected just as badly as those that live next to mining. In north-west Argentina, for example, a break in a pipeline carrying minerals owned by the Alumbreira Company through Catamarca province caused serious downstream pollution of agricultural areas in the neighbouring province of Tucumán – such that federal courts put on trial a vice-president of the company for this crime. Moreover, affected areas can sometimes be relatively economically prosperous – as with Tambo Grande in northern Peru, which hosted the first anti-mining plebiscite in Latin America, and which is an area of intensive production of citrus based on irrigation and colonization projects dating back to the 1960s.

At stake in these conflicts becoming ubiquitous across Latin America is the clash of territorial logics. The latest wave of mining concessions is simultaneously an attempt to promote a sweeping re-territorialization that speaks to the logic of global capital backed up by the repression of the state or private militias funded by mining firms. In a seemingly David-and-Goliath struggle, those who confront these projects are small usually well-established communities, long subject to relative isolation from other parts of the country and where the institutions of the state have had little impact (Bebbington, 2007; Bunker, 2011; Svampa, 2011).

To some extent, and not in all cases, multi-scale networks of resistance, such as the Union of Citizen Assemblies in Argentina, have sprung up to inform local people about the threat posed by mining planned for their locality, to promote national and international awareness, to lobby legislative and judicial authorities, to collect data on the adverse effects of mining on the environment and public health, and so on. Such initiatives seek to counter the often slick local campaigns of big mining firms that deploy sophisticated public relations teams and corporate social responsibility projects (e.g. supporting local schools and sports teams) to win over local people to their cause.

Because the stakes are high, violent conflict is often the outcome. Keen to attract transnational mining capital in these neoliberal times, many states have sought to criminalize local protest, resulting in dozens of deaths and hundreds of arrests throughout the region. Here, then, the political ecology of mining is simultaneously a major human rights issue. Contemporary data give at least some sense of the scale of the strife. Thus, in November 2013 the Public Defender of Peru reported the existence of 221 social conflicts in the country, 172 of which were classified as active. Of these, 64.7 per cent (143) were motivated by mining and 11.9 per cent (17) by oil-related activity (Peruvian Ombudsperson Office, 2013: 9–11). A 2013 regional snapshot by the Observatory of Mining Conflicts of Latin America (OCMAL) is similarly revealing. It registered 189 current disputes related to the development of regional-scale mining, six of which involved cross-border operations. This figure was up dramatically from the 120 disputes registered the year before – possibly suggesting a major escalation of

conflict across Latin America as the new wave of mining investments comes to fruition. Indeed, the distribution of conflicts by country – Peru 33, Chile 32, Argentina 26, Mexico 25, Brazil 20, Colombia 12, Bolivia 8, Ecuador 7, Guatemala 6, Panama 6, Nicaragua 4, Dominican Republic 4, El Salvador 3, Honduras 3, Costa Rica 2, French Guiana 1, Paraguay 1, Trinidad and Tobago 1, Uruguay 1 – pointed to the ubiquity of mining-related conflict.

Resistance has taken diverse forms, including national and local marches, media work, coalition-building with non-governmental organizations and academics, and so on. Opponents have pursued all legal courses open to them, even in the face of official intransigence. Thus there is a regular demand for binding official consultations that would enable local democracy to count in mining decisions. There have been several referenda on large mining projects that have always resulted in massive votes against it. The first was in Tambo Grande, Peru, and the second in Esquel in the Argentinian Patagonia in 2003. There have been other mining plebiscites in Peru as well as in Guatemala. Governments have routinely sought to stymie these local initiatives. For example, after one such referendum, provincial governments in mining areas in Argentina blocked local consultations, arguing that mining-related resources are under provincial jurisdiction, and hence the final decision ought to rest with them alone.

Some opponents regularly seek to scale up the local issue in order to garner national and international support. One example is how many indigenous peoples are insisting on the implementation of Resolution #169 of the International Labour Organization of 1989 and the UN Declaration of Indigenous Rights, which establishes the obligation for the prior and informed consultation of indigenous people about the use of their territories before local states can approve new mining projects. In other cases, opposition movements have made presentations against their governments at the Inter-American Commission on Human Rights, and obtained favourable opinions, as in the case of Belo Monte dam in Brazil and the Marlin gold mine in San Marcos, Guatemala. In both cases, governments ignored the decision of the Commission that states must stop these projects – wielding belligerent nationalist rhetoric against both the Commission and mining opponents. While such battles are a hit-or-miss affair, the spread of neoliberal mining is becoming ever more entangled in local referenda, national as well as international campaigns, and even some court rulings that in aggregate are mounting a challenge to this latest phase in the longstanding coloniality of Latin American mining.

CONCLUSION

This chapter has insisted on the historical–structural link between the rise of large-scale mining in Latin America and the colonial condition of the region in relation to the world system. Such coloniality refers to the exploitation and degradation of both nature and people. For some, this is ‘progress’ or ‘development’: built infrastructure, national income and so on. Yet this was always a skewed form of development. Infrastructure invariably revolved around mining and the circulation of its products rather than the needs of residents where the industry was located. Meanwhile, mining revenue was withdrawn from the region to serve national purposes that rarely translated into local

advancement – tantamount to ‘internal colonialism’. Thus regions such as the Peruvian Sierra or northern Chile show markedly lower social development data than the metropolitan areas of these countries despite long-term large-scale mining there.

Latin America’s mining enclaves are based on sharp asymmetries of political and economic power in which local residents are habitual victims. Here, ‘modernity’ and ‘coloniality’ collide as state-of-the-art mining refashions nature, dispossesses people, and inscribes new territorialities in a neoliberal idiom. No wonder that mining is a regional flashpoint, as local groups and their national and international supporters fight mega-projects that violate human rights and democratic principles. Further research is therefore needed into the operation of enclave political ecologies exploring the material and discursive impositions of transnational mining even as it highlights the multifaceted and multi-scale fight-back to these impositions. This dynamic of control and resistance has deep roots in Latin American history, as this chapter has shown – how it evolves in the future will remain central to how the region’s socio-natures fare.

NOTE

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12. Political forests

Peter Vandergeest and Nancy Lee Peluso

The word ‘forests’ usually brings to mind visions of land covered by trees, populated by wildlife, wildflowers and perhaps a hiking trail. ‘Tropical forests’ evoke thick, tangled expanses of vegetation, giant trees, and hundreds of different species and varieties in a single hectare. In this chapter, we elaborate on another way of thinking about forests – what we call ‘political forests’ (Peluso and Vandergeest, 2001, 2011; Vandergeest and Peluso, 2006a, 2006b). These are political land-use zones meant to remain in permanent forest – although in different stages of growth and regrowth. Political forests produce and are products of particular political-ecological relations – congealed and convergent in material, ideological, discursive and institutional relations as well as claims by states or other governing bodies. Contemporary political forests are defined by the scientific, bureaucratic and institutional practices of forestry. They are usually designated, legislated, demarcated, mapped and managed by state forestry institutions, although, more recently, political forests have also been formed, protected and managed by non-state institutions, including conservation organizations, certification bodies or private companies. The practices that define them include establishment of forest land, type and species categories; establishing and empowering one or more professional managerial institutions beholden to the state; and carrying out other forms of forest and forest plantation management. Management practices also involve mapping, patrolling, planning for planting, production and harvesting, managing access within forest boundaries, and compensating persons or other land management institutions displaced by the establishment of political forests.

The term ‘political forests’ thus highlights the socio-political dimensions of forests – albeit not to their exclusion as either a biological or an ecological entity. Here, the term emphasizes the creation of state-held territories under the jurisdiction and authority of foresters and forestry departments, even as non-state authorities may also insert themselves into political forestry. Forests exist because people understand or define particular sets of material components on the ground to constitute them.

As an initial illustration, consider how specific species can be defined as forests or not. Some states may officially recognize certain species of trees and other plants as forest species while others, for similar or different reasons, consider them agricultural species. Thus rubber (*Hevea brasiliensis*) is a forest species where it originated (today’s Brazil and Peru), but not in contemporary Indonesia, where it is an agricultural tree. Yet rubber’s categorization has changed over time in Indonesia. When it was first grown there in the early twentieth century, it was under the jurisdiction of the forest department, but in the lead-up to the Second World War it became an agricultural species/crop. In part, this reflected the forestry department’s consideration of other species as forest species, as well as rubber’s modes of production encompassing both smallholder and large-holder plantations. Meanwhile, in the 1950s rubber was brought

to southwest China, where it was classified a forest product/species and hence of concern to foresters. In Thailand, which recently surpassed Indonesia as the biggest rubber-producing country in the world, rubber has always been designated an agricultural tree. This means that, as in Indonesia, the Philippines and Malaysia, rubber there is included in official agricultural statistics alongside data on fruit trees and oil palms, while being excluded from forest cover estimates (Leblond and Pham, 2014). Indeed, the simple change in a species' identity (i.e. as a forest or agriculture species) simultaneously transforms all legal–institutional arrangements that converge around that species' production, marketing and use (Peluso and Vandergeest, 2001).

Political forest lands are not always covered with trees. This is one reason why it is important that they be demarcated and that the land on which trees stand or once stood be zoned as permanent forest. Whether 'forest clearance' was intentional (as in forest clear-cutting), the result of protest against state and corporate actors controlling the forests, or the result of natural forces and pests such as fires destroying forests from the outside or beetles eating the forest from the inside, it remains the case that many political forests are devoid of trees. Thus forest clearance does not necessary mean de-forestation – since cleared forest often remains classified as forest land, and may even see tree re-growth or re-planting. Hence political forests do not map precisely on to 'forest cover', but rather are sites in which forests are intended or supposed to grow, be planted and managed on a permanently zoned basis.

Below, we explain this concept further. Then we trace the emergence, spread and challenges to political forests as a way of showing how such forests, which were created during the eras of colonial, state and war forestry, continue to inform forest politics today. Our account relates mainly to the history of political forests in Southeast Asia, where we have done most research on this topic.

WHAT IS A POLITICAL FOREST?

The two basic prerequisites comprising political forests are territorial zones (forest territories) and forest species. Specification can be accomplished either by inclusion (demarcating a territory or species as forest) or by exclusion (specifying territory that is not forest). The latter involves a prior declaration that all land by default belongs to the state; provisions for zoning land for specific purposes under the jurisdiction of dedicated state agencies (e.g. agriculture, urban development, industry or mining) and/or for alienation to private rights holders; along with the provision that all other land is by default classified as state forest. Exclusion can also be accomplished by specifying that specific tree species (like rubber) are not forest, with the provision that all other tree species are 'forest'.

Inclusion has been more important than exclusion, as reservation of forest species and territories is generally accompanied by laws and regulations that exclude other users and uses except for those authorized by forestry personnel. This aversion to overlapping use of forests produces significant social displacement effects (often through coercion), as well as a new kind of politics between state agencies and between foresters and resident peoples who undermine these exclusions. Early in the histories of political forests (during the eighteenth and nineteenth centuries), certain species or

species associations were defined as forest species, ecosystems or products; associated regulations then delineated who had access to them, who had authority to manage them, and for what purposes. Sometimes, forests were recognized as sites where species occurred in certain densities of woody cover ‘naturally’ (i.e. not planted, encouraged or managed by humans). Yet much research demonstrates the folly in most of these assumptions about ‘natural’ forest (e.g. Fairhead and Leach, 1996; Hecht and Cockburn, 2011; Mann, 2005, 2011; Sivaramakrishnan, 1999; Guha, 2000; Peluso, 1992).

Species controls in Southeast Asia drew partly on pre-colonial practices in which rulers declared monopolies over particular species. Some were reserved for exclusive use by rulers, thus being identified as elite, royal or sacred (e.g. teak, rosewood or lacquer; sometimes tigers and elephants). Rights to extract or trade other reserved species were made subject to taxes paid to local rulers. Such species-specific practices were extended and systematized by colonial rulers, who often claimed they were simply continuing what pre-colonial rulers did and that changes made reflected their new positions as ‘successor sovereigns’. For example, the Dutch colonial forest department in Java was initially organized around the production and harvesting of one major species – namely teak, which was declared a forest species early on, and was for some time monopolized by the VOC (the United East India Company). The 1865 Forest Laws declared that the boundaries of state teak forests were to be established both where teak grew and where the Colonial Forest Service zoned land for planting teak. As the number of large individuals outside the extensively gazetted teak forest lands in Java declined, the general practice was to recognize teak forests within already demarcated boundaries. Species controls on teak grown on peasant or community lands (as in cemeteries) were enacted whenever those trees were cut and transported with intention to sell, and technically were not applicable when farmers planned to use the teak on their own land (Peluso, 1992).

In the British colonies of Malaya, as well as in Siam (later Thailand), forestry departments enacted wide-ranging controls on a range of species whose status as ‘forest’ was determined partly by land-use zoning. Thus in 1918 the Federated Malay States reserved for the state all ‘forest produce’ on state land (defined by exclusion, i.e., land not specifically alienated or zoned for other purposes) and also ‘timber, firewood, charcoal, latexes, *getah taban* leaves, wood-oil, bark, extracts of bark, damar, and thatch’ that grew on alienated land (Peluso and Vandergeest, 2001: 789). In Siam, species controls were the basis of forest control during the first half of the twentieth century in part because teak grew in mixed stands in the north, in contrast to Java, where it was the dominant or sole species in forests ‘discovered’ by the VOC in the late seventeenth century. Siam’s Royal Forest Department (RFD) was established by the king in 1896 and run by British foresters during its first few decades. The government moved quickly to reserve teak trees as the property of the centralizing state (in Bangkok) in 1897 through the Forest Preservation Act and the Teak Trees Preservation Act, which made it illegal to cut teak trees smaller than 2.1 meters girth, and made cutting larger teak trees contingent on permits issued by the forestry department. This was followed by the 1913 Forest Conservation Law, which enabled the RFD to reserve hundreds of other forest species and products (Peluso and Vandergeest, 2001: 788).

While forest laws could turn trees and other bio-physical entities into forests, the opposite could also happen: some tree species were excluded from forests by being defined as agricultural, and hence outside the domain and jurisdiction of the forests and their managers. This included not only rubber, but also many fruit trees, palms, coffee trees, tea and more: these were either defined as 'not-forest' or changed from being classified as forest species into agricultural species when the nature of their production changed. Sometimes this happened when what were previously classified as forest species were isolated and cultivated for their fruits or other products, or were recognized as being cultivated by peasant farmers. In Indonesia, coffee, chinchona, durian and most rattans were initially considered forest products – but became agricultural species when they were later produced either on state plantations (coffee, chinchona), or by smallholder farmers (coffee, durian, rattan) in swidden fallows or upland plots. The overall effect – and intention – of these classifications was to draw clear lines between forests and agriculture, both in terms of species and in terms of where these species were planted or grew. These were political decisions, often contested, and, as a result, changed over time.

Although species classification and reservation remain important, especially for wildlife management, the political forest as a territorial entity has had the greatest impact, and has thus drawn most attention from political ecologists and historians. Demarcated forest territories can comprise very large proportions of total state territories. Indeed, they represent a key manner in which states claim territorial sovereignty. For example, in Thailand, over 40 percent of terrestrial area was demarcated as reserve or protected forest by the 1980s. That figure was 80 percent in Kalimantan (in Indonesia) at that time – although this figure is changing as land is reclassified for other purposes (Vandergeest and Peluso, 2006a: 36). More broadly, territorial approaches to governance and management have expanded beyond the realm of forestry into national land-use zoning programs. Hence many species controls have been absorbed into or subsumed within territorial controls. These territories and zones have become largely accepted by various authorities, conservationists and scholars as natural forest areas or as forests that 'pre-existed' their status as political forest, and are frequently confused with 'forest cover'.

Now, a 'common-sense' understanding of forests is that, to be measured and declared 'forest cover', land must have some minimum level of tree cover, even if this differs widely based on local ecologies. In arid areas, trees are few and far between, even in political forests. International institutions and conventions, including the Food and Agriculture Organization (FAO) and the Convention on Biological Diversity (CBD), have attempted to render definitions more precise and comparable across nation-states through assessments of forest cover that generally rely primarily on remote sensing with little consideration for the ways that land is zoned and allocated politically. For the FAO:

[The term] Forest includes natural forests and forest plantations. It is used to refer to land with a tree canopy cover of more than 10 percent and [a contiguous] area of more than 0.5 ha. Forests are determined both by the presence of trees and the absence of other predominant land uses. The trees should be able to reach a minimum height of 5 m. Young stands that have not yet but are expected to reach a crown density of 10 percent and tree

height of 5 m are included under forest, as are temporarily unstocked areas. (<http://www.fao.org/docrep/005/y4171e/y4171e10.htm>)

In contrast to this definition, a territory demarcated as forest and put under the jurisdiction of a state forestry agency is political 'forest' regardless of vegetation cover. Thus statistics on extent of 'forest cover' produced by forestry departments or the FAO based on remote sensing (e.g. Leblond and Pham, 2014) are distinct from those that list land zoned as state forests. Debate over forest cover in Thailand illustrates this distinction. Leblond and Pham (2014) examined vegetation assessments that used remote sensing to estimate this country's total 'forest cover' at between 25 and 30 percent of terrestrial state territory during the late 1990s. This was distinct from, and significantly less than, the area formally zoned as political forests or 'reserve forest' (over 40 percent) at that time. The authors showed that the difference could be accounted for by recognizing that large areas demarcated as reserve forest were in fact planted in maize, cassava, sugar cane and other agricultural crops, while also containing tracts of housing, roads and other infrastructure. Yet a lack of 'forest cover' in such areas did not make them any less of a 'political forest', as farmers seeking land title in reserve forests found out when they were flatly rejected for trying to obtain land that was still 'forest'.

Diverse state practices, besides those necessary to gazette certain lands as forest territories, are involved in making political forests. Importantly, those forests require creation of an agency that acts in the name of the state to control access to and management of them. The rise of forest departments or services as components of state bureaucracies is recent historically, but is now the norm in most national administrations. And, through their territorial authority and governing jurisdiction, state forestry agencies came to control significant state property rights: they allocate (for fees) concessions and permits for extracting, buying and selling timber and other forest products, as well as hunting and other recreational uses. Activities based on commercial forestry must generate revenue, often enough to run the agency and generate surpluses for the state (Sivaramakrishnan, 1999). However, because forestry is frequently centralized under national or provincial state controls, its implementation is often contested by other state agencies, local people or political challengers to state power, thereby generating violent politics of resource control while facilitating other sorts of political violence such as civil war and insurgency (Bryant, 1997; Anderson and Grove, 1987; Poffenberger, 1990; Sahlins, 1994; Peluso and Watts, 2001; Kosek, 2007; Le Billon, 2000, 2002; Peluso and Vandergeest, 2011).

States justify reserving forests and placing them under their strict control through the notion that forestry professionals need to do this in order to manage them 'for the greatest good' (Pinchot, 1998) – a claim that many learned from colonial foresters or the FAO (Westoby, 1989). For professional foresters, forests comprise particular ecological relations about which they claim expert knowledge; forests also contain valuable resources that they are trained to harvest and manage optimally. Although timber is often the most lucrative product, forests can also be managed for non-timber products such as edible plants, animals, skins, resins, rattans or honey. Forests have also long been managed for their supposed benefits in terms of regulating water runoff,

although the science here is debatable (Gilmour, 2014). Nowadays forests are also imagined and managed as ‘carbon sinks’.

Through most of the history of professional state forestry, foresters have thus been concerned with transforming forest ecologies through management (silviculture, harvesting and other on-site techniques) or managing forests to maintain them in certain stages of growth to achieve various social, economic or political ends. To carry out ecological transformations, or to maintain ecosystems with particular components or (supposed) effects, foresters believe they must be able to predict, control, eliminate or stimulate certain ecological processes, depending on the objectives. This is partly why foresters and their departments fight for exclusive management rights over forest territories – that and the fact that valuable forest resources can be allocated to private users for the great financial and political benefit of the institutions that control them. Thus the making of forests as a political field for the production and application of scientific knowledge has until recently been a political act of allocating jurisdiction to professional foresters located in state forestry departments.

LEGAL AND HISTORICAL PERSPECTIVES

As noted, political forests as territories and species/products have existed for centuries in different forms, although prior to the formation of modern states they were defined less by intent to use productivity-enhancing ‘scientific management’ and more simply to reserve timber or other products (including wildlife) for the exclusive use of ruling classes. E.P. Thompson (1975) details the class struggles provoked by creation of forest-based hunting preserves in eighteenth-century England. Such lands were found around the world prior to the nineteenth century (e.g. MacKenzie, 1997; Gadgil and Guha, 1993; Neumann, 1998; Sivaramakrishnan, 1999; Anderson and Grove, 1987). Not all hunting preserves were forests, but in practice hunting and forests overlapped sufficiently that we could call these political forests – just as the term applies to wildlife or nature reserves that are forested today.

Most political forests in Southeast Asia were established and strengthened through three not-so-distinct historical ‘moments’ (with a fourth moment occurring only recently). The first moment was the era of territorial colonialism that dominated rule in the region from the early nineteenth century through the 1930s. Some colonial states established forestry departments with extensive authority and power. Where timber or other forest products were of great value (such as teak), they demarcated extensive political forests. The ‘strongest’ colonial departments were in Java and Burma (for teak) and Malaya (where timber serviced the booming rubber and mining economies) (Peluso and Vandergeest, 2001; Cooke, 1999; Bryant, 1997; Peluso, 1992; Potter, 1988). Watershed protection was also important, but secondary to provision of forest products. Teak districts in Java were thus legally designated before most watershed protection districts were established – the latter in any case being located on top of volcanoes and other remote areas. Finally, foresters presented their work (and hence need for territorial control) as a civilizing mission in which scientifically trained foresters could eliminate the chaos of local political authority as well as seemingly unregulated forest cutting, burning and cultivation so as to bring ‘progress’ to forest

management via application of scientific methods (Vandergeest and Peluso, 2006a). The creation of political forests thus involved the violent undoing and reconstituting of spatialized society–nature boundaries inherent in the term ‘jungle’ – which is a term indicating sites where peoples relatively unassimilated in nation-states or colonial projects of rule continued to live in as yet undisciplined spaces of ‘wild’ nature as seen from the viewpoint of state officials. The discursive shift from ‘jungle’ to ‘forest’ also served to distinguish forests from agriculture.

Reserving forest territories to enable scientific forestry during colonial rule is usually traced to Germany and France in the latter eighteenth century, but it was in South and Southeast Asia that the creation of political forests as an idea and a set of practices initially gained considerable traction. Scientific forestry and forest territories were elaborated through a series of legal and technical models in various colonies and forests, while articulating with pre-existing local practices and local colonial politics (Vandergeest and Peluso, 2006b; Grove, 1995). Siam, Java and Malaya thus all created forestry agencies during the mid-to-late nineteenth century. Forestry schools for training foresters to staff these agencies were crucial during this formative period of forest bureaucracy (Vandergeest and Peluso, 2006b: 361–2). Concurrently, the Netherlands East Indies Forest Service (or Boschwezen) in Java, the British in Burma and the Federated Malay States hired German foresters who helped develop their territorial approaches to silviculture. Many initial appointees had also spent time training or doing study tours in Germany (Peluso, 1992; Bryant, 1997; Potter, 1988). Later, Southeast Asia’s colonial powers founded their own schools. Thus senior Dutch foresters were trained in the Agricultural College in Wageningen, Holland. Meanwhile, the British created an empire forestry service with a multi-tiered educational system: higher training for the British was initially at Coopers Hill in England before transferring to Oxford in 1905 (a postgraduate Imperial Forestry Institute was added in 1925) as well as at a college in Edinburgh (from 1887), whereas Dehra Dun in India (established in 1878) notably trained Indian, Burmese and even Siamese foresters. The Siamese and Malayan forestry departments eventually set up their own local colleges for training ‘native’ foresters, while the Dutch arranged for forestry training for their subjects in a school in Bogor (now the CIFOR headquarters), as well as in secondary forest schools (Vandergeest and Peluso, 2006b: 367). Graduates of these schools later became the core of post-colonial forestry departments. All these schools trained foresters not only in managing tropical forest ecologies, but also in the legal and technical aspects of territorial control.

In the British Empire, the key models for creating political forests were provided by the landmark India Forest Act of 1878 (Guha, 2000). This Act provided for three types of political forests (Peluso and Vandergeest, 2001: 781): highly restrictive ‘reserve forest’; less restrictive ‘protected forest’; and ‘village forests’. In the last, villages (entities defined by the state) exercised jurisdiction – a precursor to today’s community forests. By the early-to-mid-twentieth century, most British colonies in Asia and Africa, as well as British-influenced Siam, had laws in place that were modeled on the India Forest Act while being adapted to local circumstances.

Both the particular models chosen as well as how they were then locally adapted were an indicator of the broader status and relative power of political forestry. Siam, where the RFD found itself fighting a Ministry of Interior reluctant to displace forest

residents, did not enact laws for enabling forest reservation until the 1930s, when they adopted both the 'protected' and 'reserve' categories. In contrast, the much stronger forest departments in the British colonies in Malaya adopted only the most restrictive 'reserve forest' category. Indeed, in British-controlled Southeast Asia, only Sarawak adopted the category 'village forest', with few forests actually designated as such there. In part this was because the Brooke dynasty that ruled Sarawak was less enamoured of scientific forestry than the British in Malaya and Siam or the Dutch in Java. The Brookes were instead supportive of continued local access to forests, and recognized much more area as 'Native' customary land. They taxed trade in non-timber forest products (which was lucrative) without the costs of establishing and maintaining territorial forest controls (Vanderveest and Peluso, 2006a). In Java, Dutch foresters devised their own models for creating forest species and territories. These models were already being crafted when two German foresters were hired in 1854 to help finalize plans for territorial management in soon-to-be-created teak districts (Peluso, 1992).

The creation of political forests has long been hotly contested not only by resident peoples, but also by competing state land agencies. Foresters everywhere found themselves disputing with civil and agricultural administrations and competing for territorial jurisdiction with other land and resource management agencies. For example, whether teak growing in cemeteries in the teak zones of Java belongs to the State Forestry Corporation or to the residents of those villages is still debated in contemporary Indonesia – even though teak forest jurisdictions are among the strongest legally established forms of land management in the country. In Siam, the powerful Ministry of Interior with jurisdiction over Siamese residents, non-residents and other people was partly responsible for blocking legislation that would have enabled the creation of territorial forests prior to the 1930s; it continued to hinder actual implementation after the Second World War. In Sarawak, the Brooke regimes rejected territorial (political) forests such that demarcation did not begin until it became a direct British colony after the war.

The second moment for establishing and strengthening political forests was the 'forestry for development' programs, which began with the formation of the FAO and its Forestry Division (FAO-FD) in 1945 and lasted until the 1970s (Westoby, 1989). The FAO's influence peaked in the 1950s as, over time, bilateral aid institutions (e.g. USAID, Canadian CIDA) and other international institutions (e.g. the World Bank) also provided financial and technical assistance in this area. On formation, the FAO-FD assisted with the institutionalization of scientific forestry in independent and newly independent countries – for example, sending a mission to Siam in 1948 whose recommendations became the basis of a re-invigorated Forest Department during the 1950s. Most of their attention focused on forest reservation and the associated quest to eradicate swidden (or shifting) agriculture. Rapidly expanding forestry departments leveraged FAO support for programs to create extensive political forests in parts of Southeast Asia where these had been limited during the colonial period, notably in Thailand, Indonesia's 'Outer Islands' and Malaysia's Sarawak. FAO employees, who were often plucked from former colonial forestry institutions, worked with newly independent governments to build forestry departments, train foresters and help demarcate land and species as forest under the jurisdictions of these departments. They facilitated convergence in legal frameworks for forest management, laws and practices

worldwide while standardizing definitions of forest types based on vegetation mapping. Through these programs, as well as through assistance provided by other aid organizations, newly independent ‘developing’ countries were helped to extend state claims to control areas called forests, while making these claims visible on the land (through demarcation, legislation and forest laws), in official documents (through mapping and legal codes) and in legal–institutional frameworks (in laws and policies; also in administering bureaucracies).

The primary purpose of development aid for forestry was to promote efficient management of forests for maximum timber production (thereby acting as a kind of natural subsidy for national development). This strategy was underpinned by a newly minted civilizing narrative in which the now discredited colonial ‘white man’s burden’ became instead ‘forestry for development’ (Westoby, 1989). Once again, foresters were taught that exclusive forest control was a prerequisite for effective scientific forestry in aid of the common good. In practice, forest farmers practicing swidden agriculture were their main targets – although research has since shown that uncontrolled logging, not swidden agriculture, was the main cause of forest clearing during this period in Southeast Asia (Dauvergne, 1997; Broad, 1994). Nevertheless, fire-and-brimstone language condemning forest-based agriculture spread throughout the region, along with aggressive policies to create more political forests and criminalize swidden agriculture. Ironically, some FAO-funded studies of swidden agriculture during this period became a later basis for a re-visioning of swidden as a potentially sustainable forest management practice, although not one compatible with maximized timber extraction (Conklin, 1957).

The third moment (overlapping with forestry for development) concerns the way that the production and administration of political forests was profoundly shaped by violent wars, insurgencies and counter-insurgencies that swept the region after the Second World War, even continuing to the present in a few areas (Peluso and Vandergeest, 2011). Violence linked to the creation of political forests during this period went well beyond the use of coercion to control or evict forest farmers from territorialized forests. Postcolonial wars began as anti-colonial struggles in Indonesia and in Indochina, but soon included insurgencies seeking to replace independent states or to create new states through separation of distinct regions from existing ones. Many insurgencies adopted components of the Maoist strategy of launching peasant-based revolutions from the countryside (in addition to revolutionary practices in and from urban areas). Islamist movements were also often based in the countryside, for example insurgencies by groups that operated during the late 1950s and early 1960s in Sumatra, Sulawesi and western Java. In practice, this meant that leftist or Islamist parties, organizations and factions set up bases and insurgent territorial states in ‘jungle’. In contrast, counter-insurgency operations often sought to clear people suspected of supporting these insurgents (e.g. Chinese, Hmong or *Orang Asli* [original people]) out of the jungle by containing them in manageable strategic hamlets. Thus counter-insurgency led Southeast Asian governments (and their US, British and Australian advisors and allies) to ‘take the forests out of the jungle’ in order to facilitate their subsequent transformation into political forests (Peluso and Vandergeest, 2011). These counter-insurgency strategies also often facilitated the movement of relatively trusted groups (Malays, Thais or Javanese) into contested regions so as to convert jungle to plantation agriculture or

smallholder plots. Overall, this process further delineated agricultural territories, jurisdictions and spaces from forests.

In the first two historical moments in the making of political forests, state forestry services were the main agents that demarcated and claimed forest species and territories, while the third moment drew in the greater financial and coercive capacity of state and international militaries, as well as more 'peaceful' rural development programs, in aid of counter-insurgency. In contrast, a fourth and more contemporary moment is characterized by the entry of diverse non-state actors into the making and administration of forests. Transnational conservation organizations have garnered most scholarly attention, but other non-state agents include rule-making bodies such as the Forestry Stewardship Council, along with the many NGOs and companies whose business it is to inspect and certify forests against these non-state standards. Private companies, forest-based 'communities' and indigenous groups sometimes also seek recognition from forestry departments for formal management and extraction rights.

In some places, outright displacement as the goal of political forestry has been replaced by finding ways of including local populations in forest management through terms such as 'agroforestry' and 'community forests', even as such inclusion is usually subject to detailed surveillance and discipline. This is not to say that outright and coercive displacement has ceased everywhere, as contemporary observers of forest plantations in Cambodia can attest. Rather, what is emerging are 'sustainability enclaves' (see below; also Whittington, 2012), where forest managers commit to specific standards with respect to social and environment practices. Meanwhile, the goals of forest management have changed and/or multiplied. Thus, whereas timber or wood fiber and resin production was primary in earlier times, in many areas today such things as conservation, biodiversity protection, endangered species protection, watershed management, eco-tourism and carbon sequestration have come to the fore – not least because of prior over-logging and forest ecology transformation. These shifts have been uneven. Thus, for example, a 1989 logging ban in Thailand marked a wholesale transition to forestry for conservation, while logging (both legal and illegal in relation to political forests) has continued apace in Malaysia, Indonesia, Cambodia and Laos alongside the rising importance of conservation. In states where timber extraction remains important, companies are increasingly likely to claim (or perform) adherence to diverse sustainable management rules. On paper at least, this generally involves demonstrating some element of social responsibility to resident or adjacent communities, often in collaboration with NGOs and other non-state entities.

Forest conservation in this fourth moment frequently targets the remainders of what we call 'charismatic forests' – that is mature forests, as well as forests containing rare species or unique species configurations that have not been recently or noticeably cleared. Here, conservation organizations' focus on endangered or charismatic species evokes earlier species-oriented approaches. However, these modern species approaches often become territorialized in conservation areas that criss-cross other political forests and even private land. Territorial boundaries are used as a key management strategy – for example, in the demarcation of conservation 'corridors' through otherwise private or community land, or in the setting aside of nature reserves.

Two examples illustrate the range of the 'grabbing' of rule-making authority in making and remaking political forests by actors outside of state institutions. First,

Barney (2014) describes a pulpwood plantation project in Lao PDR. A company obtained leases to establish plantations and organized its project in line with the standards of the Forestry Stewardship Council (FSC), in order to obtain FSC certification of its 'sustainable management' practices. To meet these standards, it had to negotiate compensation for villagers who lost swidden fields to the plantation, while making broader commitments to social responsibility (e.g. projects to improve food security, provide work, and enhance health and education). Barney labels the resulting forest plantation a sustainability enclave, drawing on Whittington (2012), who uses the term to describe how a hydropower company and transnational NGO (International Rivers) similarly worked together to produce an enclave where dam impacts were managed in potentially sustainable ways. In Barney's case study, it was the standards of a non-state organization (the FSC) that provided management rules and guidelines that went beyond government laws and regulations. The goal was, nevertheless, displacement of forest-based farmers for the purpose of creating a political forest (a pulpwood plantation) and thus elimination of agriculture from the area.

Second, Li (2007) describes how a transnational NGO (the Nature Conservancy) helped to create political forests through involvement in the management of a national park in Sulawesi (Indonesia) starting in 2001. With the agreement of park staff, it devised a collaborative management program that included writing a management plan, mapping land-use zones, collaborative monitoring of vegetation and biodiversity with villagers, and creating territorialized community conservation agreements with 'unruly' villagers whom the NGO hoped it could transform into 'environmental subjects' – that is, they would adjust their behavior and ideas to conform with NGO ideas of how conservation should take place in and around these political forests. As with many such projects, an unwillingness to confront the land politics by which villagers had been displaced ultimately undermined this NGO's efforts to mobilize villagers to help them conserve the forest. Although this project ended in failure, what is of interest here is that the NGO had used the idea of the political forest in its efforts.

There is indeed a certain measure of continuity here, as prior moments in the making of political forests sustain or inform new political forests. In the project described by Barney, for example, the plantation was enabled by the Lao government's prior zoning of land into political forests and its allocation of some of this 'forest land' as a concession to the company. Barney (2014) also emphasizes how the company not only sought FSC certification, but was fully compliant with the country's legal standards with respect to a series of land issues (see also Cashore and Stone, 2012). The Nature Conservancy's park management program described by Li (2007) similarly used the state-defined national park as its territorial basis, while ensuring that the program was based in national law.

Political forests are also strengthened today as a result of a process of de-gazetting that enables land conversion for other uses. For instance, while land already designated in Indonesia as 'conversion forest' is taken out after logging or clearing for agricultural plantations (often rubber or oil palm), the legal excision process itself – and the whole discourse of excision from the forest for private or private-public uses – actually strengthens legal recognition of remaining tracts as political forest. Meanwhile, conflicts over the classification of species as 'forest' or 'agricultural' still animate debates over political forests and the power they may impart to states (and specific

agencies) through extra-state channels. Recent contestations between state actors, scholars and private interests over the appropriate classification of oil palm exemplify this. Indonesian foresters wanted to render oil palm a forest species and thereby reap the benefits of fees paid by the international community for planting carbon-saving species. They were defeated, however, by international certification institutions and others outside the Indonesian state that preferred the current designation.

Finally, ‘civilizing’ arguments continue to circulate through the making of political forests, even with the increasing role of private organizations. What has changed is the agent who ‘brings civilization’: states are now described frequently as having failed to properly manage or protect forests, valued species or local communities because of corruption, conflicts of interest or lack of capacity to enforce their authority. Now, it is enlightened (often international) conservation organizations and ‘for-profit’ companies that are the bearers of modern conservation consciousness, compensating for what they portray as inadequate states unwilling to protect vulnerable subjects (Vandergeest and Unno, 2012).

Through these four moments, the making of political forests has always been a contingent process that has been challenged and undermined by resident villagers, competing state agencies, private businesses, even by professional foresters themselves. Formal management plans can easily become ‘paper plans’ that bear little relation to what actually happens in political forests – as loggers do not follow regulations, farmers clear forests for agriculture, and so on. Indeed, much of the history of political forests in Southeast Asia has been a history of their creation based on overly optimistic scenarios for how they can be managed to enhance both production of valuable resources and conservation of essential ‘environmental services’. Subsequent failures mean a continual renegotiation of the boundaries that define political forests and of the uses that are permitted there as forestry agencies are forced to accommodate millions of forest residents engaged in decidedly non-forest production activities.

CONCLUSION

We have coined and elaborated the term political forests to make a political-ecology argument – namely, that forests today have been produced through politics. Political acts creating forests include territorializing actions, reservation of forest species and warfare. In this chapter, we focused on how states make political forests, but the making of political forests has also contributed to the making of states insofar as states too are defined by territorial control over land, people and space (Lund, 2011) – an example of what Jasanoff (2004) calls the ‘co-production of science and society’. In the process, the making of political forests and states has profoundly affected the lives and livelihoods of millions of people across Southeast Asia and beyond. It is not surprising, then, that this has been an important focus of political-ecology research.

Both political forests and nation-states remain open-ended and incomplete projects. Many Southeast Asian forests are still used by farmers, usually without legal sanction, although new surveillance technologies make it increasingly difficult for them to hide practices that are illegal in postcolonial political forests. Under these conditions, new challenges to forest–farm boundaries have emerged, often framed in scientific and

disciplining language of agroforestry and community forestry. Such programs are presented as more acceptable than visions of forests without people. While acknowledging the presence of people in forests, however, these ‘alternatives’ also bring local practices firmly under state law and national control, thereby having a clear disciplining effect on them. Recent commodification of products and territory contained within political forests (e.g. eco-tourism, carbon markets) similarly do not change the basic practice of political forestry: their bases and legal justifications almost always lie in the same material and discursive practices that were forged in earlier colonial and postcolonial moments that first made the political forest. As such, political ecologists need to combine historical and contemporary analysis if they are to understand how political forests (a bit like the states to which they are linked) represent an enduring if flexible tool of ‘forest’ politics.

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13. Resources, wars and violence

*Philippe Le Billon**

The idea that wars are associated with natural resources is probably as old as war itself. Yet as consensus built on climate change, peak oil and the idea of the Anthropocene, deterministic views on the violent outcomes of resource scarcities have come to further prominence over the past two decades. The 1994 genocide in Rwanda was widely seen as the result of ethnic grievances exacerbated by overpopulation and land scarcity (Homer-Dixon, 1999). Fast-rising primary commodity prices, with oil climbing from \$9 per barrel in December 1998 to \$147 per barrel in July 2008, reinforced scarcity and ‘peak everything’ narratives (Heinberg, 2007; Le Billon and Cervantes, 2009). The US-led invasion of Iraq in 2003 was mostly understood as an ‘oil war’ (McQuaig, 2006), while since the early 1990s ‘oil producing countries have been about 50 percent more likely than other countries to have civil wars’ (Ross, 2012: 145). So-called ‘conflict minerals’ – such as coltan and ‘blood diamonds’ – took center stage in how wars in Africa were interpreted (Le Billon, 2008; Nest, 2011). Popular geopolitical imaginaries were also fired by movies such as *Syriana* (2005) and *Avatar* (2009), while human rights advocates and environmental groups pointed at oppression, dispossession and conflicts on the ground (Gary and Karl, 2003; Bebbington, 2011).

Perspectives on resources and war have been mostly environmentally deterministic. These include Hobbesian perspectives (i.e. resource wars as rational individualism in the absence of authority); neo-Malthusian ones (i.e. resource wars resulting from resource scarcity purportedly induced by human population growth); positivist (i.e. resource opportunities motivating and enabling wars); and, to a much lesser extent, Schmittian (i.e. historically complex identities reified in part through resource conflicts) (Korf, 2011). Popular (geo)political narratives of resource wars have mostly drawn on Hobbesian and neo-Malthusian perspectives; in essence perspectives that assert violent (but rational) scrambles over scarce and valuable resources (Klare, 2001).¹ To paraphrase the Prussian war thinker Clausewitz, resource wars would thus be the continuation of resource politics by military means. Mostly used in reference to inter-state conflicts over the control and supply of ‘strategic resources’, conventional formulations of the concept of resource wars are often associated with narrow and militaristic notion of ‘resource security’ (and in particular ‘energy security’).

In contrast to environmentally deterministic accounts of resource-related violence, political ecology approaches understand such violence ‘as a site specific phenomenon rooted in local histories and social relations yet connected to larger processes of material transformation and power relations’ (Peluso and Watts, 2001: 5). Political ecologists are concerned with the multiple forms of violence associated with resource control and access (and more broadly throughout the different phases of exploitation, transformation, consumption and disposal along the commodity chain, as well as its horizontal connections to those indirectly related to it; see Hartwick, 1998). Through a

focus on uneven power relations and the ecological dimensions of resource-based political economies, political ecologists have emphasized the ‘many violent ecologies of global inequalities’ (Robbins, 2012: 1), while developing a sensibility to physical, structural and symbolic forms of violence (to use the typology of Galtung, 1990). From such a perspective, armed conflicts lie on a broader continuum of violence that must be addressed if more equitable and peaceful approaches to resource control and access that account for historically marginalized local communities are to be realized. Accordingly, political ecologists have explored violence’s many dimensions – ranging from acts of physical violence conducted by resource-funded armed combatants (Le Billon, 2012b), to structural and symbolic forms of violence around coffee production (Nevins, 2003), and from the ‘silent violence’ of social famine (Watts, 1983) to the ‘slow violence’ of insidious cumulative pollution (Nixon, 2011) or the cosmological violence of refusals to accept different ontologies of ‘nature’ (Escobar, 2006; Blaser, 2013).

Political ecologists have also demonstrated that the concept of ‘natural resources’ is equally complex. Resources should not be considered simply as ‘raw materials’ extracted from ‘nature’, but rather as complex objects arising from socio-natural processes involving a wide array of material and discursive processes (Swyngedouw, 1999). The terms attached to resources – such as resource creation, development, production, extraction or exploitation – hint at the politically loaded ideologies attached to their understanding (Bridge, 2006). Political ecologists not only unpack these ideologies to explore how they might shape our analyses of – and responses to – ‘resource wars’, but also seek to explain how the ‘environment comes to embody ... violence and to reproduce it in various forms’ (Nevins, 2003: 677).

In so doing, political ecology contributes useful insights to the study of resource-related violence. Rooted in field-based analyses of power relations around uneven access to resources, such research has assessed relations among resources, violence and war. Rather than seeking to draw universal laws or to make prophecies of future ‘resource wars’, political ecology strives for highly contextualized accounts enriched by ecological and political economy perspectives and processes. Building on Marxian political economy as well as a wide array of social theorizing including Foucauldian power/knowledge, feminism and actor network theory, political ecology affords critical perspectives on often taken-for-granted processes. Using multi-scalar, historically informed and culturally sensitive entitlement analyses, the research thus aims to complicate if not overturn simplistic narratives about violent conflicts supposedly resulting from environmental scarcity or resource abundance (Bryant and Bailey, 1997; Robbins, 2012). For example, by carefully analyzing the mutual influence of military control with access regimes and entitlements for common-pool resources in Sri Lanka, Korf and Fünfgeld (2006) have exposed the essentialism and analytical limits of scarcity/abundance arguments, while demonstrating how the political geographies and economies of war work across various scales to confine livelihood options for many resource users. The violence of militarized landscapes in relation to resource entitlements has also been exposed in the case of war’s legacies, such as the devastating effect of landmines on rural populations (Unruh et al., 2003); the military roots and coercive effects of forest regimes tightly connected to counter-insurgency campaigns (Peluso and Vandergeest, 2011); the militarization of ‘natures’ as in the use of honeybees (Kosek, 2010); or the violence involved in branding, as in the case of Burmese teak

(Bryant, 2013). At the same time, what Martinez-Alier (2004) calls the ‘environmentalism of the poor’ not only helps to understand motives and registers of dissent, resistance and compromise in relation to violence, but also helps to set an ‘environmental justice’ agenda more attuned to the values and livelihoods of local communities.

Rather than understanding violence through linear models linking environmental scarcity to social effects such as forced migration and social segmentation (Homer-Dixon, 1999) or associating resource wealth with institutional and economic under-performance (Sachs and Warner, 2001), political ecology thus opens up research to a wider array of historically and geographically contingent actors and processes – something that Watts (2004) terms the ‘resource complex’. Such opening up not only broadens the number of ‘variables’ while avoiding the pitfall of reductionist ‘hypotheses’; it also acknowledges the hybrid ‘socio-natural’ character of resources themselves, the importance of situated perspectives, and the contingency of violent processes (Cramer, 2006).

Engaging possible relations among resources, violence and war through a political ecology perspective also offers a way to move from ‘securitization’ – the reconfiguration of issues through a narrow and often violent and historical oppressive security lens – towards ‘worldization’ whereby the recognition of distinct ontologies, values and desires is privileged over the mobilization of security narratives and the institutional imperative of self-righteous intervention. This process broadens horizons to diverse cosmologies and ‘ways of being’ while allowing the build-up of new understandings and solidarities.² As such, political ecology approaches bring a sensibility that can help ‘re-place’ mainstream development agendas by highlighting the violent landscapes of resource extraction, livelihood dispossession and cultural assimilation – such re-placement finding its expression in the search for (subaltern and non-violent) ‘post-development’ (Escobar, 2011). Following this introduction, I next briefly engage with concepts and narratives about resources and resource wars from different disciplines, before presenting specific arguments linking resources, violence and war in light of political ecology contributions.

FROM EARLY TO (POST)MODERN RESOURCE WARS

Resources have long attracted attention in the study of wars; accounts of resource plunder and destruction in war narratives date back to at least 3600 BCE. Dominated by sociobiological and geopolitical explanations, historical accounts of resource wars rely on two often-intertwined explanations. The first views resources as a motivational factor for war: raiding, looting, pillaging, grabbing, capturing, annexing and conquering all combine a sense of violent dispossession and resource appropriation. Such a motivational dimension can be mistaken for the consequences of social behavior during or after conflict: state-led military annexation and house looting by individual soldiers are both violent dispossession but they differ in scale, intentionality, means and outcomes. Furthermore, the violence of resource-based regimes based on ‘accumulation by dispossession’ may be rendered ‘invisible’ – notably through ‘developmentalist’ and

‘securitization’ discourses that tend to legitimize dispossession and the use of force (Le Billon, 2012b). Here the importance of ‘decolonizing’ resource regimes is thereby emphasized.

The second explanation is that some resources are crucial for the conduct of warfare itself, thereby meriting a ‘strategic’ status. Such resources have long preoccupied military planners, notably through anticipating the need for wars to obtain their control. In the extreme, a ‘preemptive’ war might even be conducted – accessing strategic resources and thereby denying access to potential enemies has long been a key ‘great game’ of military strategists. At the same time, the strategic and security dimension of a resource needs to be considered in light of often powerful corporate interests that can motivate or at least benefit from such association. These two explanations – resources as loot and resources as a factor in military strategy – still dominate much of the media, policy and scholarly literature on resources and armed conflicts (Peters, 2004; Klare, 2008).

Historical perspectives on the subject proliferate. Thus studies of resources and early warfare in pre-agricultural societies have largely focused on the role of material self-interest, the forms of conflict, the organization and the sedentarization of social groups, as well as the relative availability, density and predictability of resources (Ferguson, 1984). Ethnographic, archeological, evolutionary and comparative social ecology studies associate early warfare with territorial control of abundant resources (mostly food) and uncertainty about resource access. Contrary to some environmental scarcity narratives, resource abundance and higher population densities would result in territorializing practices as well as ‘spontaneous conflicts over resources’ linked to trespass or intrusion, while resource scarcity and low population densities would result in mutually beneficial cooperation, not conflict (Kelly, 2000: 133). Moreover, resource unpredictability – rather than abundance or scarcity per se – seems to have been a key factor in conflict; while unpredictability increased both competitive and cooperative behavior, the weight of evidence for pre-industrial societies rested on the side of higher conflict rates (Ember and Ember, 1992). More broadly, the transition to permanent agriculture and the transformation in resources as human groups interacted more potently with ‘nature’ is often understood as a key factor in the frequency of warfare (Wright, 1983).

In common with the classical period, contemporary Western geopolitical perspectives on resources are dominated by the equation of trade, war and power (Findlay and O’Rourke, 2007). Extended through colonial plantation economies, tropical slave-produced commodities became the core of Western imperialism (Clarence-Smith, 1985), with duties on sugar, tobacco, cocoa, cotton, coffee and opium providing ‘modernizing’ states with the finances to open new markets through warfare (Armitage and Braddick, 2002). Since sea power itself rested on access to timber, naval timber supply became a critical preoccupation for major European powers from the seventeenth century onwards (Albion, 1926) – a situation comparable to the case of oil in the twentieth century. Given the strategic role of resources, concerns about resource scarcity and war received considerable attention from contemporary scholars such as Malthus, who not only sought to see ‘vices of mankind and able ministers of depopulation’ usefully staving off (rather than resulting from) food scarcity, but more

broadly expressed his doubts about and rejection of the egalitarian ideals of the French Revolution (Malthus, 1798: 44).

The importance of resource flows for industrialization and militarization – most notably coal, iron and later oil – reinforced an ideology of resource competition among European powers, notably expressed in a flurry of studies on access to raw materials during the first half of the twentieth century, and especially between the two world wars (Staley, 1937; Westing, 1986). Resource supply geopolitics continued to flourish during much of the Cold War, as manifested in the stockpiling of critical materials and ‘foreign investment’ policies (Krasner, 1978). Yet the growing assertiveness of Third World states during this period of decolonization transformed the political landscape of sovereignty over natural resources and provided a (new) twist on ‘resource wars’ ideologies (i.e. the political and economic leveraging of resource dependence among importing countries). Resource wars narratives also provided grounds for peace-building projects such as the 1951 European Coal and Steel Community Treaty that turned these two sectors from a source of contention between France and Germany into one of abiding cooperation. Although relaxed during the 1990s (but giving way to other ‘resource war’ concerns then, as discussed below), ideologies of (militarized) ‘resource supply’ security resurfaced as commodity prices climbed after 2002, China increasingly challenged US hegemony, and relations with key resource-exporting countries were (selectively) re-articulated in the context of the ‘War on Terror’. These ideologies still inform governmental and corporate decision-making in resource management, particularly in relation to oil, food and scarce but valuable minerals such as rare earths (recently decried by some as being a quasi-monopoly of China).

By the late 1950s, broader geopolitical conceptualizations of security began to incorporate issues such as population growth, environmental degradation and social inequality in poor countries (Sprout and Sprout, 1957; Falk, 1971; Timberlake and Tinker, 1984). The concept of ‘environmental security’ thus emerged out of debates on environmental ‘limits to growth’ in the 1970s and fears of political instability caused by environmental scarcity in the South (Meadows et al., 1972; Brown, 1977; for a critique, see Peluso and Watts, 2001; Dalby, 2002). Yet this concept has been criticized as representing a skewed and controversial ‘securitization’ of environmental issues, unfairly casting blame on the poor, uncritically legitimizing support for military solutions, while constructing biased identities and narratives of endangerment (Dalby, 2002).

With the end of the Cold War came greater attention to the internal mechanisms of war as the end of superpower ‘clientelist’ politics, and support for belligerents (notably via ‘proxy wars’) changed the conditions for armed conflict worldwide. A view emerged that violent scrambles for resources among local warlords, regional powers and international actors was a major feature of contemporary conflict, particularly given the ‘declining’ role of ideology in regional or local conflicts (Reno, 1999; Klare, 2001). Resource wars narratives thus mostly interpreted conflict in several African countries during the 1990s as ‘diamond wars’, while by the early 2000s other narratives focused on international tension over key resources, with the US-led invasion of Iraq putting the concept of resource war at the forefront of global anti-war activism.

As in the Cold War, the US-led War on Terror at times developed discourses that connected security threats and military strategies to corporate interests while conflating

concepts of freedom and security. Here, the process was aimed at regimes opposing the USA that were also reluctant to open their resources to Western (or at least US) companies – most prominently Iraq. Debates on oil and US security shifted in light of 9/11, with on the one side those opposing US military interventionism arguing that the War on Terror was but a convenient cover for a renewed ‘imperialist oil grab’ in the region, and, on the other, those supporting such interventionism stressing the links between oil and terrorism that illustrated problems of authoritarian (and warmongering) governance in several oil-producing countries. To this latter rationale should of course be added business interests – which often combine in a deadly mix neo-liberalization and democratization agendas with the militarized securitization of resource supply and profits. As the Bush administration reframed the War on Terror in order to justify an attack on Iraq – first as a ‘pre-emptive’ war and then as a ‘war of liberation’ – the US administration portrayed its Middle East foreign policy as broadening from securing a free flow of oil out of the Persian Gulf to promoting democracy in the region (Le Billon and El Khatib, 2004) – a claim some Republicans later sought to boost (and legitimate) in the context of the ‘Arab Spring’ (Nikpour, 2011).

Most accounts of future resource wars are associated with a combination of rapidly increasing demand for raw materials, growing resource shortages and contested ownership (Klare, 2008). From this perspective, increasing demand for raw materials is mostly associated with the rapid growth of emerging economies since the late 1990s, especially China but also India (Zweig and Jianhai, 2005). Yet if most narratives stress rapid industrialization and rising consumerism in China as driving demand, part of these resources are redirected to the rest of the world in the form of exported manufactured goods, thereby pointing at broader responsibilities for resource consumption. Among narratives of competitive resource control and contested resource ownership, many pit China against the USA. Both countries, from such a perspective, are seen as deploying aggressive ‘resource diplomacy’ that supports (or topples) dictatorships while bolstering their own military capacities. Oil, again, has taken center stage with geopolitical accounts focusing on the Persian Gulf – above all, Iraq’s oil field dispute with Kuwait, the former’s subsequent military invasion of the latter, and the ensuing US-led intervention. Besides relations with the USA, China’s ‘global quest for energy’ is portrayed as a source of tension, especially in Asia (Lee, 2005). Meanwhile, narratives of ‘peak everything’ today abound (Heinberg, 2007), which, along with climate change, act as a ‘threat multiplier’ via such things as food insecurity, forced migration and institutional breakdown (Dalby, 2009; Sommerville et al., 2014).

WARS, CURSES AND THE VIOLENCE OF RESOURCE PATHOLOGIZATION

Reflecting on nature and the ideology of science, David Harvey (1974: 256) warned of the ‘profound political implications’ of supposedly ethically neutral scientific discussions of the population–resources relationship, especially a projection of neo-Malthusian views that invited ‘repression at home and neo-colonial policies abroad’. Four decades later, this warning still resonates through a number of concepts linking resources and violence, such as ‘resource wars’ and ‘resource curse’ (Le Billon, 2012b).

Resource wars narratives not only reduce the scope of potential explanation for the causes and processes of conflicts, but also directly influence the representations of their context and proposed ‘solutions’ (Cooper, 2006).

In doing so, these narratives often end up pathologizing at least three dimensions of resource–violence relations – by which I mean that these dimensions become defined purely as an ‘abnormal’ condition, a diseased status separate from (and dangerous to) ‘healthy’ economic and political relations. First is the pathologization of entire resource-producing regions as being under the profound (and nearly inescapable) negative influence of resources on economic and institutional performance – the ‘resource curse’ dimension. Second is the pathologization of social conduct in relation to resource control, and in particular the idea that people in general will ‘naturally’ fight over resources rather than find cooperative solutions – the ‘resource conflict’ dimension. And third is the specific pathologization of the conduct of belligerents whereby resources not only affect the financial opportunities and general feasibility of armed struggle, but also negatively influence the recruitment pattern, the (self-) selection of group leadership, and the motivations and strategies of armed groups towards greater and more indiscriminate abuses against the population – the ‘conflict resource’ dimension (Weinstein, 2007).

Among the consequences of such pathologization are political de-legitimization of protest and popular (armed) resistance (Zalik, 2011); the criminalization of small-scale mineral exploitation by local communities and regional migrants that undermine livelihood coping mechanisms (Le Billon, 2008); and the prioritization of a certain types of economic activity (such as large-scale mining or logging) over local livelihoods, as well as environmental and cultural practices (Le Billon, 2000). For Kuntala Lahiri-Dutt (2006: 15), resource wars theories, especially the resource curse argument, (re)produces

a picture of complete lack of control and disorder in the Third World, whose inhabitants – by some irrational logic of nature – have found themselves endowed with resources that they cannot or do not know how to deal with in an orderly manner. They envisage a paranoid fear about the unruly Third World, a landscape of apprehension, risk and insecurity where conflicts could only be resolved for one and all if either state-owned or multinational corporations take over the control and ownership of mineral resources, and manage them in a systematic manner – in the process putting their profits first and taking over the control of what should rightfully belong to the communities.

Such a picture is well anchored into neo-colonial mindsets while being instrumental in processes of ‘accumulation by dispossession’ (Harvey, 2003). A simplistic reading of the resource curse argument is also that more money for local authorities will only bring greater poverty and insecurity to the population. From this standpoint, a dangerous logical next step is to argue that revenues would better accrue to companies in the form of profits than to local governments in the form of rents. This is not the main point that most activists pursue, of course. Yet the onus of global initiatives, such as the Extractive Industry Transparency Initiative, has been clearly put on revenue transparency rather than rent maximization, and critically shown to be (mostly) addressing the reputational concerns of extractive companies rather than the developmental concerns of local populations (Gillies, 2009). This logic was also applied

through the Kimberley Process Certification Scheme, which was targeted against diamonds extracted in rebel-held areas rather than those produced under grave human rights abuses in ‘non-rebel’ areas (Le Billon, 2008).

WORLDING RESOURCE VIOLENCE

Anthropologist and political ecologist Arturo Escobar (2006) has rightly pointed to the importance of accounting for cultural differences in explaining ‘resource conflicts’, a focus that is frequently absent from environmentally deterministic mainstream accounts. Here I will briefly discuss such cultural sensitivity through Heidegger’s concept of ‘worlding’ in the sense of the multiplicity of meanings of ‘being-in-the-world’. By connecting the idea of ‘worlding’ resources to resource conflicts, political ecologists not only acknowledge the diversity of perspectives that exists in the world today, but also situate them in spatially and historically dynamic ways – thereby facilitating trans-scalar and inter-temporal analysis. But such an engagement with diverse ontologies must avoid a simple acknowledgment of diversity – one that would only thereby reinforce a Western epistemology of ‘cultural diversity’. Instead, it must strive to maintain a ‘pluriverse’ and openness of outcomes – whereby ‘pluriverse entails imagining the performative enactment of multiple, distinct ontologies or worlds’ (Sundberg, 2013: 38), which ‘bring themselves into being and sustain themselves even as they interact, interfere, and mingle with each other’ (Blaser, 2013: 55).

As suggested above, violence relating to resources often starts with distinctive ontologies of what come to constitute resources. For Escobar (2006: 9), ‘many communities in the world signify their natural environment, and then use it, in ways that markedly contrast with the more commonly accepted way of seeing nature as a resource external to humans and which humans can appropriate in any way they see fit’. Such worlding extends to the register of expressions involved in conflicts. Persuasively arguing a blending of political ecology and ecological economics that acknowledges values incommensurability, Joan Martinez-Alier (2004: viii) has emphasized in this regard that ‘ecological conflicts are fought out in many languages’.

Beyond questions of how certain cultures see, value and fight over ‘nature’ and ‘resources’ differently, political ecologists also consider how transformations bring about ‘new worlds’ and, to use a crude binary divide, how transformed natures affect cultures through new socio-natural worlds. Resource conflicts are thus inescapably cultural conflicts through worldviews and representations but also through material implications. In the most extreme cases, dominating forms of resource exploitation constitute cultural genocide – a concept first recognized in a 1994 draft of the United Nations Declaration on the Rights of Indigenous Peoples. If socio-natural differences are generally described as being most acute between resource companies and ‘non-Western’ indigenous populations, divergences are also becoming more common within ‘Western(ized)’ societies due to the growth of contrasting worldviews linked to pressing issues of the Anthropocene (Dalby, 2009) and what Bruno Latour (2014) calls the new ‘geo-politics’ in which the earth itself is no longer seen as playing a backstage role.

Driven in large part by criticisms of consumerism and ‘sustainable’ economic growth, the recent extension of politics into resource extraction debates has been

noteworthy. This has involved going beyond ‘narrow’ consideration of conflicts over socio-environmental damage to broader discussion of being-in-the-world that includes local sovereignties over life-paths and global responsibilities for the state of the environment. Not only directly affected communities, but also regional authorities are ‘demanding recognition for local visions of development that are not compatible with mining – and that cannot be adequately accommodated by current decision-making processes’ – as in the case of Argentina, where several provincial governments opposed the ‘opening up’ of the country to highly profitable mining ventures by a national government desperate for foreign investments in the wake of the 1999–2002 financial crisis (Walter and Martinez-Alier, 2010: 281). While local communities and provincial authorities were able to peacefully stop open-cast mining through referendum and legislation in this particular context, such resistance is often met with the targeting of social activists, the violence of a ‘state of emergency’ and the forceful removal of protesting communities from resource sites (PBI, 2011).

CONCLUSION

Accounts of resource wars have tended to be narrowly focused on material motivations and contributions to warfare. Dominated by classical geopolitical perspectives, these accounts have sought to provide a ‘big picture’ of militarized risk over ‘strategic’ resources. Such narratives reflect in large part the anxieties of (Northern) resource dependence on sovereign (Southern) resource-exporting countries. Here anxieties are seen to be built on the premise that ‘sovereign’ resource exporters will become ‘too assertive’ against – and indeed impervious to – the ‘leverage’ of major powers due to the grave risks surrounding the political and economic fallout from supply disruption (e.g. US anxiety towards Iran or a recent report for the German military on potential impacts of high commodity prices; BTC, 2011). This premise ignores, to some degree, the mutual dependence of exporters and importers (thus the ‘oil weapon’ has been much more frequently used *against* than *by* exporters).

Anxieties are also based on the fear that access to, and supply of, resources will be jeopardized by the intrinsic ‘instability’ of domestic socio-political processes in exporting countries – such situations thereby demanding military intervention (mostly in the form of selective military support for allied autocracies). This point has empirical validity (insofar as countries that are militarily supported by a permanent member of the Security Council face fewer wars), but ignores other types of violence that often result from autocratic rule. And anxieties result from a sense of responsibility and complicity in abuses within producing areas, as illustrated in the campaigns against conflict diamonds in Sierra Leone or violence-plagued coltan production in the Eastern Democratic Republic of Congo (Nest, 2011). While the latter campaigns help bridge a too frequent (and intentional) disconnection between resource production and consumption (i.e. the commodity fetish), they often end up narrowing the range of explanations and thus solutions to such abuse, while often further caricaturing producing areas. Hence (well-meaning) strategies to address these anxieties end up either perpetuating or adding to the various forms of violence involved. Economic

sanctions, for example, often end up hurting local populations while bolstering regimes and increasing the profits of political cronies.

To sum up, resource wars narratives suffer from several shortcomings. First, resources are not simply 'materials' motivating or enabling the use of military force. While the physical materiality of resources and their technical and economic functions needs to be acknowledged, resources are also social processes embedding values, desires and needs. Geopolitical perspectives themselves contribute to how resources are represented, understood and acted upon.

Second, classic geopolitical perspectives on resource wars inform and reflect dominant geostrategic policies and worldviews. As such, they bring about Manichean or dichotomized constructs of place and identity, as well as biased conceptions of security. A focus on resources through a security lens not only creates a blind-spot to other dimensions of conflicts, but also drastically reduces the type of understandings and relationships necessary to foster a broad and lasting peace among actors. To caricature, there is indeed more to the Persian Gulf than oil. Resource sectors do influence the (un)making of places, political systems and social movements involved in conflicts. But understanding this influence solely through a resources wars perspective wrongly narrows knowledge and understanding to a simplistic competitive 'struggle'.

Third, the mere presence of resources should not be simply understood for the current or future stakes that they represent for a producing area. From a resource wars perspective, some resource-exporting countries may seem intrinsically 'unstable' and in need of foreign military intervention to preserve 'vital' resource flows. Such justification is often provided without any reference to the historical role of resource sectors contributing to such instability. Oil's significance in contemporary conflicts in Iraq, for example, should be notably situated within the historical context of coercive British colonialism in the early twentieth century. More generally, conflicts over resources are often played in a 'repeated game' insofar as histories of past conflicts inform present ones. Where the Western press portrays a 'maverick' Saddam Hussein firing a rifle during official ceremonies, for example, the Iraqi public recognizes the symbolism of a president grasping historical legitimacy by firing a British rifle captured during the 1920–21 revolts against British rule. Hostilities thus build on collective memories and previous conflicts. Examining patterns of farmer–herder conflicts in the Sahel, geographer and political ecologist Matthew Turner (2004: 878) points out that

the land-use conflict engaged in by herders differs significantly from the here-and-now conflict over scarce resources invoked by standard uses of the term 'resource conflict'. These are conflicts that are waged over the long term with the conflict's history being invoked and reworked to make moral claims in the present.

Studies of 'resource wars' thus benefit from a critical analysis of regimes of accumulation as well as a 'thick' historical and geographical contextualization. This involves relating the past to the present while acknowledging contingencies, as well as connecting resource locales to places of belonging and spaces of social relations.

From this perspective, narratives of future conflicts over 'increasingly scarce resources' and anthropogenic environmental change need to be considered in the light of particular geographies of vulnerability, threat and insecurity. This sort of analysis

contrasts with the sorts of ‘realist’ assessments and prognoses of classic geopolitics mentioned in this chapter, which mostly rest on narrow conceptions of material scarcity and confrontational politics. The latter research risks raising unnecessary fears, exacerbating antagonisms and contributing to conflict – indeed, the greatest danger of ‘resource wars’ may simply be that such ideologies become self-fulfilling prophecies.

All of this points to the need for more self-reflexive and holistic perspectives on environment, resources and insecurity (Barnett, 2001; Dalby, 2009). These perspectives must go beyond narratives of scarcity, greed or resource-curse-induced conflicts to encompass broader causes, specific historical and geographical contexts and contingencies, as well as the diverse relations between resource sectors and social relations and the environment, including multifaceted violence. Political ecology’s critical approach contributes much here. Its attentiveness to uneven power relations, its critical reading of historical contingencies and regimes of accumulation, its grounded analysis of the various actors, its engagement with diverse ontologies, and its multi-scalar analysis of spatially differentiated and complex socio-ecological processes provide the requisite breadth and nuance to understand the many forms of violence occurring in relation to resources.

NOTES

* This chapter is an adapted version of Le Billon (2012a) and is used with permission.

1. The term ‘resource wars’ is frequently defined as armed conflicts revolving around the ‘pursuit or possession of critical materials’ (Klare, 2001: 25). The term was popularized in the 1980s as a geopolitical device to explain and exacerbate renewed tensions between the USA and the Soviet Union over the control of fuel and minerals in disputed ‘peripheries’, notably minerals in Southern Africa and oil in the Middle East (Broad, 1980).
2. For a Quechua woman from Peru enquiring about the soundness of development approaches to bring about poverty reduction through mineral resource exploitation, ‘you keep talking about building capacity in our country, but do you have the capacity to understand us?’ (pers. com., Glenn Sigurdson, 2013). Resource companies have often responded to this query by sending anthropologists to local communities, rightly stirring debates about the ultimate goals of such ‘worldism’ – critics pointing out that such better understanding of local communities and their perspectives were still aimed at ‘developing’ resource projects and ensuring the profitability of financial investments (Ballard and Banks, 2003).

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14. Benefit sharing in environmental governance: beyond hydropower in the Mekong River Basin

Seungho Lee

While a large and still growing literature dissects the political, economic and ecological dynamics and implications of hydropower development around the world, much less attention has been devoted to assessing possible benefits that might accrue to riparian countries and stakeholders in this process. The result can be over-simplified analyses cast in black and white that fail to capture the often complex socio-natural realities and messy politics involved in such multi-scale activity. This is surprising, given how central hydropower is to both the discursive and material articulation of ‘development’ in modern times.

Perhaps due to its radical disposition, the research field of political ecology has been no exception to this rule. It has thus developed an international reputation over the past few decades for in-depth critical studies of how states and other actors (such as transnational corporations and sometimes even non-governmental organizations) promote policies and practices that simultaneously harm local communities and the biophysical environment (Bryant and Bailey, 1997; Neumann, 2005; Peet et al., 2011; Robbins, 2012). This work is not to be gainsaid, given the ample empirical evidence of the harmful effects of global capitalism. But this critical agenda sometimes thereby obscures occasions when more positive stories can be told, even as it may hide a more complex rendering of how far and who might benefit from hydropower and other forms of development.

At the same time, political ecology has often tended to be caught in a ‘local trap’ whereby the analytical focus and normative concern are largely or even exclusively at the local scale. This has meant that insufficient attention is given to multi-scale and especially extra-local-scale dynamics. To be sure, some scholarship escapes this trap by assessing the latter in relation to such things as bilateral aid flows (Kim, 2009), Bretton Woods institutions (Goldman, 2005), and large dams (Baghel and Nusser, 2010; Fletcher, 2010; Nusser, 2003). Yet much more attention needs to be given to global as well as regional policies and practices in the quest for a truly ‘global’ political ecology (Peet et al., 2011). In the process, such attention may also help to address the recurrent complaint that political ecology seems incapable of contributing to policy-making at just about any scale (Walker, 2006; Blaikie and Muldavin, ch. 30 this volume).

This chapter thus seeks to contribute to political ecology in two main ways. First, it examines inter-state relations at a regional scale through a case study of benefit making linked to hydropower development in the Mekong River Basin in South East Asia. A key issue concerns how China and its upstream hydropower development projects affect the four downstream countries (Thailand, Lao PDR, Vietnam and Cambodia): does China alone benefit here? How do the other countries fare under these circumstances and what is their reaction? Second, it explores the possibilities for positive

outcomes in a situation seemingly destined to be the source of much inter-state and inter-stakeholder conflict (in a region long torn apart by warfare). To this end, the chapter draws on a benefit-sharing framework to assess whether, when seen in the round, benefits flow (to a greater or lesser extent) to all riparian countries in the Basin. Here, I thus seek to combine critique and solution in political-ecology analysis. Indeed, this approach echoes a point made by Robbins (2012) – namely, that political ecology ought to serve both as a critique (by revealing deficiencies in dominant approaches to the environment) or ‘hatchet’, and as a solution (by specifying equitable and sustainable alternatives and solutions) or ‘seed’.

The stakes are very high here: benefit sharing can perhaps reduce if not eliminate conflict altogether. There may then be a useful ‘seed’ to resolve major challenges, as this chapter explores in its analysis of recent cooperation between China and downstream countries during a time of growing criticism of Chinese hydropower development. In the past few decades, attention has focused on the question of hydropower. Unilateral action taken by China to build dams in the upper reaches of the river worsened the relationship between China and downstream countries – a situation only partly alleviated by China’s involvement in regional networks such as the Asian Development Bank (ADB)’s Greater Mekong Subregion (GMS) programme that began in 1992. That programme, as this chapter suggests, has nonetheless helped to reshape the landscape of the river basin’s political economy and inter-state relations. While largely affirming Chinese hegemony, it has also opened up new opportunities in trade, energy and investment for downstream countries keen to develop by building connections to south-east China.

The first part of the chapter explores benefit sharing as an analytical framework through the prism of political ecology, drawing selectively on the literature. To what extent can this idea be the basis for sound environmental governance at the regional scale? The second part then examines the Mekong River Basin case study to explore how far and in what ways the GMS programme is having a positive impact for downstream states faced with the *fait accompli* of upstream Chinese dams that have well-documented adverse social and ecological impacts. Finally, the chapter considers the ramifications of benefit sharing as well as its wider possible applicability as a tool for planting a seed for positive political-ecology outcomes.

BENEFIT SHARING AS A SEED

It has been all too easy for writers working both inside and beyond political ecology to criticize large dams and hydropower development. As a counterpoint to some mainstream thinking that uncritically extols the virtues of these temples of modern development, political ecologists and others have taken the hatchet to such narratives, painting instead a picture of chronic power asymmetries among states, transnational corporations and international financial institutions on the one hand, and radical NGOs, writers and local communities on the other. Environmental-related protest, conflict and repression are the norm in these accounts (Baghel and Nusser, 2010; Fletcher, 2010; Nusser, 2003). This can be seen in work on the development of the Mekong River Basin (e.g. Hirsch, 1998; Mitchell, 1998), including recent attention to Chinese

hydropower projects and their downstream impacts on hydrological regimes, soils, biodiversity and human health (Chellaney, 2011; Dore, 2007; Goh, 2004; Menniken, 2007; Singha, 2012).

Although large dams within a single country can cause a number of socio-economic, environmental and political problems (on India, for instance, see Singh, 2002), issues become even more complicated if dams are located along trans-boundary river systems. Studies in these contexts have notably paid attention to conflict scenarios such as on the Nile, Jordan and Tigris–Euphrates river networks (e.g. Tvedt, 2004; Wolf, 2009; Priscoli and Wolf, 2009). Too often, though, conventional approaches evaluate empirical cases in black-and-white terms – that is, they are examples of either conflict or cooperation.

Over the last few years, a new group of scholars has examined trans-boundary water issues using a ‘hydro-hegemony’ approach. Going beyond earlier work that they criticize, these writers strive instead to introduce a list of political, economic and policy options for riparian states reflecting the more complex circumstances relating to their roles as either hegemonic or non-hegemonic. Most case studies focus on the Middle East and Northern Africa (e.g. Zeitoun and Warner, 2006; Zeitoun and Mirumachi, 2008; Zeitoun et al., 2010; Warner and Zawahri, 2012), although comparative work is being produced too (Mirumachi, 2015). This new literature certainly sheds more light on the diverse options facing hegemonic and non-hegemonic countries – something that should be particularly useful for the latter in addressing unequal power dynamics.

Nevertheless, this approach does not entirely escape the conflict-versus-cooperation binary that it criticizes conventional literature for having followed. In particular, it seems to be unable to uncover less visible or obvious forms of cooperation that can often inform trans-boundary hydropower development. Such cooperation may reflect subtle and unequal power relations of a kind that political ecologists have long studied, albeit usually at the local level (Robbins, 2012). Here, a benefit-sharing approach informed by a political-ecology perspective stands to do better, notably by developing a nuanced elucidation of what is hidden and marginalized in the midst of conflict and cooperation rhetoric in trans-boundary water dynamics.

The prospect of gaining potentially larger benefits through cooperation rather than through unilateral action linked to conflict encourages many riparian countries to cooperate. Indeed, water, as political ecologists point out, is a commodity characterized by ‘unruly materialities’ (Bakker and Bridge, 2006) – with such unruliness often best tackled through cooperation. The benefit-sharing approach precisely zeroes in on the multifaceted benefits of joint rather than unilateral development of a shared resource. This type of joint management over water resources epitomizes ‘hydro-interdependency’ and accounts for trade-offs between current and future benefits. Benefits relate to such things as electricity, food and environmental services (Alam et al., 2009).

Benefit sharing is defined as ‘any action designed to change the allocation of costs and benefits associated with cooperation’ (Sadoff and Grey, 2002: 389). This approach has been applied not only with regard to trans-boundary water management, but also in relation to other natural resources (e.g. petroleum, forestry), and the term ‘benefit’ itself can be understood in different ways, from nationally administered revenue funds to revenue-sharing contracts between companies and local communities. Its proponents

argue that it is a means of distributing a range of benefits derived from resource utilization across the economy, while facilitating economic growth and socially inclusive policies (Haas, 2009). Above all, the idea of benefit sharing in trans-boundary water governance indicates the need for a change of negotiation strategy from one focused narrowly on the allocation of water to a new one premised on a much wider range of possible water and non-water benefits for riparian countries (Sadoff and Grey, 2002; Hensengerth et al., 2012).

Water, in this view, is a productive resource in that it realizes multiple benefits, while maximization of the latter is only legitimate when environmental disruption is minimal. Crucially, the range of benefits often goes well beyond only economic gains to include social, political and environmental benefits (Alam et al., 2009; Hensengerth et al., 2012; Qaddumi, 2008; Sadoff and Grey, 2005). Sadoff and Grey (2002) specify four types of benefit sharing: (1) benefits to the river (e.g. water quality, biodiversity); (2) benefits from the river (e.g. electricity, irrigation); (3) benefits derived from reducing costs 'due to' the river (e.g. floods, drought, international tensions); and (4) benefits beyond the river (e.g. integrated and prosperous regional markets; political cooperation).

The literature certainly points to successful cases of benefit sharing in practice. A classic example is that of the Columbia River Treaty of 1964 that rendered legal Canada–US negotiations on a benefit-sharing mechanism (Tarlock and Wouters, 2007). Elsewhere, and since 1972, Guinea, Mali, Mauritania and Senegal in the Senegal River Basin have shared the benefits derived from water use of that river, notably irrigation, hydroelectricity and inland navigation (Alam et al., 2009; Haas, 2009). In some cases, a downstream country has even built a dam in an upstream country to increase aggregate net benefits, with both downstream and upstream countries benefiting thereafter – as in the case of the Orange–Senqu River Basin shared between South Africa, Lesotho, Botswana and Namibia (Hensengerth et al., 2012; Yu, 2011).

However, there are challenging political-ecological issues related to benefit sharing that remain and that are certainly a cause for concern. First, this mechanism neither necessarily guarantees the alleviation of poverty nor rectifies problems caused by the trans-boundary water projects themselves. Here the unequal power relations long specified as an obstacle to equitable living by political ecologists may distort the allocation of benefits garnered at the inter-state regional scale, but that is thereafter a matter for individual states to apportion domestically as they see fit. Second, deployment of the benefit-sharing mechanism may mean that issues related to sustainable development are de-emphasized. For instance, ecological aspects to managing the Columbia River were not accounted for, triggering its environmental degradation (Tarlock and Wouters, 2007). When seen in a political-ecology perspective, therefore, questions must be asked about the overall utility of benefit sharing in environmental governance. Above all, how far does this mechanism actually regulate inter-state behaviour in a positive way, and can any accrued benefits be distributed equitably thereafter? In short, who benefits and who loses from benefit sharing? Next, I turn to a case study of hydropower development in the Mekong River Basin to explore some of these issues.

BENEFITING FROM THE GREATER MEKONG SUBREGION (GMS) PROGRAMME

In a matter of only a few decades, the Mekong River Basin has become a remarkable hydropower phenomenon. Consider, for instance, the data. Overall hydropower capacity spans three distinct but interconnected geographical areas: China, the lower Mekong Basin tributaries and the lower Mekong Basin main river. In China, dam building has been a continuous process since the 1980s, with five now built and three more in the works for an eventual combined hydropower potential of 15 450 MW. Further potential would increase this figure even more. In contrast, in the lower Mekong River Basin tributaries, 70 hydropower projects account for 9364 MW, whereas a maximum hydropower potential of 14 697 MW exists in the lower Mekong River Basin (ICEM, 2010).

It is nonetheless the Chinese dams that court controversy, because they are located upstream, and hence are likely to have profound downstream impacts, including flooding, silting, erratic flow rates, reduced fisheries and crop production, as well as ecosystem degradation (Lu and Siew, 2006). So far, China has not fully cooperated with its worried downstream neighbours in terms of information on these matters (Chellaney, 2011; Goh, 2004; Gajaseneni et al., 2006; ICEM, 2010), although greater cooperation is pledged. Such cooperation is vital since in-depth and long-term research to understand the complexity of ecosystems in the river basin and the causes of ecosystem disruption is urgently needed (Campbell, 2007; Chapman and He, 1996; Fu et al., 2008; Goh, 2004; Lee, 2013; Li et al., 2011).

This is where regional political-economic cooperation agreements come in. Various initiatives already exist, often stressing economic integration, notably the ADB's GMS programme, ASEAN Mekong Basin Development Cooperation (AMBDC) and the Initiative for ASEAN Integration (IAI). Often hailed as a success, the ADBGMS programme is hence our prime example here in terms of exploring the promise and practice of regional socio-economic benefit sharing.

Indeed, that programme, launched in 1992, centred on the quest to enhance economic relations between the two provinces of China (Yunnan and Guangxi), Myanmar (Burma), Lao PDR, Thailand, Vietnam and Cambodia. Its priority sectors were thus agriculture, energy, environment, human resources development, telecommunications, tourism, transport infrastructure, and transport and trade facilitation – with top priority given to the pivotal transport and energy sectors. Funding came from the ADB, other international development partners and the GMS countries, and will eventually amount to as much as US\$40 billion (ADB, 2012a; Park, 2013). Spread over five phases, the second phase is presently underway; 180 or so specific projects are already completed or in progress (ADB, 2012b; Park, 2013). Progress has so far been rapid, notably due to China's proactive involvement.

Such involvement is concentrated on the priority areas of transport and energy, which dovetail most readily with China's development plans. Thus, and concerning transport, attention focuses on creating economically important corridors: the North–South Economic Corridor, the East–West Economic Corridor and the Southern Economic Corridor (Park, 2013), utilizing both land and water routes (Lee, 2013). The aim is to

link Yunnan Province to the downstream riparian countries, thereby boosting regional economic opportunities.

With regard to energy (especially hydropower), the priority is on establishing a Mekong power grid that in turn will kick-start a system for regional power trading and private investment in the power sector. The World Bank, the Japan Bank for International Cooperation and ASEAN are providing funding. This massive endeavour will stitch together hitherto 'remote' areas as transmission lines link, for example, Thailand with China's Jinghong and Nuozhadu dams, dams on the Salween River in Myanmar and the Nam Theun 2 dam in Lao PDR. China has also promised funding and technological support to facilitate this process (Dorsch and Hensengerth, 2005; Goh, 2004; Lew and Choi, 2012; Schmeier, 2009).

SHARED BENEFITS

This economic transformation of the Mekong River Basin clearly combines elements of conflict and cooperation. At the local scale, conflict relates to the disruption of people's livelihoods and homes – something all but inevitable in development projects of this size. To some extent, this discontent marks inter-state dynamics concerning China's development plans. Thus downstream countries express unease about the nature and rapidity of those plans. However, and of most interest here, the relationship between China and the downstream countries has not descended into outright conflict – in part as a result of the development of cooperative behaviour between these countries in a context of socio-economic benefit sharing.

Returning to the four types of benefit sharing outlined above (Sadoff and Grey, 2002), continuous dam building in the Mekong River Basin (notably by China but also by downstream countries) in recent decades is a good example of Type 2 benefits (that is, benefits obtained from the river relating to hydropower). Clearly, China has dominated this process at least since the early 1990s, but the future may witness downstream countries such as Myanmar and Lao PDR joining the fray. In contrast, the GMS programme has failed to deliver on either Type 1 benefits (benefits to the river in terms of improved water quality or enhanced biodiversity), or Type 3 benefits (benefits linked to reducing costs 'due to' the river such as flooding and drought). Research has been done in both areas but has yet to lead to firm inter-state commitments (especially from China).

Yet the real story in terms of thinking of the GMS programme as a form of benefit sharing resides in Type 4 benefits (that is, gaining benefits beyond the river, notably in terms of regional economic integration). On the one hand, this programme has attracted, as noted above, significant funding from the ADB, other international development partners (e.g. Japan) and the GMS countries themselves. On the other hand, the GMS programme is above all playing a pivotal role in establishing favourable conditions for systematic cooperation across the region in aid of mutually beneficial socio-economic development. Such Type 4 benefits are transforming many aspects of life in the Mekong River Basin, and especially in relation to water provision and use, energy, transport and natural resources development. This region has long been renowned for being beyond the remit of even powerful states – as James Scott (2009:

x) puts it, an area full of ‘the history of deliberate and reactive statelessness’. Yet this historical situation is fast changing as both regional and global economic and environmental governance arrangements enmesh it in wider political, economic and ecological orders.

Clearly, much is being lost here, as old and not-so-old ways of life are undermined. I return to this matter below. First, though, what are the possible benefits arising from this transformation? Aggregate data provide a partial (if certainly imperfect) snapshot of what is going on. Thus the volume of trade coursing through the region has increased considerably, especially marked by the hyper-development of Yunnan and Guangxi provinces with GDP growth rates of between 12 per cent and 15 per cent in recent years. Such rapid growth has notably reflected the deepening of economic ties with downstream countries, even as the latter have reciprocally benefited (Bolt, 2011; Eyler, 2013). This increased economic activity has contributed to growing economic prosperity for many (but not all) citizens of the region. Indeed, GDP per capita for the riparian countries has leaped since the GMS programme began in 1992. For instance, in 1992 GDP per capita was US\$63 in Myanmar and US\$1894 in Thailand, but had jumped by 2011 to US\$832 and US\$5394 respectively. The per capita incomes of many countries in the region grew by a factor of 10 in the same period (ADB, 2012b). At the same time, the rise in GDP per capita income has also helped to reduce overall poverty levels. In all the GMS countries except Thailand, the poverty level was close to or more than 50 per cent in 1991. In 2011 that level was greatly reduced: 45 per cent to 23 per cent in Cambodia; 8.6 per cent to 0.4 per cent in Thailand; 64 per cent to 13 per cent in China; 56 per cent to 34 per cent in Lao PDR; and 64 per cent to 17 per cent in Vietnam (ADB, 2012b).

Such data invite careful scrutiny and a measure of scepticism. Thus GDP per capita and poverty-level data reflect much wider national and international dynamics, with an array of factors at play other than regional economic development in the Mekong River Basin. The accuracy of data for the region is also debatable. Yet, and however crude and ambiguous, the data point to the generation of some socio-economic benefits that are directly or indirectly linked to the region’s development.

Still, the GMS programme has been the subject of criticism. First, there is the question of its long-term viability: can it ever deliver large-scale gains for all residents of the region through what is, in effect, a superficial and market-oriented approach? In this regard, Oehlers (2006) laments a lack of serious institutional and political reform – for example in relation to the rule of law, private property and political rights – that would underpin a more fundamental transformation of regional practices.

Second, there is the matter of the serious socio-ecological costs associated with GMS-related development. These costs often relate to a lack of local-level sustainability, threats to local community livelihoods, and wider degradation of the environment – in short, the sorts of things that political ecologists often point to in their research. A framework to undertake rigorous environmental impact assessments (EIAs) for GMS projects would address some of these costs, but trans-boundary EIAs are not conducted in the absence of trans-boundary institutional frameworks to impose rules on the associated countries (Oehlers, 2006; Ogden, 2012). Even when undertaken, though, EIAs often raise issues surrounding effective participation by the weakest in society.

Third, there is the delicate issue of the GMS project serving as a powerful vehicle for China's geopolitical ambitions in the region. For some, a key benefit of this project has been its link to an enhanced flow of aid from China to the downstream countries as part of China's much larger 'Going-Out Strategy' (2001–05), with its distinctive unobtrusive policy towards developing countries that are often politically unstable and undemocratic (McDonald et al., 2009). Indeed, downstream countries of the Mekong River Basin hail China's non-interference in domestic politics and no-strings-attached policy in the provision of aid, seeing it as a useful alternative resource for boosting their socio-economic development without resorting to aid from the North that habitually comes with strings attached (Biba, 2012; Urban et al., 2013). Here, then, is what downstream countries see as an important Type 4 benefit. There is a price to pay here, of course – and that price is a consolidation of China's political influence over the region. That influence is greater with some countries than with others (as virulent anti-Chinese protests in Vietnam in 2014 once more affirmed). But for countries such as Lao PDR and Cambodia it is quite noticeable – seen for example in these countries' support for China in recent territorial disputes, as with the Senkaku (or Diaoyu Dao) Islands in the South China Sea (Bolt, 2011; Schmeier, 2009). Still, geopolitical influence is a reflection more of trade and investment than aid flows. Often there is a link to the quest for energy. Thus the central government in China succeeded in constructing strategic oil and natural gas pipelines throughout Asia in recent decades as part of wider efforts to develop a diversified global system of energy suppliers. For example, PetroChina, one of the major state-owned enterprises (SOEs), completed a natural gas pipeline running from Myanmar's Indian Ocean coastline to Kunming in Yunnan Province. Meanwhile, inland navigation through the Mekong River allows China to have additional access to international economic centres and seaports such as Bangkok, Ho Chi Minh City and Phnom Penh for oil and gas imports. All this helps to tie these countries further into the Chinese orbit, potentially thereby raising issues of growing political and/or economic dependence. Nonetheless, the benefits and to some extent at least the dependencies work both ways. Thus growing Chinese dependence on hydroelectric energy imports from countries such as Myanmar and Lao PDR means that it is imperative that China remain on good terms with its neighbours to secure a stable supply of energy. As this example illustrates, the question of who is a regional hegemonic power and in relation to what sectors may be becoming more complex than conventional China-as-sole-hegemonic-power analyses have suggested (Eyler, 2013).

The transformation of the Mekong River Basin, especially since the start of the GMS programme, has been nothing less than remarkable. Such epochal change has intensified many of the problems that political ecologists identify with capitalist-linked development. Yet, as this analysis also suggested, it has brought with it diverse social, economic and political benefits, ranging from increasing general (per capita) economic prosperity, to enhanced trade and investment flows between hitherto weakly connected (and sometimes warring) countries, greater relative energy security, and perhaps even some reduction in overall levels of poverty. Here then is a record of benefit sharing that has not simply been a history of benefits captured by elites. Non-elites have also sometimes prospered from inter-state dynamics at the regional scale.

CONCLUSION

This chapter has argued that political ecology can usefully draw on a benefit-sharing approach to combine regional-scale analysis of inter-state dynamics with openness to the possibility of positive socio-economic outcomes surrounding hydropower development. The point in doing so was not to downplay the many negative effects of such development that political ecologists and others have amply highlighted. Rather, it was to call for a more nuanced picture in making such analyses by considering how inter-state cooperation can result in multiple benefits, and not only to members of the political and economic elites. The chapter drew on Sadoff and Grey's (2002) four types of benefit sharing: (1) benefits to the river (e.g. water quality, biodiversity); (2) benefits from the river (e.g. electricity, irrigation); (3) reducing costs 'due to' the river (e.g. floods, drought, international tensions); and (4) 'growing' benefits beyond the river (e.g. integrated and prosperous regional markets; political cooperation). While large-scale hydropower development of the kind examined in this chapter rarely if ever manages to generate benefits across all four types, it often produces benefits of one or more types.

This chapter showed that the development of the Mekong River Basin since the 1990s, especially under the GMS programme, has done precisely that: it has generated Type 2 benefits (energy production linked to hydropower) and Type 4 benefits (regional economic integration), while failing to create benefits in either Type 1 or Type 3 categories. Thus it is fair to say that, while Mekong hydropower development has resulted in serious social and ecological costs, especially for riparian communities, it has simultaneously enabled socio-economic development whose benefits have not been the monopoly of elites. Although these benefits must not be exaggerated (or the costs forgotten), they nonetheless suggest the kernel (or seed) of a solution to a region long beset by political, economic and ecological woes, ranging from widespread warfare to ubiquitous poverty. Indeed, scholars keen to dismiss out of hand the possible benefits of Mekong hydropower development must be reminded that region-wide solutions in contexts such as this are bound to be messy and contradictory.

The benefit-sharing approach also suggests the need for nuance in the analysis of regional power dynamics. While notions of hegemonic and non-hegemonic countries are indeed useful, scholars must also remain attentive to the possibility of more complicated processes at play. The case of China in Mekong River Basin hydropower development is illustrative here: undeniably a hegemonic power in the region, yet a country that is also increasingly dependent on downstream countries in certain respects (notably energy flows) for its well-being. Power in these cases is never absolute, but rather is a two-way process. The distribution of benefits in the region may always be unequal, but there is a distribution going on – and the rules and nature of that distribution can shift over time. Part of the challenge to political ecologists is then precisely to undertake research that describes and understands these shifts – who benefits (most) and where and when? Indeed, how might political interventions (by community groups, NGO workers, activist-scholars) facilitate more or less favourable shifts (e.g. promoting greater ecological sustainability where possible) over time?

In this way, a political ecology of benefit sharing would help clarify where solutions might be found – sometimes even in the least likely of places – to ever more pressing

socio-ecological problems. Concurrently, such analysis proposes to take the non-local scale seriously. Just as many political ecologists have detailed the complex power dynamics at the local scale, so too there is need for more attention to be devoted to complicated regional and global processes (Kim, 2012). This work is integral to the building of a truly global political ecology ready to address today's multi-scale challenges.

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15. Gender, group behavior and community forestry in South Asia

*Bina Agarwal**

Community forestry groups (CFGs), managing state- or community-owned forest resources, represent one of the most rapidly growing forms of collective action in the developing world, and provide an especially useful study in how groups function. This chapter focuses on South Asian experience to illuminate how such groups – ostensibly set up to operate on principles of cooperation and meant to involve and benefit all members of the rural community – often effectively exclude significant sections, in particular women. While seemingly participatory, equitable and efficient, they cloak substantial gender-related inequities and inefficiencies. What underlies such outcomes, and how might the outcomes be improved?

It is argued here that the results of group functioning depend on rules, norms and perceptions, in addition to the household and personal endowments and attributes of those affected. The interactive effects of outcomes are also explored, such as how excluding women from a group's decision-making process can lead to the framing of inappropriate or inequitable rules that are difficult to enforce. The issues are analyzed mainly from a gender perspective, but the intersectionality of gender with class and caste is also explored.

The analysis is based largely on the author's field visits and interviews during 1998–99 in 87 community forestry sites across five states of India (Gujarat, Karnataka, Madhya Pradesh, Orissa and the Uttar Pradesh hills) and two districts (Kaski and Dang) of Nepal. Unstructured interviews with village women and men, separately or jointly, in addition to individual interviews with key informants such as office bearers, are supplemented by existing case studies and my earlier visits to selected sites.

A focus on this era is important because it was pivotal to the initiative taken by the state to involve villagers (including women) in community forestry initiatives in South Asia and many other countries (Agrawal and Gibson, 2001). It was a time of institutional innovation and diffusion whose consequences still reverberate (see, e.g. Agarwal, 2010), and which laid the foundation for the co-management of common pool resources in large parts of the world. This analysis thus contributes in critical ways to the field of political ecology with its emphasis on material processes and unequal power relations (Blaikie and Brookfield, 1987; Peet and Watts, 1996), as well as gender dynamics (Agarwal, 1992; Rocheleau et al., 1996; Schroeder, 1999). Through the lens of community forestry and gender, the chapter also addresses key general questions such as: who participates and on what terms? How does women's participation affect equity and institutional efficiency? In what ways is their participation constrained by power relations within and beyond the community, and how can those constraints be overcome? Answers to these questions will deepen our understanding of both the

gendered and the general implications of policy innovation and institutional reform in environmental governance.

BACKGROUND

In South Asia, forests and village commons have always been important sources of basic necessities and supplementary livelihoods, providing villagers with firewood, fodder, small timber and various non-timber products. Especially for rural women and the poor, who own little private land, these resources are a critical element in daily survival. In India's semi-arid regions, for instance, in the 1980s the landless and landpoor procured over 90 percent of their firewood and satisfied 69–89 percent of their grazing needs from common pool resources (Jodha, 1986). Firewood alone provided 65–67 percent of total domestic energy in the hills and desert areas of India and over 90 percent in Nepal as a whole, and was gathered mainly by women (Agarwal, 1987).

However, people's ability to fulfill these needs was increasingly eroded with the decline in communal resources, due both to degradation and to shifts in property rights away from communities to the state and individuals. The situation changed in the early 1990s, when there began a small but notable reversal in these processes with the launch of community forestry by the state, in both India and Nepal. India initiated the Joint Forest Management (JFM) program in 1990, under which village communities and the government share the responsibilities and benefits of regenerating degraded local forests. In addition, there existed informal self-initiated groups (mainly in Bihar and Orissa in eastern India), started autonomously by a village council, youth club or village elder, as well as groups with a mixed history, such as *van panchayats* (forest councils) in the hills of Uttar Pradesh (UP) in northwest India – initiated by the British in the 1930s – many of which survived or were revived by non-governmental organizations (NGOs). JFM groups were the most widespread, with virtually all Indian states passing resolutions that allowed participating villagers access to most non-timber forest products (NTFPs) and to 25–50 percent (varying by state) of any mature timber harvested. In 2001, there were approximately 63000 JFM groups, covering 14.2 million hectares (mha) or 18.6 percent of the 76.5 mha administered as forest land (Sehgal, 2001).

Nepal's community forestry program, launched in 1993, similarly transferred parts of government forests to forest user groups (FUGs). In 2000, there were 9100 FUGs involving one million households and covering 0.66 mha or 11.4 percent of the country's 5.8 mha of total forest land (Government of Nepal, 2000).

Unlike the old systems of communal resource management, which typically recognized the usufruct rights of all villagers, CFGs represent a more formalized system of rights, based either on membership (in state-initiated groups) or on rules specified by (self-)selected villagers (in self-initiated groups). Thus membership, or some other formal system, replaced village citizenship as the defining criterion for establishing rights in the commons.

This raises some critical questions at the heart of political ecology analysis, such as how CFGs perform in terms of participation, equity and efficiency from the perspective of women, especially the poor. Are the systems of rights in communal property

inclusive and equitable, or are they replicating patterns of elite and male centeredness that characterize rights in private land?

GENDERED OUTCOMES: PARTICIPATION, EQUITY AND EFFICIENCY

In terms of forest regeneration, many CFGs have notably succeeded, often by simply monitoring and restricting entry, but sometimes also by replanting. Natural revival is often rapid if the rootstock is intact, and, within five to seven years, areas with declining vegetation showed regeneration. Many severely degraded tracts in semi-arid India were covered with young trees. In the country as a whole, between 1991 (when JFM was launched) and 2001, the percentage of geographic area under forest cover increased from 19.4 to 20.6 (Agarwal, 2010). In several villages, income and employment also increased (Kant et al., 1991; Raju et al., 1993; SPWD, 1998); seasonal outmigration fell (Chopra and Gulati, 1997; Viegas and Menon, 1993); and the land's carrying capacity rose, as did biodiversity (Arul and Poffenberger, 1990; Raju et al., 1993; and my field visits). Some villages even received conservation awards (Shah and Shah, 1995). However, these results looked less impressive in terms of women's effective participation, equitable sharing of costs and benefits, and efficient functioning of the CFGs.

Participation

In both India and Nepal, state-initiated groups have a two-tier organizational structure, comprising a general body (GB), with members drawn from the whole village, and an executive committee (EC) of 9–15 persons. Typically the GB meets once or twice a year and the EC once a month. The EC, interactively with the GB, defines the rules for forest use and benefit sharing, the structure of fines for rule violation, the method of protection (guards, patrol groups etc.), and so on. Thus, which category of persons has a voice in the EC and GB affects how well CFGs function, and who gains or loses from them.

Women's effective participation in decision-making requires not only that they become members of the GB and EC, but also that they attend and speak up at group meetings, and can ensure that decisions favor them at least some of the time. Such participation also indicates democratic institutional functioning. To what extent did women, especially the poor, participate?

Participation in management

Women usually constituted under 10 percent of GB members in most JFM groups; were typically absent in self-initiated groups; and scarce in *van panchayats*.¹ In the TERI study, only 9 out of 50 *van panchayats* examined had women members. Women's presence in Nepal's FUGs was similarly sparse: in some FUGs they constituted only 3.5 percent of recorded users (Dahal, 1994: 78).

In India, JFM membership criteria vary by state. Eight of the then 22 states restricted GB membership to one person per household – this was invariably the male household

head. In eight other states, both spouses (or one man and one woman) could be members, while only three states opened membership to all village adults. In self-initiated CFGs, the customary exclusion of women from village decision-making was replicated. In Nepal's FUGs, again, the household was the unit of membership, with the male head joining (Seeley, 1996).

Not being GB members, women usually heard little about what transpired at meetings and often complained:

Typically men don't tell their wives what happens in meetings. Even if there is a dispute about something, they don't tell us; nor do they volunteer information about other matters. (Women to author, Kheripada village, Gujarat, 1999)

Women's representation in the ECs was also typically low. In a study of 20 JFM groups in West Bengal (east India), 60 percent had no women EC members, and only 8 percent of the 180 EC members were women (Sarin, 1998). Even in states mandating women's inclusion, those included were usually inducted by male EC members to fill the slots, rather than selected by village women to represent their interests. Such female EC members were seldom active. In Nepal, again, women were only nominally present in ECs; many were poorly informed about FUG activities; and some were even unaware that they are members (Moffatt, 1998; Upadhyay and Jeddere-Fisher, 1998).

Only a small percentage of women on the GB or EC usually attended meetings. Those who attended were rarely vocal, and if they did speak, they said their opinions were given little weight: 'Men don't listen, except perhaps one or two. Men feel they should be the spokespersons' (woman to author, Garbe Kuna village, Kaski, Nepal, 1998). Having a voice in the EC is important since this is the site for decisions on many critical aspects of CFG functioning. An analysis of JFM in five Gujarat villages revealed that all major decisions on forest protection and use, distribution of wood and grass, and future planning were taken by men. The only joint decisions with women concerned tree nurseries (Joshi, 1998). Women were also seldom included when CFG teams went on 'exposure' visits to other sites, or received silviculture training.

Contrasting examples of all-women CFGs and mixed CFGs with a high female presence were atypical. All-women CFGs, for instance, are found especially in the UP hills and parts of Nepal with high male outmigration, and a few have been catalyzed in other regions by an NGO, forest official or international donor.² Occasionally, women themselves initiate a CFG, but the figures remain low. In Nepal, for example, in 2000, all-women FUGs constituted under 3.8 percent of all FUGs, controlling 1.1 percent of FUG land, much of which was degraded (calculated from Government of Nepal, 2000). In India, all-women CFGs were even rarer, as were mixed groups with 30 percent or more women (Narain, 1994; Viegas and Menon, 1993; my field visits).

Participation in protection

Despite their limited formal presence on CFGs, however, many women played an active role in protection. Forest protection by communities usually involves employing a guard, or forming a patrol group. A male guard or an all-male patrol characterized 45 and 18 percent respectively of the 87 sites I visited. Mixed patrols of both sexes were rare. More often, women patrolled informally – not least because they felt men's

patrolling was ineffective. Women's informal vigilance improved protection in important ways, such as in apprehending female intruders whom they sought to dissuade from breaking the rules, and in fire fighting – in several instances their vigilance alone saved the forest. Hence women contributed notably to protection efforts even when formally excluded, indicating their stake in forest regeneration. Their limited involvement in decision-making, however, had implications for equity and efficiency.

Equity

How equitable were the CFGs in costs and benefits sharing?

Cost bearing

The costs of forest closure are broadly of two types, associated with (a) protection and management, and (b) forgoing forest use. The former includes membership fees, the forest guard's pay, the opportunity cost of patrolling time and so on. Such costs are borne largely by men. The costs of forgoing forest use include the opportunity cost of time spent in finding alternative sites for essential items such as firewood and fodder, the loss of livelihoods based on NTFPs, and so on – these costs fall largely on women.

Take firewood, which continues to be an everyday need, and collecting which is mainly women's responsibility (while obtaining small timber, needed occasionally for agricultural implements etc., is mainly men's responsibility). Typically when protection begins, all human and animal entry is banned or severely curtailed. In barren sites, this may cause no extra hardship, but where women could earlier fulfill at least part of their firewood needs from the protected area, closure forces them to travel greater distances involving additional time, energy, and the risk of being fined if caught (Agarwal, 2000; Sarin, 1995; and my fieldwork). In the early years of JFM, in parts of Gujarat and West Bengal, women's collection time for a headload of firewood increased from 1–2 hours to 4–5 hours, and journeys of half a kilometer lengthened to 8–9 km (Sarin, 1995). Many women were also compelled to take their daughters along, spending over six hours a day to walk five times further (Shah and Shah, 1995), adversely affecting the girls' education. As protection spread, shortages became more severe. Most women from landed households made do with the limited firewood available from trees on their home fields, supplemented by inferior fuels such as cropwaste (notwithstanding the negative health effects). But landless women were compelled to continue collecting clandestinely, risking fines and abuse if caught.

Such gendered consequences were widespread, causing considerable resentment among women. For example, in Pingot village (Gujarat), when asked about the award for environmental conservation conferred on the village, women responded with bitterness: 'What forest? We used to go [there] to pick fuelwood, but ever since the men have started protecting it they don't even allow us to look at it!' (Shah and Shah, 1995: 80).

In most places, this picture remained largely unchanged even after several years of protection. Despite forest regeneration, of the 87 CFGs I visited in 1998–99, 60 percent still banned firewood collection or allowed very limited extraction, usually only of fallen twigs and branches. Even after years of protection, women thus reported

persisting firewood shortages in most villages I visited, and some reported greater shortages, as in Kangod village (Karnataka):

We go in the morning and only return in the evening. Since the end of the rainy season, we have been going every day. I go myself and so does my daughter. Earlier too there was a shortage, but not as acute.

Where possible, women substituted other fuels. A few were able to switch to biogas (usually through an NGO program), but most turned to twigs, dung cakes, agricultural waste or even dry leaves. Fire from such fuels needs careful tending, which increases cooking time and prevents women from simultaneously doing other tasks. Moreover, these fuels cause more fumes, with severe negative health effects in poorly ventilated conditions. In some villages, women said they economized on fuel by forgoing winter fires for space heating, giving the animals cold feed, not heating winter bath water, and so on.

Usually women from both middle and poor peasant households reported such domestic energy problems, since even in better-off homes firewood is typically gathered, given that most have few or no trees on their private land. But landless or landpoor women are left the worst off, since they have no cropwaste or trees of their own, and few cattle for dung. In fact, forest closure (and, with it, spaces for grazing) has forced many to sell some of their animal stock. As a poor woman in Khut village (UP hills) told me ‘We don’t know in the morning if we will be able to cook at night’. And in Tallo Goungonda village (Kaski, Nepal), a group of poor women reported: ‘We go at night ... Other women have gas and stoves, but we are poor, so we have to steal.’ A similar saga unfolded for fodder, which too is usually women’s responsibility to procure.

Notably, in many regions, the persistence of firewood shortages under community forestry was due to strictures on extraction rather than absolute shortages. By one estimate for Gujarat, an average household needs about 0.2 ha of forest for meeting firewood and other subsistence needs (Shah, 1997). In 15 of my 19 Gujarat fieldsites, the protected area exceeded this norm (nine villages had over 100 ha of forest), and more extraction was possible within sustainable limits. This was also borne out by a 12-village study across three states (including Gujarat), which measured annual biomass produced and extracted from protected forests, and found that in 11 villages firewood extracted was much below production (Ravindranath et al., 2000). None of the study villages had women on their ECs. It was thus not a lack of solutions that led to the shortages, but women’s limited bargaining power within communities, which saw shortages as a private problem unworthy of community attention.

Benefit sharing

There were also gender inequities in benefit sharing. Sometimes, products were not distributed at all. Among Orissa’s self-initiated groups, for example, a number of all-male youth clubs completely banned forest entry while selling forest produce, including the wood obtained from thinning operations. The not insubstantial income so

obtained was spent on religious festivals, clubhouses or club functions (Singh and Kumar, 1993; my field visits). In Nepal, the money sometimes went into a collective fund, but women had little say in its use:

The money obtained from grass and firewood is kept by them in their fund. We have not seen one *paisa* of it. We buy grass, which is auctioned by bundles. (Women to author, Ghusra village, Dang district, Nepal, 1998)

Where CFGs distributed products such as firewood or grass, women of non-member households usually received none, since entitlements are typically linked to membership. Often these were poor households that could not afford to contribute to the guard's wages or even to patrolling, since household members had to migrate for work or undertake wage labor in the village.

Even in member households, usually men alone claimed the benefits directly, either because only they were members, or because a household got only one share. Women gained indirectly where benefits were in kind (e.g. firewood), or where member households could collect drywood or leaves from the protected area.³ But where the CFGs distributed cash, the money given to men did not guarantee equal sharing within the family. As noted in other contexts (Dwyer and Bruce, 1988; Noponen, 1991), here too men, even the poor, often spent a significant part of their incomes on personal items (tobacco, liquor etc.), while women spent almost all of their incomes on basic household needs (Guhathakurta and Bhatia, 1992; my fieldwork).

Many women realized that unless they received a share directly, they would get nothing, and when asked, said they preferred equal and separate shares for husbands and wives (Sarin, 1995). Being members in their own right could help them benefit directly, provided that the individual and not the household was the unit of entitlement.

Inequities also arise because people differ in their needs, or in their ability to contribute or to pay. Broadly, three types of principles/norms can underlie the distribution of forest products: market-determined, contribution and need. All three have gender and class implications. The market principle, embodied in practices such as auctioning grass to the highest bidder, tends to be both unequal and inequitable, since those who cannot afford to pay have to do without. Since women even in rich households have limited access to financial resources, auctions tend to be both anti-poor and anti-women. Distribution according to contribution, say by giving an equal number of grass bundles to each household that contributes to protection, would be equal but inequitable for those more dependent on the commons, notably poor households. Moreover, women's ability to contribute may be circumscribed: for instance, even if they are keen to patrol, they may be prevented from doing so by norms of seclusion. Only where distribution embodies some concept of economic need, as where (in rare cases) poor women are given access to an additional grass patch, is the distribution more equitable in that those most in need get more.

I found that contribution (in terms of membership fees, protection etc.) was the most common criterion underlying distribution, with all contributing households having equal claims to the fuelwood or grass cut during forest opening days. Some held auctions. But economic need seldom guided distribution, to the detriment of poor women.

In collective action literature, economic and social inequalities have largely been discussed in terms of their possible effect on collective action and efficient institutional functioning (e.g. Baland and Platteau, 1996, 1999; Bardhan, 1993; Ostrom, 1990), rather than in terms of the equity of outcomes from collective action, and how those outcomes impinge on the sustainability of collective action itself. As argued above, equity of outcome is important in itself for evaluating institutions governing the commons, quite apart from the links between equity and efficiency (or between participation and efficiency) elaborated below.

Efficiency

Women's limited participation in CFG decision-making, and gender inequities in the sharing of costs and benefits, can have a range of negative efficiency implications. Some initiatives may fail to take off; others may not sustain; or there may be a notable gap between the gains realized and those realizable. Inefficiencies can stem from diverse factors.

First, rule violations are common. I found that violations by men usually involved timber for self-use or sale (especially with commercially valuable trees), while violations by women typically involved firewood. Where a CFG bans collection without consulting women, many women are forced to break the rules to fulfill their daily needs, leading to persistent altercations with guards. In one *van panchayat* village, 70–80 percent of reported offenders during 1951–91 were women, many of them belonging to poor households (Agrawal, 1999).

Second, inefficiencies result from inadequate sharing of information with women, for example about rules, conflicts or other aspects of forest management. Male forest officials seldom consult women when preparing micro-plans for forest development. Some women hear about the plans through their husbands, others not at all (Guhathakurta and Bhatia, 1992). Such communication problems are acute in regions of high male outmigration.

Third, inefficiencies can arise if the male guard or patrol fails to notice resource depletion. During my 1995 field visit to Gujarat, a women's informal patrol in Machipada village took me to the protected site, and, pointing out the illegal cuttings that the men had missed, noted: 'Men don't check carefully for illegal cuttings. Women keep a more careful lookout.' My subsequent fieldwork in 1998–99 revealed similar differences in several sites. This gender difference, at least in part, arises because women, as the main and most frequent collectors of forest products, are more familiar with the forest than men.

Fourth, without women there can be problems in catching transgressors. In most cases, all-male patrols or male guards cannot deal effectively with women intruders because they risk being charged with sexual harassment. I found that such threats were common when non-member women, or women from neighboring villages, were caught. In some incidents, women and their families had even registered false police cases against patrol members, or beaten them up. Conversely, women encountered difficulties in night patrolling, or confronting male intruders. The most efficient solution would be to form a patrol team of both sexes. When women voluntarily set up informal patrols, even where there is a male guard or patrol, the efficiency of protection

improves (Sharma and Sinha, 1993). But these informal groups lack the authority to punish offenders, who still have to be reported to the formal (typically all-male) committees. This separation of authority and responsibility introduces inefficiencies in functioning. For instance, sometimes male EC members failed to punish the culprits caught by women, who then abandoned their efforts.

Fifth, efficient functioning requires effective conflict resolution. This is made difficult by women's virtual exclusion from formal committees, especially where the conflict involves women, as is common with firewood-related intrusions.

Sixth, inefficiency stems from discounting women's knowledge of plants and species when preparing plans for forest regeneration. Women and men are often privy to different types of knowledge due to differences in their spatial domains and in the tasks they perform (Chen, 1993; Pandey, 1990). Typically, women are better informed about the local ecology in which they gather, and men about species in distant areas (Gaul, 1994). Women's systemic exclusion from decision-making and management of new planting programs can thus have negative effects on regeneration and biodiversity by failing to tap women's knowledge of diverse species.

Seventh, inefficiency can arise from ignoring possible gender differences in preferences, say regarding when grass should be cut or which trees should be planted. In the rare instances when women are consulted, they tend to prefer trees with domestic use value, for example as fuel, fodder or food, while men typically favor timber trees with cash value (Brara, 1987; Chen, 1993). Women's greater involvement in forest planning would thus better fulfill household needs and increase their commitment to conservation.

In sum, by excluding women, CFGs are violating many of the conditions deemed by many scholars as necessary for building enduring institutions for managing common-pool resources – conditions such as involving those most affected by how the rules are framed and modified; ensuring that the rules are simple and fair; and having effective mechanisms for resource monitoring and conflict resolution.

WHAT DETERMINES GENDERED PARTICIPATION?

The gender-related efficiency and equity outcomes discussed above are largely secondary, stemming from women's low participation in CFGs as well as pre-existing socio-economic inequalities within communities. A key question therefore is: what underlies women's low participation and gender-unequal distribution of costs and benefits? Below I consider the factors that tend to affect participation in critical ways: rules, norms, perceptions, the person's individual endowments and attributes, and their household endowments and attributes (which define where they fall within the class and social hierarchy).

Rules

In formal CFGs, such as JFM groups in India and FUGs in Nepal, rules determine membership in the GB or EC. As noted earlier, where rules restrict membership to one person per household, only men tend to join. Rules allowing one man and one woman per household are more inclusive, but for full inclusiveness all adults must be eligible.

This is rare. Lack of awareness of rules (or changes therein) can also constrain women's participation. In West Bengal, a study of 19 CFGs found that even four years after the amended rules allowed women's inclusion, barely two-fifths of members knew of the change (Raju, 1997). Among self-initiated groups, long-standing conventions that exclude women from public bodies also deny women entry into CFGs.

Social Norms

Even when women join, they seldom attend or speak up at meetings because of restrictive social norms. Whether internalized by women, or imposed on them by threat of gossip or reprimand (even violence), these norms curtail women's ability to participate effectively in male-dominated CFGs.

Some communities practice strict female seclusion, but more pervasive is the subtle gendering of physical space and social behavior. For instance, women of 'good character' are expected to avoid village spaces where men congregate, such as tea stalls and the market place (Agarwal, 1994). This makes many women uncomfortable in attending CFG meetings:

The meetings are considered for men only. Women are never called. The men attend and their opinions or consent are taken as representative of the whole family – it's understood. (Woman in a *van panchayat*, UP hills, Britt, 1993: 148)

The gender division of labor compounds this situation. That women bear the main responsibility for childcare and housework, in addition to the load of agricultural work, cattle care and so on, makes for high work burdens and logistical constraints. As some women in Barde village (Karnataka, India) told me in 1998: 'There are problems in attending meetings since we need to cook and serve the evening meal. The meeting is long. We also have to feed the cattle.' This constraint is regionally widespread (Mansingh, 1991).

Other norms reduce women's participation through subtle hierarchies, such as requiring women to sit on the floor while husbands and older men sit on cots, or requiring women to sit at the back where they are less visible and audible. Moreover, when senior male family members are present, women either do not attend meetings or do not oppose men publicly. The hierarchy that marks 'respectful' behavior within families also marks behavior within community gatherings.

Social Perceptions

Male perceptions or prejudices regarding women's abilities also reduce their inclusion in CFGs. Some men's responses are indicative:

There is no advantage in having women in the EC. We have been told by the forest officials that we must have two women in the committee; that is why we have included them. (Male EC member to author, Pathari village, Karnataka)

Women are illiterate. If they come to meetings, we men might as well stay at home. (EC chairman to author, Ghusra village, Dang district, Nepal, 1998)

Ironically, many of these men were themselves illiterate!

Entrenched Territorial Claims

Men oppose women's inclusion much more strongly where CFGs begin with only male members and their claims become entrenched. Some young men in Basapur village (Karnataka) complained to me, for instance, that 'women have DWARCA [Development of Women and Children in Rural Areas – an anti-poverty program], they have savings groups; why don't you leave the CFGs to us men?' Facing such hostility, sometimes women want their own plots to protect, arguing that: 'If we had our own forest, we would not need to ask the men each time for a bit of wood'; or, 'they are not willing to give us even a patch to protect. Why would they be willing to give us a whole tree if we asked?' (women to author in Kudamunda village, Orissa).

Personal Endowments and Attributes

Women's lesser access to personal property or political connections reduces the weight of their opinions, while limited experience in public interaction undermines their effectiveness in public forums. Some disadvantages can be overcome if the women are older, married, have leadership qualities and are self-confident. In many CFGs, widows or older married women living in their parental homes tended to be less socially constrained (Britt, 1993; Narain, 1994; personal observation).

Household Endowments and Attributes

The class and caste position of the woman's household can matter, especially where the village is multi-caste and dominated by the upper caste, or where the CFG is constituted from several villages that are individually caste/class homogeneous but have hierarchies across villages (my fieldwork in 1998–99; see also Hobley, 1996 and Sarin, 1998). The caste factor works in complex ways. On the one hand, being low caste and poor can adversely affect a person's ability to bargain for a better deal within a predominantly upper-caste community – even low-caste men hesitate to speak at meetings. On the other hand, low-caste women are less subject than upper-caste women to norms of seclusion, restricted mobility and soft speech, and are thus more able to speak up and intervene (see also Agarwal, 2010).

WHAT AFFECTS COST AND BENEFIT SHARING?

Factors similar (but not identical) to those that affect women's participation also affect gender-unequal sharing of costs and benefits. For instance, social norms governing the gender division of labor that makes firewood collection women's responsibility also place on them the main cost of forest closure. Benefit sharing is affected by rules that

determine entitlements – where benefits are handed over only to male members, gender inequalities emerge due to unequal sharing of resources within families.

Similarly, perceptions about needs, contributions and deservedness matter. Women's contribution to household income is often undervalued, both by family members and by those implementing development programs because of the 'invisible' nature of the many household tasks (such as collecting firewood and fodder, stall-feeding animals, storing and processing grain etc.) that women perform. These tasks are often economically invisible in the absence of cash returns and physically invisible when done within the home. By analogy, women not *seen* as participating in forest management are not considered entitled to equal benefits with men.

Also, since women as a gender (albeit not all women as individuals) have fewer personal endowments, CFG shares given only to men result in unequal gender outcomes in both rich and poor households. Again, women's personal attributes such as age and marital status can moderate intra-household distribution by influencing perceptions about deservedness.

Finally, how acutely women are affected by forest closure or shortages of items they usually collect is influenced by their household's economic endowments (class) and social attributes (e.g. caste). Women of poor households are more adversely affected, although for fuelwood even women from middle peasant households face difficulties, since they too often depend at least partly on what they can gather from the commons (see, e.g., Natarajan, 1995).

IMPROVING OUTCOMES FOR WOMEN

The above analysis paints a rather bleak picture of unequal power relations predicated on gender and other social inequalities, thus underscoring a key political ecology theme. Can this situation be rectified?

Some constraints have deep economic and social roots which pre-date community forestry, and which can be reinforced or weakened by CFGs. Other constraints, such as CFG rules, are part of institutional functioning. Both types of constraints are constituted at several levels. Rules are broadly made by the state and communities. JFM membership criteria are determined at the state level, but whether forest closure should be total or partial, or how often products should be distributed, is determined largely by the community. And social norms, social perceptions and endowments are constituted and contested at all levels – within the state, community and family – with varying degrees of civil society involvement.

A promising framework for examining the possibilities for change on all these counts is that of bargaining. Women's ability to change rules, norms, perceptions and endowments in a gender-progressive direction would depend on their bargaining power with the state, community and family, as the case may be (for the full conceptual framework, see Agarwal, 1997). What affects women's ability to bargain effectively in the three arenas? Ground experience with CFGs provides some answers.

JFM experience indicates that successfully bargaining with the state for changing the initial rules of entry is not difficult. Pressure from gender-progressive NGOs and key

individuals has led many Indian states to make JFM membership more women-inclusive. Such change was helped indirectly by the women's movement in South Asia, which focused policy attention on gender inequalities. Village women thus started from a position of some bargaining strength on this count.

However, bargaining with the community to ensure the implementation of women-inclusive membership rules and to increase women's effective voice in CFGs is more difficult. True, some gender-progressive NGOs, forest officials and donors with community clout have promoted a degree of change. Some Indian NGOs, for instance, make high female membership in mixed groups a precondition for forming CFGs. In Gujarat, one NGO insists on 50 percent women for new CFGs. Similarly, some state-level officials have stipulated a minimum of 30 percent women in the GB, and some others refuse to start meetings unless women are present (Sarin, 1998; Viegas and Menon, 1993). For distributional equity, likewise, the staff of a Gujarat-based NGO took up women's complaints about firewood shortages at CFG meetings, leading to a rule change from a complete ban on entry to allowing some firewood extraction for a few days annually.

Such action, however, cannot substitute for women themselves playing an active role. Left to themselves, women typically resort to covert forms of bargaining to change distributional rules, such as ignoring closure, arguing with guards if caught, persistently complaining, and so on. Sometimes this leads forest committees to open the forest for short spells, but complaining and breaking rules (with the risk of being caught and fined) are not the most effective ways of changing rules. For effective change, women need more formal involvement in rule-making, and the ability to influence changes in their own favor.

Here a critical mass of vocal women is usually necessary. This may give women more voice in mixed forums and help them challenge restrictive social norms and perceptions. As women in some villages of the UP hills stressed: 'without a good majority of women present it is impossible to express opinions' (Britt, 1993: 146). For women to gain experience in public intervention and build a critical mass within CFGs may need, as a first step, the formation of separate women's groups. Many all-women CFGs have done well on these counts. But all-women CFGs are few in number, and in any case cannot solve the general problem of women's low presence and ineffective voice in the vast majority of CFGs, which are male-dominated.

For women's integration into mixed CFGs, other strategies will be needed. One NGO in Karnataka (India) encourages women's savings groups to discuss CFG functioning, collect CFG membership dues and persuade women to join. As a result, in several villages, some 80–90 percent of women in the savings groups are now in the CFG general body (personal communication from Pratibha Mundergee, former NGO worker, 1998). Another approach could be to constitute a women's sub-group within each mixed CFG. The sub-group could first meet separately to identify village women's forest-related needs, and then seek to ensure that those needs are addressed in the full CFG meeting (see also Agarwal, 2010).

But for women to participate effectively in public forums, bargaining within the family is also needed to reduce restrictions on women. This is a complex issue, and few rural NGOs directly intervene in intra-household relations, but all-women groups can help, and many have supported individual women in their negotiations with husbands:

There are one or two men who objected to their wives attending our meetings, and said you can't go. But when our women's association came to their aid, the men let their wives go. (Women to author, Almavadi village, Gujarat, 1998)

In other words, group strength and women's visible contributions can weaken restrictive social norms.

Indeed, group strength can be a critical factor at all levels and forms of bargaining (including over social norms). Here village women's group strength derives not merely from the number of women who would like a change, say in rules and norms, but also from their willingness to act collectively in their common interest – an interest predicated on gender. In other words, much depends on whether gender is a basis of group identity, over and above the possible divisiveness of caste or class. The creation of such a group identity could thus be part of the process of improving outcomes for women.

Finally, any group, including a CFG, would be affected by the wider context of inequalities within which it is located. Both participation and distributional equity are affected by pre-existing inequalities predicated on the caste and class of women's households, as well as on gender. These inequalities are unlikely to decline much within the parameters of CFGs. For instance, greater participation in CFGs alone cannot notably improve the economic endowments of women vis-à-vis men, or of the poor vis-à-vis the rich. For such transformative change, more wide-ranging measures would be needed to enhance the access of women, especially the poor, to land and other assets.

CONCLUSION

This chapter explored group behavior and gender dynamics in CFGs. It found that while many such groups had done quite well in regenerating forests, they had been less successful in ensuring women's participation in decision-making, or gender equity in the sharing of costs and benefits from forest protection. Consequently, they had failed to tap the full potential of collective effort. Improving participation and equity is important both in itself and for enhancing efficiency. To achieve this will require changes in rules, norms and perceptions, as well as in the pre-existing structural inequalities in women's (and their households') endowments and attributes.

And to achieve these changes will need strengthening women's bargaining power with the state, community and family. Interventions by external agents such as NGOs, forest officials and donors can help, but women's own efforts at collective action will be central to sustained effectiveness. As an initial step, forming all-women groups can help women gain confidence and experience in strategic public intervention. But other interventions (discussed here) will be needed to fulfill the wider goal of ensuring a critical mass of women in mixed CFGs.

Further research in political ecology needs to build on these insights, and especially to assess how nested group arrangements (such as women's sub-groups within mixed CFGs) might promote gender equity in group functioning. Such research could also examine how women's leadership capabilities can be enhanced, and how such leaders

could gain wider acceptance in hitherto male-dominated contexts. These are but a few steps among the many that will be needed to transform mixed CFGs, and similar forums for governing common pool resources, into more gender-egalitarian institutions.

NOTES

- * This chapter is an adapted version of the following and is used with permission: Agarwal, B. (2002), 'The hidden side of group behavior: a gender analysis of community forestry in South Asia', in J. Heyer, F. Stewart and R. Thorp (eds), *Group Behavior and Development*, Oxford: Oxford University Press, pp. 186–208, <http://www.oup.com>.
1. (Guhathakurta and Bhatia, 1992; Kant et al., 1991; Narain, 1994; Roy et al., 1992; Sharma and Sinha, 1993; Singh and Kumar, 1993; Tata Energy Research Institute (TERI), 1995; also my field visits).
 2. (Correa, 1997; Mansingh, 1991; Mukerjee and Roy, 1993; Raju, 1997; Regmi, 1989; Singh and Burra, 1993; and my fieldwork).
 3. (Arul and Poffenberger, 1990; ISO/Swedforest, 1993; Kant et al., 1991; also my field visits).

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16. Political ecologies of religious pilgrimage

Shanti Nair

The point at which political ecology meets religion needs greater study. Whilst religion is more important in the social sciences and humanities today, its importance in relation to issues of concern to political ecologists is only partly addressed. Much research thus assesses how religions reflect ‘green’ thinking solicitous of environmental protection but does not examine unequal power relations or questions of environmental access and degradation central to political ecology (Robbins, 2012). Where the latter does engage with religion, it habitually does so in relation to indigenous belief systems or conservation struggles. World religions are often neglected yet can motivate human action in ways that are ripe with political, economic and ecological meaning.

Ritual is an important aspect of religion, with the act of pilgrimage particularly insightful into how some practices can have an enormous impact on both people and environment. Indeed, political ecology is ideally placed to uncover how pilgrimage – a temporary migration of people – can reflect, reinforce or sometimes challenge unequal power relations based on wealth, health, ethnicity, caste, gender or mobility, and with what ecological implications. It also helps underline how religious pilgrimage is a form of governance that has been historically important for millions of people.

This chapter explores the political ecologies of religion in relation to pilgrimage through a case study of the *hajj*: the annual journey to Mecca and Medina in Saudi Arabia made by millions of Muslims. Each religion has its own pilgrimage rituals and human–environmental interactions (in Hinduism, for example, pilgrimage is mostly inside India; see Prasad, 2013). Yet the *hajj* is arguably most significant here, involving a community of worldwide devotees who temporarily assemble annually in one or two places. As one of the five pillars of Islam required of Muslims at least once in their lifetime, the *hajj* has been undertaken for 14 centuries. Yet it is only since the mid-nineteenth to early twentieth century that new forms of governance afforded by technological, economic and political changes have meant that such pilgrimage has become accessible to more Muslims than before, even as it is informed by surveillance by colonial and post-colonial states. To study the *hajj* is important today too because it serves not only to illustrate the rich political ecologies shaping this faith and its main pilgrimage, but also acts as a corrective to analyses that implicitly or explicitly equate Muslim practice with the ‘terrorism question’ since 9/11. The tendency to link ‘Muslim’ and ‘terrorism’ is not only misleading but dangerous (Mamdani, 2002).

This chapter is structured as follows. First, it summarizes selected research that connects political ecology and religion. It then highlights the historical and geographical importance of religious pilgrimages, including the *hajj*. The focus is thereafter on governance and the *hajj*, detailing in particular state practices including those by the main pilgrim-receiving country (Saudi Arabia) and one exemplar of a major pilgrim-sending country (Malaysia). Subsequently, I briefly consider the role of wealth and

consumption, health and civil society activism in relation to the *hajj*, before concluding with a call for further research.

BUILDING POLITICAL ECOLOGIES OF RELIGION

There is unevenness in how religion is addressed in the field. On the one side, it is notably subsumed in more expansive anthropological-style work on the politics, ecologies and cultures (including spiritual belief systems) of indigenous groups. On the other side, some work explicitly focuses on how religion, politics and culture connect through ecological thought and practice, but lacks clear linkage to political ecology.

It is not uncommon for political ecologists to broach the topic of religion or spiritual belief systems in doing ethnographies of ‘indigenous’ communities. This work is usually carried out in the global South, forms part of a wider understanding of deeply rooted local human–environmental relations, and often is normative in tone. Three things stand out here.

First, consideration of religion or spiritual belief systems (also ‘cosmovisions’) tends to serve a functional role in community narratives. The generation of ‘rich thick’ descriptions is premised on in-depth understanding of local cultural *mores* and practices – which are routinely linked to spiritual beliefs. However variable these accounts are, they regularly emphasize function – how belief systems inform local perceptions and practices embedding people in place. Frequently, they suggest belief systems aid in environmental management. Thus, writing about India, Guha (1989: 189) argues ‘through a mix of religion, folklore and tradition the peasants of Uttarakhand had drawn a protective ring around the forest. As with other forest-dwelling communities, the continuity of their world rested on continuity in their relationship with the forest’. Here ‘sacred groves’ are often invoked (Sheridan and Nyamweru, 2007).

Second, analysis often reflects a normative purpose linked to culture-based arguments favouring local communities. While not necessarily romanticist, there is nonetheless a sense that ‘local/indigenous is better’ and that it is ‘better’ because it is based on holistic understandings of socio-natures that are frequently, in turn, connected to spirituality. For instance, Robbins (2006: 188) relates the politics of nature in the Urapmin community (Papua New Guinea) to how this group differentiates nature from culture and ‘how they think about spirits and their clutching, possessive ways’. For Escobar (2008), the ‘territories of difference’ upon which the struggle of Afro-Colombian movements is based is partly a matter of weaving complex *cosmovisiones* (world views) informed by spiritual rituals such as *la ombligada* (ritual relating to the ‘navel’ and childbirth).

Third, the question of religion or spiritual belief systems is regularly related to the matter of resistance. Resistance certainly involves more than such a linkage. Yet sometimes it is seen to be crucial. According to Guha (1989: 190), for example, the ‘religious milieu’ impacts resistance: (1) by providing ‘a moral–religious sanction for their acts’; and (2) in lending ‘religious symbolism’ to the ‘ideology of peasant protest’. Then, there is direct engagement by religious figures (e.g. monks, priests) in protest.

For instance, Darlington (2003: 348) demonstrates how ‘ecology monks’ (*phra nak-anuraksa*) in Thailand adapt Buddhist scripture to conduct tree ordination rituals in community forests whose protection is vital to locals.

Not all political ecology work fits neatly in these categories. Thus, while Li (2007) occupies familiar indigenous terrain in studying the impact of development on animist highlanders in Sulawesi (Indonesia), she nonetheless assesses the role of religion in terms of how Christian missionaries use it to help constitute governable subjects likely to acquiesce to Dutch rule (Li, 2007: 67–9). Dommett (2012) examines the intersection of place, territory and violent environments in Israeli settlements in the West Bank, showing how specific perceptions of Jewish faith not only motivated settlers to create communities, but also conditioned subsequent ecological interventions (e.g. tree selection and planting). And Empinotti (2007) considers how the Catholic Church became involved in struggles over water privatization in the lower São Francisco River Basin in Brazil because such action affected a local pilgrimage site.

Meanwhile, there is growing literature that may not explicitly reference political ecology but that nonetheless operates at the interface of politics, ecology, culture and religion. This work draws on religious studies, cultural anthropology, political philosophy, human geography, environmental history and environmental studies. One theme addresses the political geographies of religious nature-linked pilgrimage. Noteworthy here is Ivakhiv (2001: 16), who assesses ‘sacred’ or ‘alternative’ New Age geographies at Glastonbury (UK) and Sedona (USA); political intent is clear inasmuch as ‘Gaia’s pilgrims’ rebel against modern consumption lifestyles, but end up perpetuating a ‘Disneyfied’ tourism that commodifies spirituality-cum-environmental concern.

Another theme (echoing work mentioned above) explores how the politics of contemporary religious practice finds growing resonance in environmentalist movements as a result of calculations owing little to ‘green’ scripture. Thus Dessi (2013) relates that moves by Japanese Buddhist organizations to criticize nuclear power (post-Fukushima) align with calls by environmentalists to end national reliance on nuclear energy, even as these moves reflect shifts in how those organizations operate consonant with a desire to reassert Buddhism in Japanese life. Obadiah (2011) meanwhile argues that eco-Buddhism is but an invented tradition in which Buddhism is ‘ecologized’ by ecological standards and discourses emanating from the global North.

Finally, work examines how religion, politics and culture come together in the context of ecological thought. One focus is the *Journal for the Study of Religion, Nature and Culture* (founded in 2007 by the International Association for the Study of Religion, Nature and Culture), which aims to explore what constitutes an ethically appropriate relationship between humans and the places they inhabit (Taylor, 2005, 2007, 2009). While covering diverse topics and approaches that build on wider scholarship on environment and religion, its attention to such topics as eco-feminism, Hinduism and India’s forests, environmental apocalyptic culture and media, eco-justice, religious-inflected alternative agriculture and ‘dark green’ religions, as well as work that rejects nature–culture dualisms suggests points of convergence with political ecology (e.g. Ivakhiv, 2007, Kent, 2010; Sanford, 2013; Schneider-Mayerson, 2013). A special issue of *International Social Science Journal* (2011) on ‘Political ecology: religion, myth, belief’, seeking to integrate ideas from political, philosophical and

religious thought, also points to a quickening multidisciplinary interest at the interface of religion, politics, culture and ecology.

This variegated literature in and around political ecology underlines the need to take religion more seriously in political ecology than hitherto. The chapter now turns to the issue of religious pilgrimages in general and the *hajj* in particular to explore selected issues in such an expansive research agenda.

UNDERSTANDING RELIGIOUS PILGRIMAGE

The role and impact of religious pilgrimage over time and space is well documented. Three themes stand out: (1) its properties as community; (2) its wider historical impacts; and (3) its environmental and geographical dynamics.

The connection between pilgrimage and community has long intrigued scholars (including non-religious ‘pilgrimages’). A focus – at least in studies on world religions – is how ritual in pilgrimage can produce a condition of ‘liminality’ (or disorientation) among pilgrims in communities of the apparently like-minded. A shared sense of equality, global unity and brotherhood (as perhaps epitomized in the *hajj*) acquired through pilgrimage not only underpins camaraderie at pilgrimage sites, but also sometimes affords a unique occasion for pilgrims to reflect critically (free of the conventions of everyday life) about their lives as well as the societies in which they reside (Turner, 1974). For example, Low (2007) argues that the *hajj* in the early twentieth-century colonial world encouraged a kind of pan-Islamic solidarity based in part on anti-colonial sentiment.

Yet such communities are differentiated. As Eade and Sallnow (1991) suggest, the process of pilgrimage may even accentuate social differences, as distinction-making acquires a spiritual guise. There are competing discourses at play in these sacred journeys, linked to socially unequal positioning based on such things as class, gender and ethnicity. That these journeys are embedded today in capitalist exchange as well as occurring against the backdrop of international conflict only reinforces divisions.

At the same time, scholars stress that pilgrimages differ, sometimes considerably, according to the different religious traditions from which they spring, while having different historical impacts (Bianchi, 2004). The latter can take many forms, thereby underlining non-religious ramifications to this process. One area historians note relates to the global circulation of people involved, as pilgrimage connects to such things as long-term migration and growing diaspora (Laffan, 2003; Amrith, 2011). But it is more than this. The history of pilgrimage also reflects the intersection of trade, commerce, travel, ritual, devotion, polities, empires, states, elites, ordinary people and memories, in a jumbling together of ‘local histories’ and ‘trans-local places’ (Tagliacozzo, 2013: 42). The history of *hajj* from Southeast Asia reflects this jumble (Tagliacozzo, 2013); as does the creation of Muslim diasporas along trade routes that allowed pilgrims to linger at stops in the Indian Ocean en route to Arabia (Amrith, 2011). Recently, the velocity and volume of pilgrimages has increased, perhaps thereby lending a distinctively new spiritual conceptualization to mobility; undertaken as an articulation of faith (concerning individual and collective fulfilment), pilgrimage unifies the inner and

physical journey into a holistic project of self-realization *through* motion (Hyndman-Rizik, 2012).

Finally, pilgrimage needs relating to environmental and geographical dynamics. Spatial understandings of holy sites and pilgrim movements constitute important geographic facets to pilgrimage: for example, ideas about journeys as ‘travel’, the physical distances involved, the concept of nodal regions and religious tourism. Assessment is made of how personal experiences and symbolic economies relate to religious tourism and pilgrimage (Raj and Morpeth, 2007). Nevertheless, for sheer scale and intensity, modern-day pilgrimage and religious travel are sometimes seen as being like any other form of tourism (McKercher, 1993). Indeed, today’s pilgrim is often perceived by some writers as more a tourist than a traveller, due to limited ritual engagement and reliance on commercial package tours (Gladstone, 2005; Singh, 2006). Environmental impacts of pilgrimage are also noted. As visitor numbers increase, sacred sites are subject to environmental problems: air pollution, overcrowding, sewage treatment, contaminated or insufficient water supply, deforestation and so on (Shinde, 2007). Such problems have socio-cultural and political implications (Collins-Kreiner, 2010) that demand effective management (Woodward, 2004; Shinde, 2010).

In short, religious pilgrimage is ripe with political-ecology meaning, often involving global flows of people, goods, capital and ideas, creating more complex, pluralized societies over time and space that challenge state regulatory capacities. And, with a neo-liberal-inspired shift away from state controls, governance is increasingly linked to a diverse assembly of institutions, organizations and civil society networks (McLoughlin, 2013).

Hajj

The *hajj* provides a useful case study of the political and ecological complexity of pilgrimage. It also raises unique multi-scale dynamics consonant with global political ecology. Before turning to the analysis, an overview is needed.

As noted, the *hajj* is one of the five pillars of Islam, uniting Muslims doctrinally. All Muslims (if physically and economically able) must perform this pilgrimage at least once. Whilst it involves visiting Mecca and Medina in Saudi Arabia between the eighth and thirteenth day of the final month of the Islamic calendar, many Muslims also undertake the *umrah*, which is a non-mandatory lesser pilgrimage performed outside the *hajj* season. Whilst international pilgrimage has existed since antiquity in world religions, the *hajj* is remarkable in its doctrinal centrality, geographic focus and historical continuity. As a phenomenon of temporary mass migration, it is unparalleled in size. Internationally, it attracts millions of pilgrims (approximately 50 per cent from Asia, 35 per cent from the Arab world, 10 per cent from sub-Saharan Africa and 5 per cent from Europe and the Western Hemisphere). Taken together, these constitute the largest and most culturally diverse assembly of humanity over time and space (Oxford Islamic Studies Online, 2014). Such migration has grown rapidly: from 1.8 million in 1995 to 2.7 million in 2010 and over 3 million in 2012 (CDSI, 2013). Meanwhile, in 2011, there were around 9.2 million *umrah* and *ziarah* (i.e. sites associated with revered Islamic figures) visits in Saudi Arabia with total direct receipts from all religious tourists (*hajj, umrah and ziarah*) around US\$10.7 billion (Jafari and Scott, 2014).

Whilst 1.6 billion people currently self-identify as Muslims, that number is projected to grow to 2.2 billion by 2030 (PRC, 2011). True, not all are active practitioners or able to travel. Still, this indicates how the *hajj* might grow in the future.

Literature on the *hajj* once tended to divide the world of pilgrims into discrete units rather than envisioning the unity of the *dar al-Islam* (the community of nations where Islam is practised freely). Recent work on the Indian Ocean region offers new understanding (Low, 2007; Tagliacozzo, 2009, 2013). It underlines the connection between the spread of Islam and the complex cultural and trade networks emerging in the pre- and early-modern periods, including the *hajj* that built 'latitudinal' linkages between (British) India and the Red Sea, Arabia and the Suez Canal – prompting British suspicions about pan-Islamic 'threats' (Low, 2007). Indeed, Tagliacozzo (2013) describes the Islam of the Middle East as an 'alternative modernity' to that of colonialism for many Southeast Asians.

The *hajj* continues to shape how Muslims see themselves socially and politically. As a transnational gathering over a short time-period, it epitomizes a globalized phenomenon of temporary migration that realizes the Islamic *umma* (community of believers), both imagined and real. This has led to perceptions of the site of the *hajj* as holding enormous potential for building the *umma* at collective and individual levels, and for shaping social and political attitudes in both (Eickelman and Piscatori, 1990). Pilgrimage then involves new religious and social experiences relating to ideas and processes linked to multiple scales. These experiences represent a kind of accelerated modernism in action, in which the sacred and the secular, the traditional and the modern, coexist in hybrid material and discursive practices. Such action is embedded in the larger world of international relations, global flows of capital and cultural change (O'Connor, 2013). Yet such hybridity does not equate to any universalized Muslim identity, given the multiple nationalities, cultures and identities involved (McLoughlin, 2009).

GOVERNANCE AND THE *HAJJ*

The combination of religious practice, transnational behaviour, as well as a sense of collective and individual identity, has long rendered the *hajj* a subject of complex governance. The qualities of such governance have changed over time and space in a process both reflecting and shaping broader political, economic, cultural and ecological processes – making *hajj* governance of prime political-ecology interest. Below, the chapter considers selected issues in such governance: state practices, wealth and consumption, health and civil society activism.

State Practices

The *hajj* has not only been profoundly shaped by state practices; it has also shaped the articulation of state identities in the *dar al-Islam*. While governance has never been reducible to state action, it is nonetheless true that this actor has played a pivotal role. Specific geographies involving the annual transnational movement of people between sending and receiving countries has meant that the *hajj* has had political implications in terms of both state policies and inter-state dynamics.

The *hajj* has shaped the modern emergence of Middle Eastern states, especially that of Saudi Arabia, where both Mecca and Medina are located. In complicated ways, this process is entangled in that other regional claim to fame – oil. That the world's leading petroleum state is also guardian of key Islamic holy sites suggests a political ecology of governance that is unique. Here, the 'unruly' materiality (Bakker and Bridge, 2006) of people (pilgrims) and resources (oil, but also water) collide intriguingly.

Hajj governance in what is now Saudi Arabia was never straightforward. Pre-colonial administration was haphazard, depending on the struggle between the Hashemite dynasty (guardians of the site) and the Egyptian monarchy (leaders of the most populous regional Muslim nation). As noted, the projection of European (especially British) power in the nineteenth and twentieth centuries meant that, along with many Muslim countries, the *hajj* itself was colonized, thereby shaping pilgrim experiences. Colonial institutionalization of the *hajj* – partly from fear of disease (see below), partly from concern about pan-Islamic anti-colonialism – underpinned its later elaboration by the post-colonial state. Since 1957, the Saudi royal family has asserted more systematic control of holy sites alongside more comprehensive administration of the *hajj* in a move designed simultaneously to legitimize the stature of Wahhabi Islam (a strict form of Islam preeminent in Saudi Arabia calling for literal Koran interpretation) and to secure the kingdom's stability – with oil revenues sustaining this endeavour. In thus exercising guardianship, the Saudis assumed symbolic leadership of Sunni Islam, using control over holy sites to consolidate their leadership in the Islamic world, even while generating tensions (Peters, 1994; Fraser, 1997).

Without doubt, oil greases the wheels of the modern *hajj*. From modest beginnings in the early twentieth century, Saudi Arabia became the world's leading oil exporter. This role places it at the heart of contemporary capitalism while enmeshing it with the world's most powerful countries. The wealth and power generated from Saudi oil has in turn enabled lavish refurbishment of holy sites plus construction of modern facilities for pilgrims – such governance deemed beneficial for all Muslims (Fraser, 1997).

Oil wealth also enabled the Saudi state to strictly regulate the *hajj* experience in a move prompting international tension. There is the bureaucracy: over 20 agencies led by the Ministry of Hajj involved in planning, implementation, supervision and control of the *hajj*. It is a complex task: to safely transport and accommodate pilgrims over a one-week period, across an area of 68 000 km² with diverse demands, including rituals conducted at multiple holy sites on different days at specific times in variable order (al-Khodmany, 2009). There is the politics too: some agencies are more powerful than others, linked to different strands of the ruling elite, with some working with counterpart agencies in sending countries and/or engaging in global public outreach (Ministry of Hajj, 2014). This bureaucracy is notably involved in the business of a Wahhabist-oriented homogenization of praxis and identity, with the pilgrimage experience increasingly subject to rigid textual guidelines, professional guidance, and dictates from religious and government authorities (Low, 2007).

Environmental transformation is integral to this process. Partly, this relates to pilgrim movements to and from Saudi Arabia. Such pilgrimage involves the temporary enlargement of individual (and national) carbon footprints (Hanandeh, 2013). Partly, it concerns the holy sites:

On the way from Jeddah to Makkah [Mecca] along the modern superhighway, pilgrims board one of the fleet of 15 000 buses assigned to the Hajj. This vast concourse of vehicles approaches Mina [the ‘tent city’ just outside Mecca] ... where most of the pilgrims are housed in the thousands of air-conditioned tents that stretch to the limits of Mina Valley ... Food is prepared in hundreds of kitchens spread throughout Mina and distributed among the tents. Thousands of drinking fountains and wash areas are located throughout the tent city. [Meanwhile, on the Plain of Arafat] thousands of sprinklers [are] placed atop 30-foot poles and spaced some 50 feet apart, which spread a fine mist of water to provide coolness. Millions of containers of chilled water are distributed from refrigerated trucks located along the pilgrim route. (Royal Embassy of Saudi Arabia, 2010, cited in Henderson, 2011: 546)

Here is a dynamic of resource access that facilitates pilgrimage while generating waste. Similarly, mammoth and sprawling development of the city of Mecca has resulted in widespread land degradation (Sadar, 2014).

That experience must also be related to policies in pilgrim-sending countries. The latter form a heterogeneous group, differentiated by geography, proportion of Muslims in the population, level of development, cultural and national imaginaries, and so on. Research needs to explore such diversity while relating it to political, economic, cultural, religious and ecological dynamics in specific countries. Thus a comparative political ecology of *hajj* governance may be elaborated.

To illustrate some issues here, the following briefly explores the case of Malaysia, a prospering middle-income country in Southeast Asia that is an important player in the *dar al-Islam*. Islam in general, and the *hajj* in particular, have long played a central role in the articulation of Malay as well as Malaysian national identity. The *hajj* ‘played a vital role in fusing religious and political power’ in both the Malay and Indian Ocean worlds between the seventeenth and early nineteenth centuries (Tagliacozzo, 2013: 84). For both pilgrims and non-pilgrims, the *hajj* enabled the Malay world to define itself in relation to the religious and intellectual worlds of the Muslim centre. Imperial visions of the *hajj* thereafter allowed for connections between ‘race’ and Islam (Tagliacozzo, 2013: 125–8). The post-colonial state has prioritized constructing a large bureaucracy to facilitate the *hajj* for its citizens. Part of a larger process of state building, it is simultaneously a means to entrench Malay ethnicity at the heart of national life – a mission to which the ruling party, the United Malays National Organisation (UMNO) is dedicated. Central to Malay identity, the role of Islam is crucial here (Nasr, 2001). Boosting a religious-based Malay identity not only reflects political calculations (i.e. to undercut support for the rival Pan Malaysian Islamic Party, or PAS); it also seeks to ensure that Malays benefit more from national development (long seen to go disproportionately to the minority Chinese).

Two things stand out in this quest. First, state capabilities have relied on UMNO’s ability to control the nation’s Islamic politics and to define its Islamic values. Partly, this involves state engineering of an international identity for Malaysia as an exemplary Muslim country: moderate, capitalist, tolerant and globally integrated. Promotion of Islam *Hadhari* (‘civilizational Islam’), as much about exercising ‘good governance’ as about interpreting religion, has sought to locate Malaysia at the forefront of Muslim modernity – technically and scientifically adept, highly educated, progressive – partly as a counter to calls for an Islamic state notably emanating from PAS. Hence the state extends its ‘protection’ of ethnic Malay (and therefore Muslim) nationalism through

management of transnational Islamic influences on Malaysian Muslims (Nair, 1997). These UMNO-led efforts form part of wider changes – rural–urban migration, the existence of a Malay underclass, urban ethnic diversity and globalized modern living, Islamic revivalism (*dakwah*), a burgeoning civil society, an educated, urban middle class and so on. Malaysia’s increasingly globalized economy has provided fertile ground for Malay–Muslim socio-religious disorientation even as more Malays are inducted into a capitalist economy (Tong and Lian, 2003; Fischer, 2008).

Second, global economic integration reflects decades of growth, notably based on natural resource exploitation and plantation development. Intensive logging, especially, garnered international attention, but the spread of rubber and palm oil plantations also dramatically transformed Malaysia’s landscape. Such export-oriented activity is increasingly complemented by other activities (e.g. industry, services), with the World Bank (2013) lauding this ‘success’ story. In contrast, political ecologists join ‘radical’ NGOs (e.g. Sahabat Alam Malaysia or Friends of the Earth) in criticizing the social and ecological costs of this ‘development’ (Hurst, 1990; Jomo et al., 2004; Cramb, 2013). Yet this ‘cashing in’ of natural resources means that diverse social and economic activities have gone ahead, aimed at enhancing Malaysia’s international standing.

State management of the *hajj* is a prime example here. Since 1969 when the Lembaga Urusan dan Tabung Haji (Pilgrims Fund Board) was established, the Malaysian state has enabled the *hajj* to become an overt means for Muslim self-identification – for example, providing hefty subsidies each year to every pilgrim (*Sunday Star*, 2014). Meanwhile, administrative improvements in service delivery are promoted so as to underscore official concern for Muslim (read Malay) interests, thereby helping to shape Malay–Muslim identity in a national and a global context (Nair, 1997). Yet, with the infusion of cash come tighter controls – the *hajj* being governed with a carefully defined political and religious identity in mind. It is, too, increasingly nationalized in the sense that pilgrims are corralled into national delegations that stay together throughout the pilgrimage. Such nationalization seeks to induce ‘proper’ conduct.

Being a transnational process, cooperation between states is vital but rarely smooth. Aside from doctrinal disputes, one flashpoint is *hajj* quotas – a Saudi system to control both pilgrim numbers and *hajj* practices (and Muslim identity generally). Here, the Saudis are aided by the Organisation of Islamic Cooperation (OIC) – the second-largest intergovernmental organization after the United Nations that was founded in 1969 as a ‘collective voice of the Muslim world’. As evinced by the quotas issue, that voice is notably influenced by Saudi Arabia, with the OIC helping to enforce an ‘international *hajj* regime’ (Bianchi, 2004). Thus, even as states would define pilgrim experience and Muslim identity, they often disagree on appropriate governance. There is too the question of how far *hajj* governance is reducible to state practices since it involves diverse actors and issues that bedevil strict control.

Wealth and Consumption

Governance involves multiple mechanisms and issues that horizontally and vertically link actors. Transnationally, it encompasses intergovernmental negotiations and non-formal processes of coordination among state and non-state entities. Such governance

encompasses autonomous spheres of authority beyond the state (Dingwerth and Pattberg, 2006). In turn, this situation reflects individual and group practices notably shaped by wealth and consumption concerns.

Those concerns can be seen where an individual or group's capacity to perform *hajj* is influenced by class position and wealth, even as such factors mediate attitudes towards *hajj* and its 'rewards'. Even to go on pilgrimage may reflect individual circumstances in terms of direct costs (e.g. travel, accommodation, food, visas) and indirect costs (e.g. loss of income). Economic differentiation does not disappear once pilgrims enter Saudi Arabia. More affluent pilgrims, including those drawn from burgeoning Muslim middle classes in the *dar al-Islam*, can perform *hajj* and *umrah* multiple times, thereby enhancing their social status and ability to partake in consumption lifestyles (Fischer and Abedi, 1990). Less fortunate co-religionists may combine spiritual duties with pursuit of employment in the Saudi informal sector (Silvey, 2005). For even the poorest pilgrims, though, the *hajj* offers a dazzling encounter with technology, wealth and cosmopolitanism that leaves its imprint as surely as do spiritual insights. For the better-off, it is an occasion for cosmopolitan living, affirmation of social advancement and calculated gift-giving. Such living occurs in a Mecca that has been turned into a curious hybrid of Disneyland and Las Vegas (Sadar, 2014).

The *hajj* is thus integral to a wider process of middle-class self-definition in an increasingly globalized world. It is assimilated as another marker of that identity, sitting alongside such things as prestigious higher education, luxury belongings or (multiple) property ownership. This practice can also be seen to be part of global de-politicization whereby consumerist logic infiltrates those sectors that might be a source of anti-systemic resistance. This is especially crucial in the context of the *hajj*, where 'political Islam' may threaten to seize this politically and symbolically important space with worldwide ramifications.

Hence the *hajj* raises questions about 'proper Islamic consumption'. Such debate is political insofar as states, private organizations and individuals become involved. In Malaysia, the state confronts the challenge from Islamic revivalist organizations and other Malay-Muslim political interests by striving to frame the discourse on consumption at home and abroad (e.g. the *hajj*). Such framing promotes religiosity supportive of individual economic endeavour and consumption. Yet negotiation among consumer, marketplace and the state in Malaysia evokes contradictory visions, lifestyles and debates about Islam. Still, a style of Islamic practice is promoted fully commensurable with capitalism and the project of modernity supported by the middle class (Fischer, 2008; Zook, 2010). That there are often severe environmental consequences attached to such consumption practices is not in doubt either, and has begun to generate an activist backlash (see below).

Health

The history of the *hajj* is partly a story about disease as well as fears about it. In colonial times, the *hajj* was linked to the spread of cholera, prompting sanitary surveillance of it and the holy sites by colonial powers. Health hazards persisted, with elevated death rates still experienced well after the Second World War (Low, 2007; Tagliacozzo, 2013). Epidemiological risk remains high despite medical advances. Thus

a cholera epidemic in 1989 affected 102 pilgrims and, due to the global scale of *hajj*-related migration, risks today include diseases such as SARS, avian flu and haemorrhagic fever (Ahmed et al., 2006).

It is also about ill health linked to performing rituals in a harsh desert environment. Going to Mecca and Medina can be physically challenging to the non-acclimatized and/or those of poor health. Indeed, environmental heat injury is a leading cause of morbidity and mortality, while cardiovascular diseases, neurological disorders, trauma, gastrointestinal problems, heat exhaustion and dermatological diseases are common (Ahmed et al., 2006; Gautret et al., 2009).

States today often work with private firms to reduce risks of contagion through improved sanitation, better crowd control, state-of-the-art medical facilities and so on. Preventative steps go hand-in-hand with religiously sanctioned practices. For example, and as part of a larger attempt to advance Malaysia's role in a multi-billion US dollar global *halal* industry, both public and private agencies from there are working with Saudi Arabia to launch the first 'halal' vaccine against meningococcal disease and hepatitis (*Chemical Engineer Today*, 2014). Currently, pilgrims require these vaccines but they contain small amounts of religiously proscribed pig product.

Additionally, rituals associated with the *hajj* prompt other health and environmental risks requiring complicated governance. Thus pilgrims perform animal sacrifice (commemorating the sheep that God ultimately accepted from Ibrahim in place of his son), but this has led to much personal trauma and injury among laypeople who are either unaware of or reject professional slaughtering services (Ahmed et al., 2006). The sheer scale of the annual slaughter (over a million cattle and other livestock each *hajj* season) in an environment of intense heat poses other risks associated with the spread of disease as well as land and watercourse contamination. And, while slaughter involves some food distribution to the poor, inadequate cold-storage facilities add to problems of contamination and food waste. In short, health issues pose unique governance challenges that involve state and non-state actors in complicated remedial measures that must continually navigate among religious, political, economic, cultural and ecological factors.

Civil Society Activism

The combination of growing socio-environmental implications of mass pilgrimage, often inadequate state responses and a rising worldwide middle class have prompted the emergence of civil society activism aiming to 'green' Islam. Such activism builds on a longstanding tradition of non-state faith-based organizations even as it raises issues and concerns unique to the modern era.

While still early days, diverse initiatives suggest a trend that marks efforts to address 'inconvenient truths', including those linked to the severe ecological impact of contemporary pilgrimages such as the *hajj*. Some Muslim environmental activists today are increasingly relating their activism to what is known as the 'Islamic ecological paradigm' (IEP) (Islam, 2012). The IEP stresses an anthropocentric vision of human responsibility – hence a 'trusteeship' for the earth exclusively by humans, underlining the social relationship between humankind and the environment that exists in the same divinely created realm. Such religious environmentalism thus constitutes a form of

worship and ritual, and refers to all actions on the planet. The IEP may be seen in action in local community practices. For instance, the rise of Islamic environmental groups in the UK has manifested in diverse projects to improve environmental awareness, promote sustainable horticulture and enhance environmental conservation (Gilliat-Ray and Bryant, 2011).

Some activism directly targets the *hajj*. Notable activity here is centred on the multi-faith Green Pilgrimage Network (GPN), a global network of 28 pilgrim cities and other sacred sites around the world coordinated by the UK-based secular not-for-profit organization Alliance of Religions and Conservation (ARC), whose vision is for these places to become ‘models of care for the environment’ (www.arcworld.org). Thus it sponsored the first guide to an environmentally sustainable *hajj* written in English in 2011 specifically designed to encourage Muslim pilgrims to reduce their ecological impact (Arabic and Bahasa Indonesian editions followed in 2012). Social media is also deployed to spread the message – as, for instance, when a ‘Green *Hajj*’ Facebook page was launched in 2013 to spread the word about the Indonesian edition. *The Green Guide for Hajj* (ARC, 2011) is packed with practical tips, including such things as choosing low-impact travel options and/or carbon-offsetting flights, booking through environmentally minded agencies, and avoiding use of plastic bags and bottles. It also encourages pilgrims to use the occasion of the *hajj* to reflect on their personal lives, consumption patterns and environmental impacts – hence asking them to reflect critically on the way that some states have encouraged Muslims to see no contradiction between consumer-oriented capitalism and Islam. That said, and perhaps reflecting a tacit recognition of the ultimate limits of voluntary pilgrim action, the book calls for more and better state policies to promote ‘greening’. While these efforts are still in their infancy, they nonetheless underscore how *hajj* governance is changing in part to accommodate non-state groups, interests and issues hitherto less visible in this process.

CONCLUSION

This chapter explored the political ecologies of religious faith and pilgrimage, focusing in particular on the latter via a case study of the *hajj*. The question of religion has so far not loomed large in political ecology, usually appearing in relation to holistic analyses of indigenous peoples’ human–environmental practices and how spiritual beliefs may play a role in those practices. Although important, this literature does not amount to a well-rounded treatment of the topic, even as work at the margins of the field, often based in religious or environmental studies, rarely directly confronts issues of governance and power at the heart of political ecology.

The aim here has thus been to assess some of the issues and concerns that a political-ecology perspective might bring to bear on the study of religious faith and pilgrimage – including state practices, wealth and consumption, health, and civil society activism. This discussion was inevitably exploratory, given the paucity of political-ecology research. And yet the *hajj* case study was nonetheless able to point to a rich array of issues at the juncture of politics, ecology, culture and religion that merits in-depth investigation. Further research ought to investigate personal Muslim understandings of and feelings about contemporary *hajj* practice, notably as it relates to

environmental issues. Beyond the question of the *hajj*, political ecologists need to understand better how Islam may influence individual and community actions on a daily basis. They might also assess how the sorts of issues discussed here in relation to Islam might unfold with regard to other world religions. Finally, they might consider how growing religious environmentalism rubs up against other forms of social and environmental activism on the one hand, and powerful globally linked consumerist practices on the other. By addressing these and other topics, political ecology will be able to engage with one of the more powerful yet still understudied facets of modern human life.

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17. Governing people in depopulated areas

Raymond L. Bryant, Ángel Paniagua and Thanasis Kizos

The question of how human demography relates to a political economy of the environment is a tricky one in political ecology – at least in the Anglo-American world that is the concern in this chapter. Much thinking has focused on the critique of simplistic population-degradation theses, ranging from the ‘population bomb’ arguments of the US biologist Paul Ehrlich (1968) to the ‘environmental scarcity’ claims of Canadian political scientist Thomas Homer-Dixon (1999), typically as part of a wider anti-capitalist and anti-colonial analysis (Hartmann, 2001). In the process, environmental degradation and conflict are blamed on non-local actors – natural resource firms, forest departments, the World Bank and so on – that ‘accumulate by dispossession’ (Harvey, 2003), even as the role of local residents in promoting environmental conservation and rehabilitation projects is highlighted to stress how the poor promote sustainability if allowed to do so, even sometimes under conditions of rising population density (Tiffen et al., 1994). This is an important message. But it has meant that political ecology has shied away from providing a full exploration of human demographics, including those situations where *depopulation* is the norm. The broad aim of this chapter is to contribute to a political ecology of demography and its cultural articulations – something that is increasingly called for in the literature (Biersack, 2006; Robbins, 2012). The specific focus is on depopulated areas, building on our prior work (Bryant et al., 2011; Paniagua et al., 2012).

We begin by discussing how far and in what ways the demographic question has been addressed in political ecology, arguing that it played a crucial part in the field’s early development. And yet, apparently tainted by association with neo-Malthusian thinking, the relationship between demographic patterns and human–environmental interaction was never thereafter systematically pursued, as political ecologists focused instead on issues of class, power, the coercive state and globalizing capitalist relations. In contrast, we argue for a return to the demographic question through analysis of the seemingly paradoxical case of depopulated areas. That analysis draws on the concept of shadow landscape, which brings together processes of marginality, scale, socio-nature and cultures of depopulation to explain human–environmental dynamics in those areas marked by the relative absence of people. Two brief examples from Spain and Greece then follow before the conclusion takes stock of how a political ecology of depopulated areas might be further elaborated.

DEPOPULATED AREAS: FOILING MALTHUS

To understand why human demography is a loaded question in political ecology is to appreciate how this field developed in the Anglo-American world. From the late 1960s,

a new generation of radical scholars was increasingly dissatisfied with the academy – be it the positivism of the social sciences or the political conservatism of the US-based neo-Malthusian movement that whipped up fears about ‘runaway’ population growth in the Third World (or Global South today). This dissatisfaction was perhaps most vividly expressed by the geographer David Harvey in a blistering critique of neo-Malthusianism (Harvey, 1974), but was also to be seen in the pages of *Antipode*, a radical journal of geography founded by Richard Peet and others at Clark University in 1969, as well as the pioneering work of the Marxist anthropologist Eric Wolf (1972). Deriding Malthus and his modern-day acolytes was seemingly *de rigueur* for this intellectual counterculture.

Political ecology was thus partly a backlash to the population fetish of writers such as Paul Ehrlich (1968), Garrett Hardin (1968), Donella Meadows et al. (1972) and William Ophuls (1977). While these writers were not the first academics to explore human demography, their interventions were nonetheless pivotal in the development of the field, notably because they garnered popular and political acclaim in the West for supposedly scientific analyses that conveniently focused attention on the Third World population ‘problem’ rather than over-consumption in North America and Western Europe. A new generation of geographers and anthropologists, radicalized by the Vietnam War and anti-colonialism, and often holding in-depth knowledge of Third World development issues based on their doctoral and post-doctoral fieldwork, felt impelled to respond to what they saw as factually inaccurate and politically dangerous neo-Malthusian narratives (Bryant and Bailey, 1997).

In the process, a political ecology that sought to combine ‘the concerns of ecology and a broadly-defined political economy’ (Blaikie and Brookfield, 1987: 17) was born. For some, the critique was about demolishing the fallacies associated with Hardin’s (1968) metaphor of the tragedy of the commons – a process that culminated in a tragedy of enclosure counter-narrative that related worldwide land dispossession to the political economy of capitalism (*Ecologist*, 1991; Goldman, 1998). For others, the very idea of the neo-Malthusian project was but an example of Western neo-colonialism and racism – a way that the West sought to ‘know’ and control developing countries in Asia, Africa and Latin America in the Cold War (Buchanan, 1973; Escobar, 1995).

The most important element of this critique related to the pressure of population on resources (PPR) debate, for it was here that the question of the environmental impact of shifting demographics took centre stage. Blaikie and Brookfield (1987: 34) combined multidisciplinary research with diverse historical and geographical examples to arrive at one emphatic conclusion: ‘degradation can occur under rising PPR, under declining PPR, and without PPR’. Blanket neo-Malthusian claims were rejected in favour of more complex arguments that, among other things, drew on detailed local knowledge, multi-scale and multi-actor causation, and the ‘progressive contextualisation’ of unequal power relations (Vayda, 1983).

For us, the crucial insight here was a recognition that environmental degradation could increase even under conditions of declining PPR. As Blaikie and Brookfield (1987: 28) observed, ‘periods of population decline have often been periods of severe damage to the land’ (even as conversely there was evidence that periods of population increase led to localised land improvement; see Tiffen et al., 1994). Building on the work of Danish economist Ester Boserup (1965), the idea was that rising population

numbers enabled communities to obtain economies of scale in terms of labour and capital investment. For, if concentrated human populations could create ‘landesque’ capital, which Blaikie and Brookfield (1987: 9) defined as ‘any investment in land with an anticipated life well beyond that of the present crop, or crop cycle’ (e.g. stone walls, terraces, irrigation systems), then the ‘de-concentration’ of those populations was linked to the unravelling of many if not all of these benefits due to the high ongoing labour costs of their maintenance.

The motif of depopulated areas was thus integral to early work by political ecologists, albeit mainly to help them ‘defuse’ the population bomb argument. This motif recurs in the field, even if usually only to make a ‘bigger’ point – it is what Paul Robbins (2012) terms ‘a hatchet’ designed to attack pernicious narratives. For instance, scholars note how misleading depopulation discourses are used by elites to justify conquest, whether in the ‘pristine’ environments of Latin America (Sluyter, 1999) or the ‘wastelands’ of South Asia (Gadgil and Guha, 1992). These discourses are sometimes adapted to justify the creation of protected areas involving the systematic displacement of local people living in low-density but high-value ‘wilderness’ (Peluso, 1993; Neumann, 1998) that continues to the present day, underpinned by scientific justification, moralizing politics, and state–NGO complicity (Bryant, 2009). Other writers describe demographic collapses linked to such things as disease, land confiscation, punitive labour demands or outright genocide by ruling elites, but with an eye to their impact on peasant livelihoods and agrarian practices (Zimmerer, 1996) or conditions that the quest for an alternative polity must confront (Escobar, 2008).

Rarely in such work is the focus on developing a deeper understanding of depopulated areas per se – insight gleaned is hence often of a secondary or incidental nature. Indeed, the tendency to study more densely populated areas has only grown in recent years – witness the rise of urban political ecology as a major sub-field, for instance (Heynen et al., 2006). Yet, as political ecologists follow ‘where the people are’, an opportunity to make sense of those places scattered around the planet that are characterized by relative depopulation is thereby missed. This missed opportunity is a mistake for two reasons. It is an intellectual mistake in so far as relatively depopulated areas raise intriguing questions about past and present political, economic, ecological and cultural dynamics that are not reflected in the analyses of more populated areas predominant in political ecology. It is a practical mistake too, in that depopulated areas are more widespread than often thought – thereby putting paid to neo-Malthusian work suggesting that humanity is everywhere running out of cultivatable land. In short, the topic of depopulated areas merits a more sustained analysis in political ecology.

ADDING A TOUCH OF *MELANCHOLIA*

The obstacles to such an analysis in political ecology may run even deeper than it simply being a case of scholars following where (most) people are. Consider for example the 2011 film *Melancholia* directed by the Danish director Lars von Trier, in which viewers are treated to the ultimate scenario of a depopulated area: the annihilation of earth itself through inter-planetary collision. The film tracks the final days and hours of two sisters and their family as the apocalypse nears – with the central

premise being that depressed people (symbolized by Justine) are better able to deal with a hopeless situation than non-depressed people (represented by Claire and her husband John).

Like *Melancholia*, the issue of depopulated areas might seem at first glance to be a hopeless and depressing one – and hence best to leave alone. Apparently subject to their own slow-motion apocalypses, these areas can come across as ‘no-hope’ zones subject to gradual decay, degradation and death. This is important for a field such as political ecology, which is precisely known for its focus on *potentially* hopeful situations surrounding human–environment interaction – however dark the story of unequal power relations gets, there is (almost) always the possibility of redemption through the resistance of the poor. Things can not only get better; they *must* do so.

But where does this leave the study of ostensibly less hopeful or even hopeless situations – seemingly (but necessarily) the case in depopulated areas? Of course, a less anthropocentric research field than political ecology might precisely find hope in these settings – hope, that is, for the *non*-human world finally allowed some geographically delimited respite from the human onslaught. Yet, as noted, political ecologists tend to follow where the people are – noticing changes in flora and fauna only in the context of a human-centred drama (the coercive conservation theme being a good example).

Our aim here is not to advocate the study of a-human political ecology – after all, even depopulated areas are rarely completely devoid of people. Rather, we argue that a well-rounded approach to the political ecology of human demography would, among other things, require the careful analysis of (relative) absence as well as presence – where people have been before but now are mostly not. For these scenarios tell us something interesting about human mobility and human–environmental interaction.

SHADOW LANDSCAPES

In tackling this topic, we find it useful to think about depopulated areas as shadow landscapes – places reflecting culturally distinctive if often opaque and shifting geographies that are irreducibly human creations marked by deep ambiguity and emotional attachment. This approach builds on our prior work (especially Bryant et al., 2011), with inspiration too from other writers (Barrell, 1980; Matless, 2008), and enables us to analyse depopulated areas as objects of research in their own right.

Shadow landscapes can be understood as the combination of four elements used in the literature to describe aspects of human–environmental interaction: marginality, scale, socio-nature, and cultures of depopulation. Here, we sketch these elements before turning to two European case studies of depopulated areas.

Depopulated areas are notably shaped by what is termed ‘marginality’ – those conditions whereby some people and places are rendered socially weak or peripheral in light of political, economic, ecological or cultural perceptions and practices. Such relations are complex – shifting over time and space, as well as being reflective of individual and collective perceptions. In fact, the notion of marginality has long been central to political ecology, serving as a useful tool to gauge the effects of unequal power relations. Indeed it was at the heart of Blaikie and Brookfield’s (1987: 19–23) ‘regional’ approach, with the poor battered in a three-fold manner: in terms of economy

(marginal units of crop production); ecology (marginal units of cultivable land); and political economy (marginal members of society whereby others hold power over them). It was the inter-relationship of these three forms of marginality that angered scholars so much, since deepening poverty and environmental degradation was a recurrent outcome (Blaikie, 1985), albeit with a glimmer of hope that things could be reversed and were not identical everywhere or for everyone (Robbins, 2012). Yet, while writers have thoroughly documented how marginality can be a curse for some people just about everywhere and anytime – from pre-colonial times to the present, from the most remote rural areas to the most densely populated urban slums – the relationship is nonetheless distinctive in shadow landscapes. Here, depopulated areas can be seen as both an outcome of marginalization processes – for example as poor people battered by the processes Blaikie and Brookfield describe migrate elsewhere in the hope of a better life – and as ongoing centres of marginalization, as those meagre populations that stay behind attempt to eke out a living, often buffeted by wider political, economic and cultural processes beyond their control.

Here is where scale comes in. That shadow landscapes are contingent and fluid is in no small part due to the effects on depopulated areas of multi-scalar politics – such politics being a growing interest of political ecologists (Neumann, 2009). Crucial in this is a move away from fixed notions of scale to ones based on fluidity and the social construction of relationships. Partly this is about thereby obtaining more complex forms of explanation than found before – for instance, ‘how actors strategically engage scale-based *discourse* in order to frame an issue in a particular way to effect change, whether to legitimise or to challenge existing power asymmetries’ (Harrison, 2008: 119; italics in original). Partly, too, it has been about describing new forms of resistance enabled by modern communications and global relations – notably, how poor groups develop multi-scalar political and economic networks to combat locally powerful actors (Perreault, 2003). All this resonates in terms of the fate of depopulated areas, where the process of depopulation itself changes the articulation of scales as well as how actors position themselves (Paniagua, 2009). Thus debate over whether to allow the reintroduction of wild wolves in one largely depopulated area of France in the 1990s was simultaneously a battle over ideas of nature and material practices as well as creating a unique multi-scale struggle involving farmers, scientists, NGOs, national and local governments, tourism firms and citizens (Buller, 2008). Multi-scalar politics can help construct shadow landscapes – for instance by reinforcing some people’s feelings of marginality, as ‘local’ issues are ‘hijacked’ by outsiders who too feel deeply about these areas but sometimes in antithetical ways to residents’ views.

One reason why multi-scalar politics holds such purchase on local issues today in shadow landscapes undoubtedly relates to the matter of ‘socio-nature’ – those partly humanized and domesticated landscapes debated by actors at multiple scales and with varied power capabilities. Part of a wider post-structural shift, the notion of socio-nature rejects understandings based on human–nature dualism in favour of those that describe the mutual constitution of social and natural, both materially but also in people’s minds as social and environmental discourses render some meanings ‘self-evident’ (Hinchliffe, 2007). The making of a shadow landscape can be seen to involve the emergence of specific socio-natures, including the possibility of novel socio-natural

imaginaries and practices – for example, the ‘back-to-the-future’ scenario of reintroduced wolves in Buller’s (2008) account. Often scarred by marginality while shaped by multi-scalar politics, shadow landscapes seem to almost invite interventions that produce new socio-natures: eco-tourism, agri-environmental schemes, skiing resorts or cultural tourism based on a cultivated nostalgia. The possibilities seem endless but the aim remains the same – recuperate ‘lost’ lands and make them ‘productive’ again. Depopulated areas are thus socio-natural laboratories – lands of experimentation and outside intervention.

Finally, ‘cultures of depopulation’ help constitute shadow landscapes. The status of depopulated areas is ever in flux: population levels in an area may keep falling, stabilize or even rebound. Yet cultures of depopulation are a longer-term phenomenon – the lingering, sometimes melancholic ‘reputations’ of a place that endure in the mind while often framing how these areas come to be defined through material practices. Here are particular forms of representation in which words like ‘loss’, ‘tradition’, ‘golden age’ or ‘heritage’ loom large, even as specific historical events or practices, local cultural identities, and opportunistic livelihood strategies commingle in complicated ways. Unlike the case of coercive conservation studied by political ecologists, where wilderness discourses are usually connected to the displacement of residents and their erasure from history (Adams and Hutton, 2007), cultures of depopulation associated with shadow landscapes seek instead to enshrine in the popular consciousness particular narratives of local settlement and life – stressing thereby the invaluable-ness of the ‘socio’ in local socio-natures. Thus representations of poor but valiant farmers clinging to ‘traditional’ agriculture in areas of northern Scotland largely depopulated by eighteenth- and nineteenth-century highland clearances can form part of modern cultural economies there, even as such imaginaries may in turn be used to challenge new and locally unwelcome interventions (Gauld, 2000). Many such economies are characterized by narratives of a golden age cut short due to war, disease, changing local climate or economic transformation that is followed by a seemingly inevitable out-migration. Such narratives are rendered tangible through local museums, pageants and festivals – a nostalgic if melancholic commemoration of a more populous and purportedly successful era. They are sometimes also rendered tangible in the image of ‘deserted’ villages populated by the elderly – for instance in ‘feral’ Greek villages ‘gone wild’ (Kizos et al., 2010; see also below). Such representations can be deceptive since many depopulated areas reveal more vibrancy than these portrayals allow (López-i-Gelats et al., 2009). Indeed, they are but one part of the story: the combination of processes of marginality, scale, socio-natures and cultures of depopulation produce complex, durable but flexible shadow landscapes that give depopulated areas a richer and more interesting character than they are usually given credit for.

TALES FROM SOUTHERN EUROPE

If many parts of southern Europe are now beset by severe economic crisis and austerity, there is another story that has shaped the history of this region linked to large-scale population out-migration and the attendant creation of shadow landscapes that resonates even today. True, shadow landscapes are to be found in other regions of the

world, but southern Europe seems to have a particularly rich concentration of them. In this section, we draw on two short case studies from Greece and Spain to illuminate further how shadow landscapes are made and governed in light of political ecology themes.

Spain

Spain's shadow landscapes are historical yet fluid artefacts shaped by multifaceted socio-demographic, political, spatial, economic, ecological and cultural forces. They reflect the fact that depopulation is an old phenomenon in this country. Indeed, this matter has been the focus of public policy since the eighteenth century, and was even more central to political debate in the nineteenth century. Efforts to stem out-migration were made – for example under the military rule of General Francisco Franco between 1939 and 1975 with a campaign of agrarian colonization mainly in irrigated areas. Yet the rural exodus continued, apparently halting only at the end of the twentieth century.

There is a long history of marginalization associated with the formation of these landscapes. On the one hand, traditional economic activities in many parts of rural Spain suffered long-term decline especially from the nineteenth century, as wider national and international political-economic changes rendered both extensive agriculture and small family farms obsolete. Growing international trade and the rise of more cost-effective competitors elsewhere in the world proved the undoing of small communities dependent on such practices. On the other hand, the lure of the Spanish cities and new coastal tourist towns (as well as foreign lands such as the USA) grew and seemed to promise employment for struggling rural residents (Hoggart and Paniagua, 2001). Decades of such push–pull migration gutted entire swathes of rural Spain such that, by 2013, barely 3 per cent of the Spanish population continued to live in a village with fewer than 1000 inhabitants (INE, 2013).

A sense of melancholia over (imagined) glories past compared with contemporary marginalization and decay may have long lingered in Spain's depopulated areas – indeed, it may still exist here and there. But change seems to be afoot. In recent years, especially since severe economic crisis has rocked Spain, hitting urban youth especially hard, a sentiment that marginality in contemporary depopulated Spain may be a good thing has sprung up, at least for some residents living in these areas (Paniagua, 2012a). Not for these people is there a dependence on the city or even a desire for an urban standard of living with all its stresses and strains. Thanks to the current economic crisis, there has even been a trickle of people 'going back' to rural life – as the 'prosperity gap' between rural and urban areas has shrunk. Still, life can be quite basic in depopulated areas – as demands for the provision or restoration of this or that state service vividly attest. Local education is often a key demand of the protest movements that have sprung up – precisely because when the local primary school is closed, so too end the possibilities for social reproduction and future life in the village.

Yet, as the issue of village schooling highlights, depopulated areas in Spain are particularly vulnerable to the workings of multi-scalar politics, as diverse state and non-state actors intervene in the life of depopulated areas. The Spanish government has certainly been involved in efforts to revive depopulated areas – most recently in a programme launched in 2007 that seeks to promote sustainable development in them.

Meanwhile, regional governments such as Castile-León, Aragón and Galicia in the north-west have sought to assert their power in these areas through their own strategic plans. Here, sometimes, multi-scale intra-state rivalries (between the centre and regional governments) manifest themselves in rival schemes to solve the depopulated areas 'problem'.

At the same time, how these extra-local actors see this problem has begun to shift in recent years. Take the case of successive interventions by the Castile-León government. Initially, it promoted a 'classical' regional strategy against depopulation in 2005 that simply wanted to retain or attract people to the region – that is, boosting population numbers was the main aim. But only six years later, this government had abandoned this strategy in favour of a new one in which depopulation was not a problem, but rather an opportunity. In a great change of perspective, the emphasis now was placed on promoting depopulated areas as good places to live (thereby drawing implicit or explicit comparisons with crowded urban areas that, at least since the economic crisis began, are gaining an image as undesirable areas to live).

Such official repositioning also undoubtedly reflects the growing political pressure of new social movements in the affected territories. Thus movements such as Teruel También Existe (Teruel Province Exists) or Soria Ya (Soria Province Now!) work in some of the most depopulated provinces of Spain, mounting campaigns to improve services in these communities. Just as important, these civil society groups are helping to generate positive new identities for depopulated areas, thereby beginning to counter decades of negative discursive framings. Many of these groups are based in national or regional cities, but often connect with local-level groups and networks such as Abraza La Tierra (Hold the Land) or the Asociación española de municipios frente a la despoblación (Spanish Association of Municipalities against Depopulation) to create new local politics based on the attraction of depopulated areas for restless urban populations. In this way, a new politics of depopulation is emerging in Spain, notably as a result of multi-scalar non-state activism.

Much of this new politics is refracted through the prism of different representations of socio-natural engagement, as these shadow landscapes are infused with new understandings of and relations between nature and society. Thinking about depopulated areas in environmental terms gained currency in the latter decades of the twentieth century at precisely the time when out-migration was at its peak, environmentalism was winning international attention, and Spain was being integrated into the European Union. At first, the focus was mainly on applying so-called agri-environmental schemes as part of the larger rehabilitation and reorientation of declining agriculture in these areas. Taking advantage of EU largesse, these schemes combined a traditional aim (retaining local populations linked to agriculture) with a new one based on the redefinition of depopulated areas as above all territories serving a national if not international socio-environmental function (Paniagua, 2001). While these schemes persist today, reflecting EU-wide visions of socio-natural dynamics, a new concern with the creation of rural enterprise based on the consumption of depopulated area environments has come to the fore. Early efforts here to promote a rural tourism that would appeal to urban holiday-makers seeking new experiences provided few permanent jobs and limited income opportunities (Hoggart and Paniagua, 2001) – hence having a limited impact up to today (Pulido and Cárdenas, 2011; Paniagua, 2012b).

Perhaps most important in these initiatives is a new imagining of the countryside, one more associated with a romantic, nostalgic and idealized vision – a vision designed to play well with middle-class tourists who live mainly in urban centres (Paniagua, 2012b).

That imagining is usually steeped in local cultures of depopulation that stress traditional *mores* and practices as well as the attractiveness of small villages. These are of course externally generated imaginings and associated reputations – depopulated areas as exotic throwbacks to a long-lost past, with residents enacting life in historical imagined communities. Yet such imaginings do not necessarily chime with how local people see themselves culturally or morally. Often, residents experience depopulation through their everyday practices – sometimes seeing it as the cause of recurrent irritants or sadness (e.g. lack of local schools, medical facilities, grocery shops or other essential services), anger (e.g. protests over proposed development plans made without their input) and joy (e.g. greater sociability or enjoyment of nature). At the same time, the remoteness of these depopulated areas is greatly lessened by the mobility afforded by the automobile. Hence new cultures of depopulation develop that incorporate a seasonal and temporal lifestyle – between weekend and weekdays, between summer and winter – scarcely imaginable even in the recent past (Paniagua, 2011).

Greece

While parts of Greece where shadow landscapes have developed echo some of these Spanish experiences (notably on the mainland), the fact that Greece is also a country of islands raises interesting questions about how shadow landscapes have developed in this different setting. Indeed, islands are often considered to be isolated and marginal places: their very name implies an ‘insularity’ that is integral to the identity of island residents as well as how others seek to identify them (Baldacchino, 2004).

Greece has over 2000 islands and islets, including more than 100 inhabited in the Aegean alone, where they form a complex archipelago. Many islands have played important political, economic and cultural roles in the history of the east Mediterranean region – various islands enjoyed a golden age marked by relative wealth and influence. Thus, in the nineteenth and early twentieth centuries, many Aegean islands prospered, as evinced by rising population numbers as migrants flocked to the area. For example, Kizos and Koulouri (2006) note how the population of Lesbos doubled in the nineteenth century. During this time, residents could earn a good and multifaceted living that took maximum advantage of the geographical location of the islands. While many people took to the sea to participate in the flourishing trade networks that connected the islands to each other and to the nearby mainland, others worked the land through a system of intensive but largely sustainable agriculture that combined cultivation of arable crops, permanent plantations (olives and vineyards) and animal husbandry (Petanidou et al., 2008; Kizos et al., 2013).

This prosperity did not last, as a number of technological, social and political changes brought about the collapse of the local economic base and the general marginalization of the region. Thus the production of new long-distance ships in the twentieth century rendered small trading ports obsolete. Then a series of wars between Greece and Turkey in the 1910s and 1920s further undermined life in the Aegean

archipelago. Following a campaign of ethnic cleansing in Greece and Turkey that prompted a major population exchange in 1923–24, the two enemies turned their backs on one another – thereby cutting off the islands from their eastern hinterland. After the 1950s, major improvements in transport also meant that competition from more productive mainland agriculture where irrigation and mechanization had occurred decimated the less productive agriculture of the Aegean.

The resulting depopulation was immense. Some smaller islands lost as much as 80 per cent of their populations between 1951 and 1981, with only six islands bucking this trend. Today, the population has stabilized, but it is an ageing one that caters to small-scale seasonal tourism. In short, most of these islands are now classic shadow landscapes. Thus they are marginal in that economic activities are limited and not that remunerative, the age profile is heavily skewed towards the aged, thereby undercutting any sense of a future for these communities, and basic social services are lacking. Physical and social isolation is a common problem.

Their fate too is linked to multi-scalar politics beyond their control. While the islands have long been subject to national and international political and economic forces, the contemporary context of dependency on outsiders seems unparalleled. Thus, for example, contemporary animal husbandry continues but is largely controlled by absentee landowners who reside in distant cities, and hence who lack the sense of rootedness that derives from permanent island residency. Moreover, such agriculture is only viable today as a result of subsidies from the EU – echoing the multi-scalar agri-environmental dynamics that were noted above in relation to Spain. Then of course there are the multifaceted ramifications of the severe economic crisis in Greece today – with yet more external dependency and uncertainty via the Troika of the International Monetary Fund, the European Commission and the European Central Bank.

As with Spain, the material and discursive production of socio-natures is a prominent component of these island shadow landscapes in the Aegean. Long sculpted by human intervention in times when the population density made the use of all types of land a necessity, environmental transformation in an era of depopulation has been remarkable. Much agricultural land was simply abandoned, with ‘landesque’ capital crumbling away. The fate of such land today is shaped by two contrasting trends that in environmental terms are best described as a mixed bag (Koulouri and Giourga, 2007; Kizos and Koulouri, 2006; Petanidou et al., 2008). On the one hand, the landscape is undergoing re-wilding – much to the joy of environmentalists who track this process. While the loss of certain bird species that were associated with arable crops is expected, this is offset in their view by the proliferation of snakes, foxes, badgers, porcupines and turtles, as well as shrubs and trees. On the other hand, the landscape is subject to an intensification of grazing as sheep and goats roam often freely across the islands. Thanks to the aforementioned EU subsidies, sheep and goat husbandry is one of the few economically viable sectors – such that the numbers of such animals has tripled in recent decades on many islands. Imported feed is part of this subsidized activity, but flocks still tend to graze unchecked, especially in the fields of absentee owners. Soil degradation and social conflict with resident landowners is the all-but-inevitable result in these situations (see Kizos et al., 2014 on this dynamic on Crete). Meanwhile, many elderly residents decry both the unfettered animal husbandry and the

re-wilding of the landscape that, to their eyes at least, is depressingly ‘un-orderly’ and ‘wild’ (Kizos et al., 2011).

Not surprisingly, then, island shadow landscapes of the Greek Aegean are strongly marked by cultures of depopulation that have powerfully affected their image and symbolic representation. A key refrain is that of islands as ‘heaven’ or islands as ‘hell’ (Kizos, 2007). The latter depicts islands as derelict places where only remnant (ageing) populations of a former ‘golden’ age are to be found – places where people live not through choice but rather through a kind of ‘exile’ and which are popularly seen in Greece as ‘closed’ and ‘backward’. The former depicts islands as a getaway paradise at the heart of internationally famous and lucrative Greek tourism – that is, places for outsiders to enjoy their vacation, to relax and have fun by ‘escaping’ the pressures of everyday reality back home, even as they spice up their beach holidays with occasional inspections of nearby ‘traditional’ society and landscape. Poignancy is added to these contrasting representations in that they can be seasonal depictions of the same place – the hell of ‘winter’ islands versus the heaven of ‘summer’ islands.

CONCLUSION

This chapter has briefly assessed what a political ecology of depopulated areas might look like as part of a wider call to take human demography more seriously in the field. A victim of the population wars that shaped political ecology’s inception, demography in general, and depopulated areas in particular, have for too long been forced to take a back seat to other issues. Yet our discussion of the complex dynamics associated with shadow landscapes, and embracing issues of marginality, scale, socio-natures and cultures of depopulation, highlights that these often neglected areas are rich in analytical possibilities affording novel perspectives on unequal power relations.

But there is more work to do in accounting for depopulated areas than this overview can suggest – briefly, here are three promising lines of inquiry. First, research should examine in detail the conditions that make and unmake shadow landscapes – something that involves much more than a crude tally of selected quantitative indicators (such population levels or shifts in economic activity). What are the political, economic, ecological and cultural factors involved? How do the four elements described in this chapter relate to identity formation and dissolution by involved actors, especially local residents? Second, comparative research needs to assess whether and where depopulated areas are on the increase or decrease, and why this is occurring. For example, how does the spread of neo-liberal economic practices across the globe connect to the creation, operation and destruction of shadow landscapes? How far do intensifying drought events (often linked to climate change) alter the fortunes of remote mountain communities (Orlove et al., 2008), perhaps even precipitating shadow landscapes? Third, how do shadow landscapes relate to other kinds of landscapes – for example, militarized landscapes found in war zones such as Syria or Afghanistan, or at military test sites in the USA and elsewhere (Kuletz, 2001; Le Billon, 2001). Can the one morph into the other, and what are the conditions conducive to such change?

These avenues of inquiry underscore the need for comparative and multi-scale research that nonetheless remains firmly based in detailed empirical knowledge of

specific areas (a long-standing strength of political ecology). In the process, the research field will embrace a widening array of demographic issues that can only be to its good.

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18. Political participation and environmental movements in China

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In many parts of the world today, intensifying environmental degradation is putting traditional state-led governance under growing strain even as it is prompting new forms of governance that criss-cross state and non-state boundaries. Neoliberal initiatives certainly underpin corporate-led governance, often linked in turn to depoliticizing tendencies based on ‘consensus’ governance by ‘experts’ (Swyngedouw, ch. 10 this volume). At the same time, though, counter-tendencies exist, usually centred around social and environmental movements that demand meaningful political participation and systematic political reform. Research in political ecology addresses this quest for ‘alternative’ governance even as it complicates our understanding of its politics, including the sometimes blurred divisions between it and mainstream governance arrangements (e.g. Bebbington, 2004; Bryant, 2009; Wolford, 2010).

China raises distinctive issues in this regard in so far as it combines ongoing (if less severe than in the past) state authoritarianism, a blend of socialism and capitalism, rapid economic growth and pervasive environmental upheaval at a time when the country is assuming a global superpower role. Here the juncture between state preservation, political participation and environmental protest is especially acute. Scholars working in political ecology and adjoining research fields have begun to chart the political, economic, cultural and ecological patterns and ambiguities involved (for an overview, see Yeh, ch. 44 this volume). Such work notably encompasses attention to environmental NGOs and activism generally (e.g. Ho, 2001; Yang, 2005; Xie, 2009). Such activism feeds off growing disquiet and even anger among an increasing cohort of Chinese citizens – ranging from poor villagers contesting state and private sector dispossessions to newly middle class and often urban-based residents unhappy about an array of environmental issues (e.g. endangered species conservation, water safety, air pollution). Activism itself takes diverse forms, including environmental NGOs (both legal and illegal), social movements, court cases and ‘spontaneous’ protests; and such activity varies according to such things as the degree of collective versus individual action, the scale of the environmental problems being addressed, the spatial and temporal complexity of the actions, and the repertoire of tools of resistance or persuasion utilized. All these pose potentially quite serious challenges to China’s political authorities: in 2011 alone, the Ministry of Environmental Protection (MEP) was alerted to 106 large-scale mass incidents (i.e. citizens’ protests) out of a total of 542, including 22 major incidents sparked by environmental emergencies and conflicts. Such activity also occurs against the backdrop of more ‘peaceful’ action, notably the mobilization of public opinion via national and regional media campaigns as well as social media networks.

Thus, just as growing environmental problems underscore chronic tensions in China's contemporary economic miracle, so too the conjoining of environmental issues to multifaceted political participation tells us something interesting about shifting governance structures today in the world's most populous nation. Although Chinese authorities can see how environmental conflicts relate to social insecurity, they remain cautious about dealing with environmental issues as a 'focused main issue' given the political, economic and cultural investment that has been made in a no-holds-barred type of economic system that has brought noticeable wealth to a rising cohort of the national population (even as it has also made a tiny minority fabulously wealthy). At the same time, governance has changed in various ways, notably to accommodate to some extent at least public participation, with a measure of political complexity and pluralism the result (He and Warren, 2011). This has included providing some channels to include the public in decision-making processes, ranging from disclosing government information to the public to conducting public hearings and policy consultations with a variety of social actors. These measures may be facilitated by a growing body of environmental legislation and policy regulations. And state agencies led by the MEP work with environmental NGOs on diverse initiatives.

This 'opening' of the Chinese state to civil society groups such as environmental movements of course must not be exaggerated. Restrictions on those movements remain and can be ramped up at any time, even as the terrain of cooperation is largely shaped by the state. Yet the greater leeway to participate in political processes is not to be gainsaid: severe environmental problems need attention and require working with affected parties in civil society since go-it-alone state coercion is not a viable strategy. As such, this chapter argues that political ecology needs to pay close attention to shifting governance arrangements while eschewing the tendency to dismiss them as merely tokenistic in (quasi-) authoritarian states such as China. In doing so, I explore the nature and characteristics of environmental movements in China by focusing specifically on their participatory agendas (and mindful of comparison with Western equivalents).

The chapter is structured as follows. It first explores the basic characteristics of China's environmental movements. Then it analyses how the political authorities respond to environmental activism, before investigating public attitudes toward political participation. I next examine the main scenarios of interaction between the Chinese public and the state to assess the array of possibilities surrounding political participation on environmental matters. The conclusion considers how political ecology research can build on contemporary knowledge about China's environmental movements, political participation and state practices.

CONCEPTUALIZING CHINA'S ENVIRONMENTAL MOVEMENTS

In general, China's environmental movements tend to exhibit four key features (Diani, 1992: 7): (1) networks of informal interactions between pluralities of individuals, groups and/or organizations; (2) shared beliefs and solidarity; (3) collective actions directed at contentious issues; and (4) participants within movements display actions

that fall both within non-institutional and institutional spheres. Each of these characteristics is addressed below.

Networks

As with most other types of NGO in China, environmental NGOs tend to lack organizational capacity, in which respect they differ from many of their counterparts in Europe and North America. Crucially, they do not have the resources needed to act independently and wield significant influence; such resources include financial backing, professional management and information skills, social as well as political recognition, and a large constituency of supporters. Hence it is not surprising that NGOs are often absent when it comes to organizing citizens in public hearings and the like (Li et al., 2012).

In this context, more diffuse networking and bridge-building activities have played a key role in the development of China's green activism. Social networks (encompassing activists and a wider concerned public) in particular act as mechanisms for coping with the absence of a formal and reliable system of environmental laws and regulations. It is notable here that many founders of environmental NGOs have histories of strong personal ties forged in previous episodes of activism (e.g. the 1989 pro-democracy movement), with other activists connecting to these organizations through such personal networks. As I extensively document elsewhere (Xie, 2009), these networks are vital in that they have helped to shape a collective identity out of environmentalism and mobilize coordinated actions, while encouraging the political authorities to provide greater access to useful information (e.g. scientific data on such topics as water or air pollution) and to grant political protection to activists harassed by the police. Increasingly, online networks serve as a powerful communication tool (despite official surveillance), with virtual networks now built by various participants in environmental movements. BBS (Bulletin Board System) on websites are favoured by users of regional internet connections, especially on university campuses but also in certain residential areas (e.g. where more affluent middle-class professionals live).

Such networking is a complex phenomenon. Aside from the many private individuals involved, there is also a complicated array of more or less organized actors, both state and non-state, that engage with environmental issues at least in part through online networks. For example, Sullivan and Xie (2009) identify government-organized NGOs, international NGOs, registered voluntary groups, registered and unregistered national NGOs, purely web-based Chinese NGOs, sympathetic government departments such as the MEP, news organizations, environmentally linked businesses organizations, and a miscellany of online discussion boards and blogs. And these virtual networks reflect and inform 'real-world' practices, as individuals and actors move back and forth between virtual and real worlds in the process of explaining, debating or contesting proposed or existing environmental policies and practices.

Identity

An environmental identity based on a shared set of beliefs about nature and ecological issues has been developing among Chinese environmentalists since the early 1990s.

One facet to that identity resembles early environmental movements in the West where the main concerns were nature conservation and environmental education. For example, Chinese environmental groups (such as Friends of Nature and Green Earth Volunteers) have been instrumental in identifying the need to protect endangered species such as Dian monkeys and Tibetan goats, while also mounting campaigns for river rehabilitation.

Another aspect to environmental identity reflects a wider tendency linked to perceptions about what is valuable in Chinese culture and society. Thus well-educated adults who are today part of the prospering middle class under a pro-capitalist national strategy nonetheless feel the lingering pull of an earlier ethos about the value of collectivism, partly as a result of the moral education they endured as children during the Mao and immediately post-Mao eras (Yuan and Shen, 1998; Shapiro, 2001). For these individuals, therefore, environmental concern chimes well with their desire to realize a certain collective ideal of responsible behaviour that avoids directly challenging China's contemporary political economy (Xie, 2009).

A third facet to environmental identity stems from Chinese citizens' increasing awareness of rights and how these relate to the need to protect the environment. An early concern was thus to question the fairness and soundness of an official environmental decision-making system that has rarely listened to disadvantaged groups. Meanwhile, individuals have generally been quick to show concern where issues affect them directly, such that rights claims have become central to movement actions (Xie, 2014). Indeed, such activism is unique in that it has led to the mobilization of a diversity of social groups (many not normally involved in environmental struggles) who have pursued multifaceted individual and collective action while developing a range of typically local environmental affinities. The key rights claims here focus on environmental welfare provision by government as well as legal protection against state misdeeds (van Rooij, 2006). They mostly revolve around personal political rights, the independence of the legal system and government obligations to treat citizens equally (including in relation to influence over official policy). Scholars refer to them as 'lawful rights' (O'Brien and Li, 2006), with debate about how far these 'bottom-up' initiatives stretch the boundaries of existing rules and institutions to encompass subscription of rights not clearly prescribed (Yu, 2003; Li, 2010).

Collective Action and (Non-)institutional Behaviour

Key to understanding China's environmental movements today is recognizing that a growing cohort of citizens is adopting proactive environmental behaviour of one sort or another, which in turn is driving the participatory agenda. Especially with regard to contentious issues, collective action is becoming the norm as activists draw on institutional and non-institutional forms of action (Li, 2010). In particular, demonstrations (sometimes violent) occur where officially sanctioned participation is inadequate. Yet strategies here are not usually either/or, since the boundary between public resistance and formal institutional participation becomes blurred and citizen responses to environmental policies and issues change over time. In response, political authorities adopt more dynamic approaches to dealing with environment-related behaviour and concerns as part of a larger set of political calculations (see below).

Yet, in assessing environmental activism and strategizing, many scholars tend to be highly selective, for instance focusing only on certain stages of public response (e.g. formal political participation). Such a vision is narrow in that it captures at best one element of political participation, what Ho and Edmonds (2008) call ‘depoliticized politics’ or ‘self-imposed censorship’. A wider sense of how environmental activism is articulated through political participation is thereby missed. The latter can include a broader understanding of what such activism and participation mean in light of the networked identities noted above. Indeed, a more expansive appreciation encompasses recognition that how the public responds to policy decisions and deliberations can rarely be captured in a snapshot taken at only one stage of the political processes. Rather, it needs to be seen through iterations as both citizens and state agencies seek to influence each other over time. Hence activism-based collective actions have yet to be viewed as dynamic processes involving continually evolving patterns of political behaviour.

GOVERNMENT RATIONALITY AND PRACTICES

That state authorities fear the disruption that social movements can cause is well recognized (Piven and Cloward, 1971). Chinese authorities are no exception here. Indeed, their environmental governance combines mechanisms for public inclusion and exclusion. Understanding them is thus vital to appreciating how political participation and environmental activism are connected.

In theory at least, the ‘principle of mass participation’ has been central to the state since the founding of the People’s Republic of China in 1949 (Zhao, 2010). This principle was reinforced after the UN Earth Summit in 1992, at which China committed itself to implementing Agenda 21. In doing so, it received international assistance, in return for which it agreed to work with non-state actors, thereby notably opening up a space for environmental NGOs (Xie, 2011b).

Recently, the state has also elaborated its environmental legislation, purportedly allowing even more space for citizens to participate in environmental governance. For example, the Environmental Protection Law (2014) declares that individual citizens are ‘entitled’ to environmental information; other documents, such as the Environmental Impact Assessment Act (EIA) and the Environmental Strategic Planning Law, allow for participation in public consultations, while ‘empowering’ citizens to supervise environmental quality and ‘enforce’ government policy by accessing such information. Yet this legislation is criticized for not opening up full and genuine public access to official decision-making, while neglecting to incorporate a clear set of environmental rights for the public (Xie, 2014). Meanwhile, in 2007 the MEP adopted a system aiming to ensure that both state agencies and even private corporations obeyed ‘open environmental information’ guidelines, even as this same agency established a complementary scheme designed to guarantee that citizens could challenge environmental protection agencies’ policy decisions. Here, too, critics point to the lack of full guarantees for individual rights, even as the relative weakness of the MEP compared to other agencies of the state (notably economic and military) is noted (Xie and van der Heijden, 2010).

Still, in contrast to the past, this proliferation of environmental legislation now covers a broader range of areas on which citizens can seek judicial relief against unsatisfactory administrative decisions than ever before. Clearly, officials retain ultimate power. For some scholars, this is nonetheless a positive sign that a more inclusive approach to environmental governance is being introduced as part of a broader state adherence to ecological modernization (e.g. Mol, 2009). For others, including many political ecologists, these are typically token gestures that fail to promote an effective participatory agenda (Zhao, 2010; Yeh, ch. 44 this volume).

Such critics also point to the major policy areas that remain completely off limits to the public. Indeed, in 'sensitive' areas such as nuclear power, even local government opinion is ignored (He et al., 2013). Yet, even in 'less sensitive' areas notably relating to the economy – a sector with profound environmental impacts – central government holds firm to power, even going so far as to exclude the public from access to important information (thus going against the grain of the environmental legislation noted above), so as to undermine possible action by environmental movements. This is so because the latter emphasize raising environmental awareness above all through disseminating information to the public (Xie, 2009).

Concurrently, the public is often excluded from participating in official planning processes because the range of policies open to it is limited, even as such public participation in general has featured in only a few handpicked geographical locations (Kostka and Mol, 2013) where the government is relatively open to such participation (Zhan et al., 2013). Further, options to participate are subject to the vagaries of local state politics, for it is here that most government schemes are developed. Sometimes local officials lack knowledge of public participation policy or the resources to implement it (as Tang et al., 2010 found in Guangdong Province). Other times, they are simply against the very idea of public participation in their work, perhaps fearful that such extra scrutiny might uncover local malpractices. Indeed, in 'peripheral' parts of China where international impact is less visible, only limited attempts are made to involve the public, if at all (Kostka and Mol, 2013). Finally, the spatial organization of the state itself may stymie meaningful public participation. Notable here is the situation in which ecological issues straddle administrative boundaries (e.g. provincial, municipal) such that those issues rarely if ever get the multi-jurisdictional attention and resources they deserve (Liu et al., 2010). Limited political will to implement public participation procedures only exacerbates the situation (Tang et al., 2008).

PUBLIC ATTITUDES TOWARD PARTICIPATION

While the Chinese state persists with this dualistic strategy on public participation, individuals in China are becoming increasingly well informed, environmentally aware and information-demanding (as with their counterparts in the West; see Beck, 1992; Wynne, 1992; Bickerstaff and Walker, 2005). The result can be seen in general public attitudes to participating in formal environmental governance that broadly divide into three: willingness to participate; opposition; and no response. Such attitudes are rendered complex because they can change depending on the issue in question or even regarding the same issue over time (for instance, as people's attitudes soften or harden

to a given government policy). For our purposes, though, the aim is to develop a general schema in order to map possible scenarios of interaction between the Chinese public and the state (see below). First, though, a few words should be said about each of these public attitudes.

As noted, official reluctance to fully address environmental issues means that exclusion is common while inclusion is heavily circumscribed, resulting in practice in limited public involvement in policy matters (Xu, 2012; Bi et al., 2010). Meanwhile, formal institutions and channels such as the National People's Congress, Chinese People's Political Consultative Conference and Local People's Congress are theoretically empowered to have competence in decision-making while representing public interests, but scarcely exercise this power (Mol, 2006; Wong, 2010; Xie, 2011a; Li et al., 2012). So, even where there might be a public willingness to participate, options can be few and far between. In contrast, where options and a willingness to participate often coincide relates to individualized action, notably in relation to the filing of complaints (信访) about environmental problems and civic disputes to the Environmental Protection Bureau. This thus serves as a regularly used institutional channel through which the public's grievances can be addressed and court judgments challenged. While environmental NGOs may sometimes become involved here – for example, where there is a cluster of complaints relating to an issue of wider public concern, such as river pollution – it is usually through informal relationships between NGO leaders and local officials that such intervention occurs (Tang et al., 2010).

Yet the combination of habitual official intransigence and worsening environmental problems means that public opposition to state policies and practices often bypasses state-sanctioned channels in favour of more direct political action. A more combative 'political citizenship' (Xie, 2014) involves people acting singly and in groups to pressurize officials to meet targets on environmental quality and obtain redress concerning perceived unjust treatment by government on environmental protection matters (Munro, 2014). Some of this public opposition can ratchet up so that it involves direct forms of (often extra-institutional) action that may spill over into violence (Feng, 2006). Issues involving the strongest public non-sanctioned political action include those relating to water pollution, pollution-linked threats to health and livelihood, waste management and hydropower development (Xie, 2009; Johnson, 2010, 2013; Holdaway, 2013). In no small measure, such behaviour conforms to standard NIMBY behaviour ('not in my back yard') in which urban middle-class homeowners constitute the majority of protesters (Johnson, 2010).

Perhaps the most common public attitude towards political participation in environmental matters in China today is encapsulated in the category of 'no response'. Surprisingly, it has yet to receive the in-depth treatment that scholars have accorded to the other attitudes just noted. Partly, this may be because this attitude can be hard to discern, involving as it does the affirmation of *inaction*. In many rural areas, as well as areas generally away from the 'international glare' of the major cities and coastal regions, no response may be the only sensible response in a context of local political and economic oppression. Here, 'just cause' is hardly sufficient for environmental mobilization (Lora-Wainwright et al., 2012; Munro, 2014). Indeed, apparent quiescence may change quickly over space and time, underlining the need for the sorts of detailed ethnographic work for which political ecology is renowned (Yeh, ch. 44 this volume;

see also Deng and Yang, 2013). As with debates about public participation in Western countries, China scholars are starting to assess how far a willingness to act (either through sanctioned or non-sanctioned pathways) is linked to the development of a larger sense of political citizenship, something that can generate interest in policy discussions (Pellizzoni, 2003). Such citizenship does not usually follow neat urban–rural lines. On the one hand, some argue that ‘thick’ citizenship has emerged in different rural groups around the country precisely through the assertion of political rights against the state (Goldman, 2007; Heimer and Thogersen, 2006; Xie, 2014). Here, individuals can show growing rights awareness and assertiveness in articulating their interests (O’Brien, 2001; Shi, 2000), which can feed through in complicated ways to a more general engagement in environmental governance (Sun, 2011). On the other hand, a ‘no response’ can occur even among relatively well-educated and better-off urban residents. This can be seen, for example, in survey results that suggest that, despite rising environmental awareness, many citizens have tended not to change their behaviour in keeping with a greener lifestyle (Horizon Key, 2012), albeit perhaps also swayed by a lack of appropriate infrastructure development (e.g. dealing with waste separation and disposal at the household level).

MAPPING THE SCENARIOS

Bringing together the discussion so far, it is possible to see how political participation in relation to environmental movements revolves around a series of scenarios encompassing the Chinese public and the state. To be precise, there are six possible scenarios (with five recorded as having occurred and one [situation (c)] unlikely ever to occur). And as suggested above, most scenarios play out at the local level while being observed in various policy areas. To obtain an overall picture, the following discussion briefly explores each scenario; thereby the participatory possibilities surrounding shifting governance arrangements in contemporary China are canvassed.

Table 18.1 presents the six scenarios in a form that encompasses the three-fold set of public attitudes towards participation and the two-fold government response to political participation by the public discussed above. While it bears repeating that both public and government responses can be quite complex in practice, and hence do not necessarily abide strictly by these categories, the table nonetheless illustrates some of the complexities surrounding environmental governance and social movement action today.

Table 18.1 Public attitudes and government responses in Chinese political participation

Public attitudes	Government response: inclusion	Government response: exclusion
Willingness to participate	(a)	(d)
No response	(b)	(e)
Opposition	n/a (c)	(f)

Situation (a) is perhaps the most straightforward scenario. Here, there is government-sanctioned participation, where political authorities acknowledge that individual citizens cannot – or should not – be excluded from certain policy areas that relate to the environment. Concurrently, such practice receives public support, notably via individual involvement in officially recognized environmental NGOs such as Green Environmental Volunteers (Xie and van der Heijden, 2010). While political ecologists and other scholars are right to be wary of this form of political participation, this stance must not lead to a blanket dismissal of such cooperation (Jiang, 2004). Indeed, as in the West, state–environmental movement cooperation by no means needs to be a case of civil society ‘capitulation’ to a domineering state.

In contrast, situation (b) is one in which the public offers no response, while the government plays a dominant role in governance even as it solicits public input on diverse environmental matters. Public ‘passivity’ here can be complex and typically reflects location-specific considerations. Partly, it may reflect traditional fears of a coercive response from the state if public input deviates from the expected path. Partly, it may also reflect a genuinely non-committal attitude on the part of the public. For example, take the case of official campaigns to disseminate knowledge about, while providing financial incentives and technical support for, public uptake of ‘green’ technologies. Here, people have shown little interest, reflecting a low level of enthusiasm for green consumption practices in general in a country still undergoing a first phase of unbridled individual consumerism (He et al., 2013). Interestingly, when compared with the mandatory mass participation in many government policies and practices in the past (especially under Chairman Mao), the choice by many individuals concerning various environmental matters to ignore government calls for public input can be seen as a form of political participation that would have had dire consequences in the past.

Turning to situations (d) and (f), the boundary between them is blurred in so far as a mixture of forms of public action is adopted. Cases where the public seeks to use official channels but is rebuffed can thereupon fizzle out, but, then again, can often morph into direct and open opposition to a specific government environmental policy. This potentially quite complex set of dynamics is typically seen, for instance, in popular campaigns against the planning of and/or operation of waste incineration facilities. As Johnson (2013) suggests, this kind of campaign, which tends to develop through the environmental decision-making process (e.g. EIA approval) is ‘NIMBY-focused’. Here, a range of stakeholders becomes involved, including local inhabitants, the media and different government departments (e.g. MEP). Waste incineration campaigns often resort to contentious tactics to exert maximum pressure on government, sometimes provoking a coercive backlash. Yet two things complicate the story here. On the one hand, government is not necessarily united inasmuch as these campaigns can be interpreted as an institutionalised articulation of public input reflecting ‘rules-based’ environmental activism (Johnson, 2010; Xie, 2014) in which public concerns may engender official sympathy in some quarters. Yet, because waste incineration is often integral to a much larger government economic growth strategy, its strategic sensitivity results in an exclusionary outlook by the most powerful officials. On the other hand, the very NIMBY (i.e. localized) qualities that make it such a

common issue in China today also serve to minimize the perceived threat to the central state that, say, a nation-wide campaign linked to an anti-growth strategy would provoke.

Situation (e) is a scenario where government reticence about public input is matched by relative or total public indifference to the environmental policy area in question. A prime example is climate change policy. This is dominated by the central authorities with little involvement from either the general public or from institutional intermediaries such as environmental NGOs (Gilley, 2012). For one thing, there is no interest on the part of the Chinese state to involve the public in a highly sensitive international issue in which China now stands as the world's greatest annual emitter of greenhouse gases. For another thing, a wider public (or a good proportion of it) that is today firmly attached to the multifaceted benefits linked to the nation's economic production and consumption choices is arguably not all that receptive to addressing 'global' environmental problems (let alone China's role therein).

Not only do these five scenarios display complex circumstances in their own right; they are part of a larger picture characterized by movement *between* scenarios. By examining each one, we can see that environmental movements are most likely to hold a proactive attitude towards situations (a) and (d). When government is minded to be inclusive, situation (a) is likely to occur; when the government (or the most powerful parts of it) opts for exclusion, situations (d) and (f) are probable outcomes, with, as noted above, dynamic flow between them.

At the same time, there are strategic possibilities for both the environmental movement and government in terms of shifting an issue from one scenario to another. For the former, one possibility seemingly within its grasp is to try to shift an issue from situation (b) to situation (a) – for example by galvanizing public opinion on 'green' living. Much tougher is to try to shift situations (d) and (f) (let alone (e)) to situation (a), as this involves clear movement from a recalcitrant state. For the latter, a key aim in the current circumstances might be to try to move an issue from situation (f) to (d) or even (e), thereby reducing the social instability it faces (Lee and Zhang, 2013). While such strategizing is not a foregone conclusion – for example the government itself may adopt a more inclusionary outlook over time on a variety of hitherto 'off-limits' environmental issues, thereby obviating the need for environmental movement pressure on them – it does underscore the dynamic nature of political participation concerning environmental matters in contemporary China. In a context in which outright coercion might be becoming a less effective or even less desirable tool, such participation looks set to increase in the years ahead – in various forms (Bella, 2012; Stern and Hassid, 2012; Johnson, 2010). And, while historical comparisons with the West may hold some appeal, they must not be exaggerated: political, economic, cultural and ecological differences are likely to affect both the Chinese public and the government in different ways, meaning that the pattern of environmental movement behaviour witnessed in the West (which itself was differentiated) is unlikely to neatly recur in China (Liu et al., 2004; Gilley, 2008).

There is thus much for political ecologists to learn about political participation and environmental movements in contemporary China, with insights likely to undermine generic assessments that describe an omnipotent state and powerless environmental

movements. The realities are more complex than such a caricature, and so too are the political ecology consequences.

CONCLUSION

This chapter examined the interplay of political participation, environmental movements and state practices, focusing on the increasingly complex case of contemporary China. I argued that this interplay has become more complex than in the past – something not always recognized in Western accounts. Indeed, political ecologists should pay closer attention to the shifting governance arrangements that reflect and reinforce both public attitudes towards political participation and government responses to such participation by the public. By mapping out the main scenarios for participation, I sought to open up areas for further research that take the question of Chinese political participation seriously, while pointing to scenarios in which the kind of in-depth location-specific research that political ecology is renowned for can prove illuminating.

Such research should explore a diversity of issues that political ecologists have begun to address, but only so far in a limited manner (Yeh, ch. 44 this volume). One axis could address the similarities and differences between rural and urban environmental activism (while recognizing that a neat rural–urban divide is often not possible). How do changing demographic complexities affect the formation of people’s identities and repertoires of actions available to environmental movements? Further, if rights-based environmentalism is increasingly common in urban and rural areas, is this feeding through into wider demands for liberal political rights? If so, how far will such demands facilitate larger-scale movement mobilization across the country? Or will the NIMBY qualities of much of this action naturally work against the scaling up of activist agendas (let alone whether the government would permit it to occur)?

Building on established political ecology strengths, research should explore in more detail how far political participation involving the environmental movement is affected by the unique materiality of specific environmental issues. For example, do the different physical properties of ‘water’ and ‘waste’ hold consequences not only for their technical management but also for a wider participatory agenda? While the *political* properties relating to different environmental issues may be known here (notably government attitudes to public involvement), less is understood about how *ecological* dynamics may shape (and in what ways) the possibilities for a participatory agenda. Hence, why might patterns of participation be more likely to take place over certain issues rather than others (and how has and might this situation change over time)? Do some environmental issues hold greater ‘intrinsic’ appeal for Chinese citizens than others? Why is this so (e.g. NIMBYism, aesthetic appreciation, technical complexity of the issue)? What are the political implications of such variations?

Further, close examination of changing attitudes among the public is needed. In particular, this may help us to understand which (and on what conditions) social groups are likely to switch from non-involvement to active involvement in environmental movements. Alternatively, how far can it be said that situation (b) is indicative of a distinctive political culture in China – that is, one in which public trust in government

is high on selected issues, and hence why individuals may not even wish to become involved in their governance (even if offered that option by government)? In contrast, in a country increasingly polarized into the 'haves' and the 'have-nots', are social groups that experience acute hardship and/or discontent more likely than the better-off to become involved in environmental movements, and what factors might motivate such a transition?

Overall, these sorts of issues and questions point to a rich research agenda in the Chinese context that is ripe for further political ecology analysis. How far the findings of this research might raise in turn broader international comparative questions is also a matter that is indicative of the timely nature and global significance of that agenda.

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19. Understanding Fukushima: nuclear impacts, risk perceptions and organic farming in a feminist political ecology perspective

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Nuclear power constitutes a significant portion of the global energy mix today, with more than 430 commercial nuclear reactors in 31 countries (World Nuclear Association, 2014). While some countries, such as Germany, have decided to phase out nuclear power, others, such as France and the USA, have maintained a pro-nuclear stance. The USA alone has 104 reactors, five more under construction and more than a dozen under consideration (Nuclear Energy Institute, 2014). The nuclear industry is also aggressively promoting nuclear power in developing countries. Undeterred by the Fukushima accident in 2011, for instance, Japan reached nuclear cooperation agreements with Turkey and the United Arab Emirates in 2013 (Johnston, 2013) and is in talks with Vietnam to build a nuclear power plant there (UPI, 2014).

There is a long social sciences tradition of analyzing nuclear power with diverse approaches, including social movements literature (Walsh, 1988; Walsh and Warland, 1983; Joppke, 1993), risk theory (Slovic et al., 1991; Peters et al., 1990) and science and technology studies (Wynne, 1992; Petryna, 2002). Surprisingly, the research field of political ecology (Robbins, 2012) – which examines how unequal power relations shape human–environmental interaction – has paid scant attention to the subject, often focusing instead on other things such as land, water and natural resource struggles (including in Japanese scholarship; see Shimada, 1999; Lye et al., 2003; Sato, 2011).

In contrast, this chapter addresses the nuclear power issue using a feminist political ecology perspective to understand some of the complex social dynamics and governance issues involved. After considering how social scientific understanding here would benefit from use of this perspective, we analyze Japan’s Fukushima Daiichi Nuclear Power Plant disaster of March 2011 in relation to the impact on local organic agriculture. This analysis affords political ecology insight into one of the world’s largest recent disasters, while exploring how politics, ecology and gender intersect in this disaster. It also demonstrates why political ecology needs to examine more systematically the multifaceted effects of today’s ‘risk society’ (Beck, 1992).

NUCLEAR ENERGY, POLITICAL ECOLOGY AND FEMINIST POLITICAL ECOLOGY

Political ecology has rarely been utilized in analyzing the nuclear sector, even though it holds great promise for explaining the complex socio-environmental processes involved. Work done tends to focus on the military dimension (e.g. Mathur, 2001;

Masco, 2006), even as a growing literature examines other ‘ills’ of the risk society (e.g. Harrison, 2008; Little, 2013). In the process, political ecology analysis of civil nuclear power tends to be neglected.

This is unfortunate, because political ecology has much to offer here. First, it provides a useful framework for understanding the uneven distribution of the costs and benefits of nuclear power. Studies of anti-nuclear movements have certainly analyzed them in relation to the emergence of new social movements in the developed economies from the 1960s (Welsh, 2013; Touraine et al., 1983; Rudig, 1990; Joppke, 1993). However, this literature emphasizes movement strategizing in relation to organized politics, while paying less attention to issues of environmental justice and global inequality in the shaping of nuclear politics. But these latter issues are immensely important, with nuclear power long embedded in colonial-type relationships within and across borders. The disproportionate burden borne by indigenous communities is particularly clear here, notably in relation to uranium mining and nuclear waste disposal (Ishiyama, 2003). Even the location of nuclear plants is concentrated in indigenous areas (Fan, 2006), as well as other disadvantaged communities (Aldred and Shrader-Frechette, 2009). Unequal power relations associated with the nuclear industry also requires global analysis today insofar as nuclear firms (usually from the global North) aggressively promote nuclear energy exports to the global South. At multiple scales, therefore, political ecology is well placed to analyze who benefits and who loses in a globalizing nuclear industry.

Second, political ecology can document how the expansion of nuclear energy is intricately linked to how it has been discursively framed. Thus, from images of ‘peaceful’ atomic power use after the Second World War to its recent framing as a low-carbon energy solution to climate change, how nuclear power is presented has been vital to industry fortunes (Bickerstaff et al., 2008). Here, political ecology’s attention to struggles over the meaning attached to resources would help illuminate the power relationships involved in shifting nuclear discourses and practices.

Third, political ecology is well placed to assess the perennial threat of nuclear accidents, given its long focus on disasters. Nuclear accidents are certainly not limited to the big accidents in Three Mile Island (in 1979), Chernobyl (in 1986) and Fukushima (in 2011), since there have been more than 30 significant accidents since the 1950s (Rogers, 2011). Now, while political ecology has analyzed disasters ranging from soil erosion (Blaikie and Brookfield, 1987) to industrial accidents (Rajan, 2001), nuclear ones are rather neglected. Instead, analyses of nuclear disasters tend to portray the latter as a single, abnormal and isolated event – as with Fukushima, which was ‘caused’ by an unprecedented tsunami rather than industry-related problems. Here, the historical and structural analyses found in political ecology would be a useful antidote to such work in that they could highlight how disasters are not freak events but are rather embedded in larger social structures and historical trajectories.

Additionally, feminist analysis of nuclear power offers an even richer understanding of the politics of nuclear energy. Research certainly shows that nuclear power involves complicated gender relations. First, studies suggest that women face a greater vulnerability to ionizing radiation than do men (Olson et al., 2012). Female scientists have been pivotal in the analysis of the differentiated health impacts of ionizing radiation. Epidemiologist Alice Stewart, for instance, established in the 1950s that X-rays

conducted on pregnant women would result in a much greater likelihood of childhood cancers (Greene, 1999). Female scientists have also led in resisting the ‘nuclear safety myth’ spread by the establishment. For example, Australian pediatrician Helen Caldicott was prominent in international anti-nuclear campaigning, founding Physicians for Social Responsibility in the 1970s (Caldicott, 1997; Anonymous, 2014).

Second, there are well-documented gendered differences in attitudes to nuclear power and radiation impacts (Brody, 1984). Women are more likely than men to be wary of, or downright opposed to, nuclear power. Not surprisingly, social mobilization has long involved many women, with activists often adopting an ecofeminist theme based on the argument that a masculine logic of domination in the nuclear sector was inherently destructive and anti-women (Salleh, 2011). Feminists also identify masculine bias shaping the development of nuclear power and weapons, even as the analysis of nuclear discourses and media representations reveals patriarchal values underpinning them (Caputi, 2004).

Third, and paradoxically, scholars have shown how the notion of feminism itself was appropriated by *pro*-nuclear factions that argued that women’s liberation necessitated widespread uptake of nuclear energy to free them from domestic drudgery. Indeed, the industry targeted women as a key partner in its public relations (Nelkin, 1981). For instance, the US industry’s Atomic Industrial Forum created a linked organization called Nuclear Energy Women (NEW), whose slogan was ‘newer than NOW [the National Organization for Women]’ to foster a ‘pro-nuclear feminism’ that would mobilize women in favor of nuclear power (Nelson, 1984).

Lastly, nuclear disasters (as with all disasters) merit analyses that explicitly incorporate gender dimensions. Impacts of disasters are always stratified, particularly along class, race and gender lines. The gendered effects of disasters are increasingly known today, even as gender ‘mainstreaming’ is now a common feature of international disaster and risk reduction platforms (e.g. UNISDR, UNDP and IUCN, 2009). And yet, nuclear disasters are rarely analyzed in this way – despite the insights that await such an analysis, especially from a feminist political ecology perspective.

It is to the detailed analysis of one such nuclear disaster, the Fukushima accident, that this chapter now turns in order to redress this gap in the literature while thereby highlighting a fruitful research agenda for further political ecology work.

RESEARCHING FUKUSHIMA’S IMPACT ON LOCAL ORGANIC AGRICULTURE

On 11 March 2011 (hereafter 3.11), a magnitude nine earthquake hit the northeast part of Japan’s main island of Honshu. The earthquake and subsequent tsunami damaged the cooling systems of the Fukushima Daiichi plant’s reactors operated by Tokyo Electric Company (TEPCO).

The nuclear accident in turn inflicted a major blow on Fukushima’s agriculture. One survey there found that 17 200 out of 50 945 farmers reported damages from earthquake, tsunami or nuclear accidents (Ministry of Agriculture, Forestry and Fisheries, 2011). But the impact of the nuclear accident has been felt much longer than that of the earthquake and tsunami. A 2014 survey found that 77 percent of farmers in

Fukushima were still unable to resume farming, with 96.6 percent of respondents blaming the nuclear accident for this (Ministry of Agriculture, Forestry and Fisheries, 2014). The accident not only contaminated soil and water, but also made agriculture a risky business for the farmers. Reports of contaminated food resulted in strong consumer fears over the safety of food from the region: sales of Fukushima rice and vegetables plummeted (*Fukushima Minpo Newspaper*, 2012; Ouse, 2012).

Organic agriculture was especially hard hit. While Japanese organic farms constitute but a fraction of the farming area (0.16 percent), with similarly tiny plot sizes (1.7 ha on average), their popularity and public recognition had been increasing in recent years, particularly with the introduction of a national certification system in the 1990s (Katano, 2007). Organic farmers have habitually sold their produce through non-conventional routes, particularly consumer-supported agriculture groups or *teikei* (Japan Organic Agriculture Association, 2012). And Fukushima was a leading center of organic farming, at least before the accident (MOA Nature Farming Culture Foundation, 2010).

As such, this chapter focuses on the experiences of organic farmers in Fukushima (who grew rice, vegetables and fruits) in order to explore selected impacts of the Fukushima accident, including how social perceptions and governance objectives affected people's lives there. Using qualitative methodology, the research involved interviewing mostly women (10 out of 12 interviewees), in keeping with insights from feminist political ecology that women's voices are often marginalized in narratives of environmental struggles (Rocheleau et al., 1996). Particular attention was paid to how interviewees themselves understood radiation contamination and its social impacts (Sprague, 2002). At the same time, the chapter situates such understanding in the context of national debates and framings, as well as farmer agency, drawing on stakeholder interviews, media reports and policy documents.

SOCIAL TENSIONS AFTER THE DISASTER

Farmer narratives suggest profound struggles erupted as people sought to make sense of the radiation risk. Yet social tensions here were mainly described not in terms of contestation between pro-environment and pro-nuclear camps, as might be expected (even if some farmers did criticize the government and TEPCO). Rather, the tensions reflected a more complicated matrix of differences that disrupted their sense of normalcy and solidarity. Three themes stood out: tensions between farmers and consumers; among farmers; and within farming families.

Tensions between Farmers and Consumers

Media reports of contaminated food made consumers wary of radiation contamination, such that organic farmers struggled with the tarnished reputation of their produce. Just having the 'Made in Fukushima' label deterred customers. What was most shocking to farmers, though, was the fact that some consumers saw them as 'wrongdoers'. Several interviewees referred to the Shinagawa Declaration issued in 2011 by grassroots organizations as an example of such a discourse. That Declaration demanded that both

TEPCO and the government be held accountable, but also implied that produce from the affected areas was akin to low-level radioactive waste. From the farmers' viewpoint, they were themselves victims of the accident and deserved empathy, like other victims. However, frightened consumers started to see farmers as a part of government-led conspiracy to downplay radiation risk.

The shock was especially strong for organic farmers, who prided themselves on producing healthy produce and working well with consumers. One interviewee sobbed as she related how 'farmers were criticized for just farming in Fukushima. A lot of slander and criticisms ... [I] never thought to be criticized like that by doing organic farming. People call our vegetables "poison".' While few had faced such direct condemnation, a record of rejected orders and declining sales marked just how disrupted relationships were with consumers.

Suddenly, organic farmers and consumers were sharply divided by divergent risk perceptions. The former felt their produce was safe (e.g. a level of radioactive cesium lower than the government standard), while the latter felt the potential of contamination to be too risky to justify purchase. Thus a central pillar of Japanese organic agriculture – mutual support and partnership between consumers and farmers – was disrupted.

Tensions among Farmers

Social tensions also existed among organic farmers. Most obvious was the contrast between those who left and those who remained. Following the accident, farmers were faced with the question of whether to stay or leave, as well as whether to continue farming or not. Unlike farmers in the mandatory evacuation zones, for those outside these zones the dilemmas were real enough

Organic farmers thus had to decide whether to continue farming in what many saw as a contaminated landscape. Some decided to farm elsewhere or to leave agriculture altogether. Of the two female interviewees who chose to quit farming, one had been farming for more than 30 years, producing rice, vegetables and hen's eggs. Discussing her decision, she said that she was 'lucky' to be able to leave farming. Not only did she have another job; there was no familial pressure in making a decision. This is important because land in Japan is more than simply a piece of property, holding also great significance in terms of family lineage and filial piety. Although she was from Fukushima and married to a local man, her in-laws were old and had Alzheimer's disease – thereby effectively removing any pressure that she might otherwise have experienced.

In contrast, most interviewees chose to continue farming. When asked why, though, many could not provide a clear answer. Thus they described how the initial shock was followed by chronic uncertainty because the government did not give clear instructions to farmers except when contaminated produce was discovered. One (male) interviewee noted, 'As a farmer, when spring comes, you just cannot sit around and do nothing. It's the rhythm of life for us.' Farming was a way of life, and they wanted to farm. The shadow of radiation was present, but both media and government pronouncements tended to downplay the risk.

The decision to stay or go was reflected in how (ex-) farmers perceived that risk. Those who stayed tended to portray some radiation in food as inevitable and something

to be accepted (while admitting that acceptance depended on individual sensitivity to radioactivity). Those who left felt that radiation must be avoided as much as possible. So, when they talked about the level of cesium in produce, for instance, the former would talk about *only* 15 Bq/kg being found in their produce (i.e. well below the government standard of 100 Bq/kg), while the latter would say that such a level was not acceptable.

Tensions within Farming Families

Social tensions also erupted within farming families. Sometimes it was a generational divide – grandparents grew vegetables that younger generations would no longer eat. More often than not, tensions were gender related.

At issue were gendered perceptions of radiation risk. One interviewee even talked about a ‘disaster divorce’ in which her daughter (anxious about risks) separated from the husband (not anxious about it). More commonly, women farmers indicated how family relationships became strained over different risk perceptions. When asked why they had stayed, they replied, ‘Father [*otōsan*, referring to the husband] decided to do it [continue farming], so we just followed’ or ‘Mr X [husband’s name] thinks being in a community is important ... once you are in, you should not leave casually.’ Such statements revealed how the power of decision-making remained with husbands.

One case was particularly telling. A woman farmer and her husband grew rice and vegetables in Fukushima. Given that neither of them was from there, that they had two young children, and that the wife’s parents had a farm in another prefecture, the family had ample reason to leave. But during the interview she started to weep quietly as she talked about their decision to stay. She politely called it a joint decision, but it was clear that he had strongly pushed for it (as other interviewees confirmed). Although not local, he now played a critical role in communal life. As elsewhere in Japan, their village had experienced rapid depopulation and aging, and thus a relatively young couple like this was essential to its functioning. For him, leaving Fukushima meant abandoning villagers who had welcomed them into the community and had become dependent on them. The wife chose her words carefully – emphasizing that the two of them ‘became stronger’ – but her conflicted emotion was self-evident.

Thus farmer’s lives after 3.11 were riddled with social tensions rooted in divergent interpretations about the risk of radiation. Echoing other research, it was the women organic farmers who seemed to be most concerned with the health implications of the situation for themselves and families. Yet, as feminist political ecology literature observes, women’s concern here cannot be equated to some ‘inherent’ affinity with nature (Agarwal, 1992; Rocheleau et al., 1996). Rather, women’s caring roles might sensitize them to take more seriously than men perceived threats to the body and the environment linked to radiation.

Analysis of masculinity is also helpful here. Rural masculinity is often connected to heroism and bravery, linking men’s bodies to control, strength and risk-taking rather than dependency, weakness and safety for women (Brandth and Haugen, 2005). The above stories about men not evacuating and not willing to quit agriculture echo studies that highlight men’s unwillingness to confront changing environments due to their heavily invested subjectivity as breadwinners and heads of household (Alston and Kent,

2008). Furthermore, patrimonial succession tends to put pressure on male heads of household to stay in farming (Price and Evans, 2009). Rural masculinity is also intimately linked to a man's subject-position of being 'in control' in life, including in relation to agricultural resources (Campbell et al., 2006).

FRAMING FUKUSHIMA: THE NATIONAL DIMENSION

The local tensions and confusions described above are not the result of farmer ignorance or an inevitable consequence of an unexpected accident involving little-studied substances. Rather, confusion and discord at the local level were at least partially a reflection of national dynamics.

First, the lack of preparedness for nuclear disasters by the national regulatory authorities fueled local conflicts and confusion. Even baseline information was missing. Thus, for example, when the accident happened, it quickly emerged that the main regulatory tool for food safety – the Food Sanitation Act – did not include standards for radiation contamination of domestic food. This meant that no official standards existed to inform citizens what radiation levels were deemed 'safe'. To fill this gap, the government adopted temporary standards, but these were simply borrowed from standards specified in a document prepared by the Nuclear Safety Commission (NSC) and labeled as 'provisional regulatory values' (PRVs). However, these PRVs lacked legitimacy because the NSC was seen to be part of the pro-nuclear establishment. Citizen organizations and some scientific experts thus severely criticized the PRVs for being too lax (Kimura, 2013). As a result, when food was officially tested as being 'safe', many consumers knew that this designation was only in relation to PRVs, which were widely discredited. The consumer skepticism that some organic farmers encountered (as described above) was thus partly rooted in a national structure of food safety assurance that lacked both trustworthiness and legitimacy.

Second, the government's decision to manipulate the 'safe' radiation exposure limit seemingly in order to suit official efforts to maintain order and to limit the socio-economic 'fallout' from the Fukushima accident also compounded the local confusion experienced by the farmers. The pre-3.11 standard for it had been set at 1 mSv(sievert)/year, following the guidelines of the International Commission on Radiological Protection (ICRP). However, after 3.11, the government opted instead for ICRP's much higher emergency standard set at 20 mSv (Nuclear Safety Commission, 2011). To justify this dramatic switch, both the government and the nuclear industry mounted a national campaign that claimed that it was safe for individuals to be exposed to levels much higher than 1 mSv (Furitsu, 2011). Now, strict adherence to the pre-accident 1 mSv standard would have entailed the evacuation of many more people in Fukushima (including some interviewees) than actually occurred. Yet all this safety propaganda campaign did was to make the evacuation decision an ambiguous one, in effect leaving it up to individuals outside of the narrowly defined mandatory evacuation zone.

At the same time, other seemingly politically motivated government decisions in relation to the question of farm land contamination only compounded the sense of uncertainty felt by farmers. The Ministry of Agriculture, Forestry and Fisheries (2012) did indeed test farm land in Fukushima for possible radiation contamination, but only

covered a portion of it. Such uneven coverage left those farmers on untested plots facing tremendous uncertainty because, without such data, they could not tell whether their land was contaminated and hence whether ongoing farming would be dangerous to consumers and to themselves. Clearly, more thorough soil testing would have helped greatly to reduce this uncertainty, but this was not done. Observers like Koyama and Komatsu (2012) suspected a political reason for this situation: a beleaguered government fearful that a more detailed contamination map of Fukushima prefecture would be used in turn by farmers to ask for financial compensation. The upshot was that farmers had to decide, without critical data, whether to farm or not, causing them great anxiety.

Yet a feminist political ecology analysis needs to go further here to carefully consider the performance of gender roles in times of crisis. In particular, and as work on the social construction of manhood during times of Australian wildfire crisis management shows (Eriksen et al., 2010), disaster situations tend to bring out hegemonic gender frameworks, notably putting a premium on the ‘proper’ performance of hegemonic masculine identities. This dynamic can be clearly seen in Japan in the wake of 3.11. Here, hyper-masculine responses shaped government discourse in a context of a perceived extreme national threat – indeed, for some, a threat on a par with defeat in the Second World War. At the same time, this accident put Japan under intense international scrutiny, with the post-tsunami nuclear crises at the Fukushima plant unfolding for weeks in front of a global audience. The world, it was keenly felt, was closely watching – and judging – how Japan dealt with the crisis. If, as the political scientist Robin LeBlanc (2009) suggests, a sense of masculine honor traditionally shapes the Japanese political ethos, then 3.11 required a ‘manly’ response in order to uphold national dignity and honor.

That response was above all to emphasize control and power as core virtues, as was notably manifest in government discourse (see Carrigan et al., 1985 generally on hegemonic masculinity). Thus, working with pro-nuclear experts, the Fukushima prefectural administration as well as the national government repeatedly emphasized the safety of the region while downplaying the risk of radiation. Indeed, they even proclaimed that eating Fukushima produce was a patriotic act to support the devastated area as well as to aid in national reconstruction – hence an officially sanctioned ‘Eat to Cheer Up’ campaign that encouraged citizens to consume produce from the affected areas.

If masculinity was seen as a helpful quality in crisis management, ‘femininity’ was typically understood as being emotional, irrational and unhelpful. In post-3.11 Japan, consumer panic over contaminated food was understood in this gendered manner. In relation to those consumers who were avoiding food from the affected region, the government as well as the mainstream media spoke of ‘harmful rumors’ (*fūhyōhigai*): a concept referring to the economic damage caused by the precipitous decline in the sale of products popularly regarded as contaminated by radiation. Yet this officially promoted term implies that there is no scientific basis for such concern – thus in effect chastising consumers for not purchasing Fukushima produce or even for expressing concerns about contamination. The stakes were said to be very high: government and mainstream media portrayals claimed that *fūhyōhigai* was causing enormous economic damage even as ‘unjustified’ concern about food safety was tantamount to being anti-farmer and anti-Fukushima while jeopardizing national reconstruction efforts.

Feminist scholars have long pointed out that women's environmental concerns are often described as hysterical and emotional responses, drawing on the traditional marking of women as irrational and weak on techno-scientific issues (Blum, 2008; Brown, 2007; Murphy, 2006; Newman, 2001). The *fūhyōhigai* discourse reflected such a description. In Japanese society, women still shoulder a disproportionate amount of the burden of purchasing food and cooking meals. Indeed, longstanding national policy discourses on food have always tended to hold women responsible for this 'domestic' issue (Kimura, 2011). Therefore, when the discourse of *fūhyōhigai* chastised irrational consumers, it implicitly blamed women for their 'harmful' behavior. The blunt criticism of one food safety expert, Kazuki Matsunaga, of women's perceived ignorance about food safety risks was perhaps typical here: 'after the Fukushima No. 1 reactor accident, it was women, particularly mothers, who were concerned *and confused* about food contamination' (Matsunaga, 2012; italics added). In this view, it is women who are to blame for sowing the seeds of societal anxiety about food – and, thus, also to blame for hampering national recovery and hurting farmers.

In short, the farmers' problems noted earlier were not merely a local matter, but reflected larger political and economic forces. Thus the government did not provide critical data on personal and land safety from excessive radiation exposure, even as it combined with other stakeholders (such as pro-nuclear scientific experts and the mainstream media) to promote a masculine discourse of control and patriotism in times of crisis while condemning 'feminine' concerns over food safety as irrational and unscientific.

FARMERS RESPOND

The response of the organic farmers was complicated, befitting both the complex circumstances on the ground locally and national political economic dynamics. A feminist political ecology approach seeks to understand how farmers showed agency in this crisis situation, including how far and in what ways they took issue with dominant masculine discourses.

Yet farmer agency was not monolithic insofar as gender was concerned. Indeed, and linked to the primordial choice of whether to stay or to leave, discussed earlier, women farmers who stayed behind sought to rejuvenate local agriculture via engagement with Fukushima organic associations, whereas departing women quit farming in the belief that agriculture should not be done in a contaminated landscape, channeling that view into subsequent engagement with the national anti-nuclear movement. For the latter, agency even involved participation in litigation against the government and TEPCO – reflecting how far the views of these departing women farmers had become aligned with an overt and nationwide campaign against the nuclear industry.

In many ways, the agency shown by the (mainly women) interviewee farmers who remained is the more complicated of the two in that they were pulled in different directions about how to respond to the crisis and associated national 'safety' campaigns, let alone in relation to the more localized tensions discussed above.

One female farmer's experience illuminates some of these complications. A recent graduate of a college in the Tokyo metropolitan area, she decided to return to

Fukushima in 2010 in order to run the family business. In the aftermath of 3.11, and despite the worries of her family (including her parents) about possible radiation impacts on her (reproductive) health, she chose to continue to work on the farm. Indeed, she established a company to promote 'green' tourism on the farm, even as she became a spokesperson for Fukushima agriculture, participating in events and symposia with supportive civic organizations. The latter included the Fukushima Women Organic Farmers' Association established in 2012 by local women to communicate 'the reality of Fukushima from women's perspectives' and the allied Fukushima Organic Agriculture Network established in November 2011 to support local farmers and agriculture.

Such local engagement was sustained by a fervent belief in the safety of her farm's produce. Thus she remarked:

I am testing what we harvest, and I know that they are rarely contaminated. More than 90 percent are ok. I understand why other people are worried, but I have the good understanding of the situation and I feel we don't have to be too sensitive.

And, while she certainly condemned the nuclear accident and its subsequent poor national management, she nonetheless tended to emphasize that there was a wide variation in the degree of contamination within Fukushima prefecture, with much produce tested and safe to eat.

At one level, the stance by this farmer, as well as other organic farmers who stayed behind, seems to closely resemble that reflected in the official national discourse that suggested that food from Fukushima was safe to eat. Indeed, the Fukushima Organic Agriculture Network also appealed to consumers to continue buying Fukushima produce, asserting that healthy agriculture was still possible in the affected region. It even established a café in Tokyo that used their produce in the food prepared on site, even as the café sold produce directly to consumers. Women farmers frequently also organized events such as cooking demonstrations – in a move designed to restore pre-existing consumption patterns.

At another level, though, the discourse propounded by these farmers was subtly different from that officially promoted under a hegemonic masculinity. First, and rather than obfuscating the uncertainty of the science surrounding the radiation's impact on local food, the farmers frankly acknowledged the need for more studies and information to assist consumers than was officially available. Thus they put this concern into action by proactively soliciting help from scientific experts and grass-roots organizations in order to conduct their own tests about radiation levels.

Second, they sought to deepen their relationship with anxious consumers by communicating honestly about their farming situation rather than simply asserting that their produce was safe. In this vein, the Network purchased a detector and learned how to operate it in order to test the local soil and produce – with test results thereafter disseminated in a transparent manner to consumer groups. This approach sought to empathize with consumer dilemmas while responding to consumer demands for more information in a timely manner – information, moreover, that was not connected to an already discredited (and arrogant) government campaign.

And finally, the farmers' discourse reflected a fundamentally different underlying ethos from that embodied in the official national discourse. Thus, whereas the latter

stressed the need to revitalize agriculture to help rebuild a severely dented national economy and condemned irrational (usually female) consumers for unpatriotic abstention, the former reflected what feminist scholars term an ‘ethics of care’ in the revival of Fukushima’s organic agriculture – something akin to what Lucy Jarosz (2011) found in her study of women involved in US alternative agriculture who emphasized the nurturing of nature and community precisely in defiance of the dominant (masculine) economic logic of industrial agriculture. Of course, the organic farmers were embedded in a wider capitalist economy and hence depended on farming to generate an income. And yet their main emphasis was on caring for the land and for the community that depended on that land. Indeed, if government discourse was predicated on the notion that (Fukushima) agriculture needed to be supported for the sake of the national economy, the farmers’ discourse argued that organic agriculture was sacrificed under such a crude and misleading logic – instead emphasizing how all citizens needed to understand the specific circumstances facing Fukushima’s organic farmers, while, it was hoped, showing solidarity with those farmers as they sought to resume the production of safe and nourishing food.

CONCLUSION

The case of the post-3.11 Fukushima organic farmers discussed in this chapter underscores the complex interplay of post-disaster nuclear impacts, divergent risk perceptions, wider political economic calculations, and local tensions and struggles. It has also proven to be fertile ground for a feminist political ecology analysis in which gender dynamics have been seen to operate at multiple scales, thereby complicating even further our understanding of one of the world’s largest modern disasters.

Often analyses of disasters (nuclear or otherwise) downplay or neglect altogether a gender dimension. Yet, as this chapter has shown, this is a mistake since gender is not peripheral to the 3.11 story – it is more often than not central to it. Thus, whether it be an official discourse reflective of a hegemonic masculinity that emphasized control through business-as-usual and the downplaying of radiation-related risks, or official condemnation of ‘irrational’ (read feminine) consumer fears over food safety, local tensions linked in part to intra-family and often gendered divisions over whether to stay or to leave farms, or women’s leading role in the ‘fight back’ for Fukushima organic agriculture as distinct from heavy-handed and counter-productive national (male-led) efforts, gender dynamics were important in how people perceived and/or responded to this epic disaster. But those dynamics were not necessarily straightforward in the sense that all divisions followed gender lines – to the contrary, one important split was between departing and remaining women farmers, who justified their choices in terms of divergent risk interpretations about whether or not the land was contaminated.

This chapter has thus demonstrated the rich potential of applying a feminist political ecology perspective to the study of nuclear disasters such as Fukushima. It provides greater depth and breadth when compared with research that focuses more narrowly on risk perception – and which thereby obscures the crucial role of both the larger political economy and the impact of gender roles and identities in shaping disaster responses. At the same time, a sustained focus on the nuclear energy sector is long overdue in

(feminist) political ecology as this research field – a bit like the nuclear energy sector itself – goes increasingly global.

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20. Mind the gap: global truths, local complexities in emergent green initiatives

Adeniyi Asiyebi

Scholars of political ecology are engaging with a widespread transformation of environmental governance and conservation across the globe. This transformation, part of what Fletcher et al. (ch. 26 this volume) call a ‘reinvention’ of the global conservation movement, is manifest in a whole array of somewhat novel causes that claim to address environmental threats from climatic change to biodiversity depletion, and from environmental destruction to wanton consumption. These causes are most distinguished in their prioritization of the market as the singular site and principle for purportedly solving these problems. Through them, aspects hitherto illegible to capital are being increasingly subsumed by it. So pervasive is this process that some suggest that ‘capitalocene’ better describes the current socio-ecological epoch than ‘Anthropocene’ (Castree and Henderson, 2013).

This transformation has been the focus of significant engagement in political ecology. From a variety of disciplinary standpoints typical of this sub-field, scholars have analysed this transformation, very broadly, as neoliberal environment (e.g. Heynen et al., 2007), neoliberal natures (e.g. Castree, 2007a, 2007b; Bakker, 2010) and neoliberal conservation (e.g. Büscher et al., 2012, 2014; Brockington and Duffy, 2010; Igoe and Brockington, 2007). Together with the web of perverse socio-ecological consequences this transformation often engenders, scholars describe it partly as green grabbing (e.g. Fairhead et al., 2012), grabbing ‘green’ (Corson et al., 2013) and green rush (Sullivan, 2013a). Going beyond the failing promises of this emergent transformation, scholars continue to find alternative conceptions of human–environment relations, for instance, in what Fletcher et al. (ch. 26 this volume) capture as ‘vital alternatives’.

Yet this growing body of work has so far accorded only little effort to assessing how far plans and discourses of the emergent global transformation are being translated into reality on the ground, and, if so, as planned. We argue that closer attention is needed to such issues, echoing an earlier concern in policy implementation studies to gauge how far and in what ways this globally articulated transformation is in fact operationalized. Using an example of a carbon scheme in Nigeria, we show the disjuncture between globally dispatched plans and local realities, which are much messier than commonly assumed both by proponents and critics. We infuse the terrain of political ecology with insights from implementation studies, proposing an understanding of these projects as ‘floating symbols’ with variegated impacts. If the ‘degree to which the conservation movement is currently reinventing itself is not yet clearly understood’, as Fletcher et al. (ch. 26 this volume) posit, we argue that here lies one critical dimension of deeper understanding.

We proceed, first, by highlighting the globalizing nature of this emergent transformation. We demonstrate this global flourishing in the case of ‘reducing emissions from deforestation and forest degradation’ (REDD+), and how it contrasts with dispiriting outcomes on the ground. We then consider insights that implementation studies offers to political ecology analysis of this disjuncture. Finally, we illustrate some of these insights with empirical materials from the unfolding of REDD+ in Nigeria.

GLOBALIZING ENVIRONMENTAL TRANSFORMATION?

The emergent transformation amplifies the globalizing tendency in conservation and environmental governance to new effects (Corson et al., 2013). This is linked to the increasingly entrenched neoliberal universalist conception of nature as an indefinite pool from which to create value endlessly (Smith, 2008; Robertson, 2007), but it entails more. This ‘globalism’ is set within a conjuncture of nature’s biophysical interconnection, the ecology–capitalism nexus in colonial and post-colonial imperial endeavours (Beinart and Hughes, 2007), the specific ascendancy of neoliberal logic in the environment (Redclift and Woodgate, 2013) and the internationalization of environmental causes and organizations at different historical moments. Yet this conjuncture is in turn nested within emergent virtualizations that increasingly define the contemporary social, economic, financial and technological epoch. Hence the current shift of resource governance from ‘territory to flows’ (Sikor et al., 2013). It is indeed such a conjuncture that enables the global circulation of capital, as carbon pollution emitted in Germany is expected to be mopped up by forests in Democratic Republic of Congo, once a broker in New York has facilitated exchange of so-called certified emission reduction for capital.

Yet there is a sense in which this globalism is far from thorough – a sense in which it remains a ‘thin’ endeavour, as Smith (2008) notes of capital’s universal conception of nature. This is, for instance, manifest in the contradiction inherent in this emergent neoliberal mode of conservation, which claims that nature can be saved only by selling it. Thus universal biodiversity is rid of human interactions and ecosystem dependencies. Drawn into markets, biodiversity is discursively and materially pieced into standardized, fungible commodities whose value and management are exclusively determined by and financially displaced within markets (Robertson, 2012; Sullivan, 2013b). Indeed, the ‘global’ treatment of the environment is sometimes nothing more than a ‘point-to-point connectivity that bypasses and short-circuits all scale based on contiguity’ (Ferguson, 2006: 42). Global conservation is about biodiversity hotspots, national parks and charismatic species.

This (thin) globalism, together with its associated discursive–institutional apparatus, remains an important hallmark of the current transformation, as we later show. But it is also affirmed and reinforced by critical scholars. Heynen et al. (2007: 288) observe that both proponents and critics of neoliberalism do not often ‘take the risk of grounding their arguments in real examples’. For instance, political economy critique has often privileged a globalist reading of neoliberalism and the emergent conservation movement (cf. Peck and Tickell, 2012), even if scholars are beginning to emphasize ‘actually existing neoliberalisms’ (Heynen et al., 2007: 15). Yet this emergent global movement

is driving a whole array of processes in locales across the world. It is precisely how and to what extent it does so that are yet to be sufficiently articulated. We argue that this requires a renewed focus on global conservation dispatches and their relation to outcomes on the ground. In what follows, we illustrate this with an example of incentivized forest conservation, showing signs of dissonance between flourishing global discursive articulations and dispiriting local realities.

REDD+: FLOURISHING GLOBAL ARTICULATIONS AND DISPIRITING LOCAL OUTCOMES

At the centre of current international efforts to reduce carbon emission is REDD+, hailed as ‘one of the most promising policy initiatives’ to have emerged in addressing climate change (Hall, 2012: xiii). This scheme promises to reduce carbon emissions by transferring cash incentives (through market and non-market instruments) to developing countries to reduce the deforestation rate and to increase forest-held carbon against a set baseline. REDD+ emerged in international climate change negotiations of the United Nations Framework Convention for Climate Change (UNFCCC), first as compensated reduced deforestation at the 2005 Conference of the Parties (COP) to the Kyoto Protocol (Santilli et al., 2005). Accretion of negotiation, policy and research over the years gave rise to the current expansive form: REDD+ (Karsenty, 2008). Generally, the scheme is now in the ‘readiness’ phase in most countries where technical and institutional capacities are being prepared, and project-level cases demonstrated to supposedly lead the way to a global market shift.

In a lethargic atmosphere of broader climate change negotiations, REDD+ has enjoyed significant policy appeal and popularity among policy-makers, the COP, big environmental non-governmental organizations (BENGOs) and researchers, making its emergence curiously rapid (Hall, 2012). A submission of the Tropical Forest Group (a key international player in REDD+) to the UNFCCC estimates that ‘No other large source of potential emissions reductions has such a comprehensive, consensus-based record of policy, technical, social, and financial debates, reports and decisions’ (TFG, 2011: 2). This scheme has not only outpaced broader international negotiations on climate change; it has garnered enormous support from other platforms besides the UNFCCC. These include the UNREDD (a United Nations platform), the World Bank’s Forest Carbon Partnership Facility (FCPF) and various bi/multilateral initiatives. Total non-market funds pledged to REDD+ readiness stand at US\$4.6 billion (Climate Funds Update, 2014). Most BENGOs have developed some form of REDD+ projects. About 338 different projects are ongoing worldwide (Forest Climate Change, 2014).

REDD+ policy-making has thus become an important symbol of global optimism not only for climate change but also for forests, a problematic resource that has historically been a site of unending contestations (Hecht and Cockburn, 1989; Bryant, 1997). But this flourishing is at the global policy–research–discursive plane, where policy decisions are made and technical standards are set, where technical research goes on and carbon markets thrive. This is the level of the COP, and a variety of actors including the UNFCCC and associated bodies, researchers, NGOs, multilateral organizations, corporations, investors, royalty and even fraudsters.

Conversely, general appraisal of REDD+ projects being implemented in various places increasingly reveals situations at variance with the global flourishing. Not only has the rate of progress been ‘slower-than-expected’ (Angelsen et al., 2012: 324); projects are often confronted with various technical challenges, including issues of measuring and reporting carbon, ensuring additionality, avoiding leakage (Ghazoul et al., 2010), difficulty securing multiple benefits (Putz and Redford, 2009; Phelps et al., 2012) and escalating future conservation costs (Phelps et al., 2013). REDD+ is being challenged by complexities of forest governance, land tenure, property rights and land-use issues in locales, just as these complexities are also being refigured by REDD+ in ways that create and perpetuate regimes of unequal power relations (Mahanty et al., 2013; Beymer-Farris and Bassett, 2012). Here, history but also local politics and agency transform globally dispatched blueprints (McAfee and Shapiro, 2010). Clearly, there is a dissonance between the flourishing global policy optimism and the often frustrated local reality in REDD+.

Though scholars hint at this dissonance, there is yet to emerge sufficient work to generate significant debate. Noting how it is barely sufficiently articulated, though pervasively evident, in discourses of the neoliberal environmental agenda, Fletcher (2013) calls this disjuncture a ‘public secret’. Boyd (2009: 2380) depicts its manifestation in the ways that ‘the rhetoric of global carbon actors often asserts these schemes (carbon schemes) in one light, while the rhetoric of those who are immediately involved locally may be different’. This dissonance, though aligned with a global–local gap, goes beyond mere scalar dichotomy. It could be productively understood as a site of multiple and complex power relations, practices and discursive claims. Implementing REDD+ involves precisely the bridging of this ‘gap between the will to govern and the refractory processes that make government so difficult’ (Li, 2007: 263). It is within this gap and efforts to bridge it that analytical attention must be beamed. Doing so raises two important concerns: how one might conceptually understand this untidy translation of global dispatches into reality in locales, and what empirical imperative this suggests. In what follows, then, we consider insights that policy implementation studies offer for initial consideration of these concerns. We then provide empirical accounts from an investigation of the unfolding of REDD+ in Nigeria.

INSIGHTS FROM IMPLEMENTATION STUDIES

Implementation scholars have retained as their main concern how to understand the translation of policy into reality. Addressing this concern had for long entailed identifying factors that help account for and bridge the gap between policy and implementation (O’Toole, 1986; Matland, 1995). Consequently, variables continued to be added to this literature, resulting in the ‘too many variables’ problem (Hupe, 2014). Moving beyond the variable impasse, Matland (1995) proposes an important intervention that was as useful to the field then as it is today. He develops what he calls the ‘ambiguity/conflict’ model, positing ambiguity and conflict as irreducible characteristics of policies that provide a ‘more comprehensive and coherent basis for understanding implementation’ (Matland, 1995: 155). He thus suggests that implementation is always positioned along a continuum of four perspectives based on the interaction of

ambiguity and conflict: administrative, experimental, political and symbolic implementation. We focus on Matland's symbolic implementation because of its relevance for our purposes here.

For him, symbolic politics is traditionally linked to a situation of little or non-implementation partly because opposition coalitions are able to limit it. Here, there is a high level of ambiguity and conflict, and implementation is shaped by the strength of local coalitions that control available resources (Matland, 1995). Technical know-how plays an important role too, as actors with professional training are likely to step into situations of vague goals and means. Here, policy goals hold little information about implementation means and processes, 'yet the symbols are sufficient to create significant opposition before any plans are [even] promulgated' (Matland, 1995: 169). Symbolic implementation stirs intense involvement of actors and disagreements. Any actor's influence is linked to the strength of his/her coalition compared to the strength of competing coalitions. Though they provide resources and focus attention on broad issue areas, those individuals in overall charge of implementation can hardly minutely monitor activities or structure local actions.

Matland thus provides a framework in which to describe policy, the translation process and the result simultaneously. His emphasis on actor coalitions resonates with more recent calls in implementation studies to focus analysis on 'micropolitical processes' (Barrett, 2004) and the actions of those who convert policy into practice (Fixsen et al., 2005). We argue that the translation of emergent global conservation into reality could be usefully conceived as 'floating symbols'. We use symbols here to denote Matland's symbolic implementation. But we also use them to reflect the rhetorical flourishing of emergent conservation projects, part of what Büscher (2013) calls 'reified representations', where emergent conservation discourses – tangential to reality as they are – constitute a new level of reality. Yet, beyond the reification of rhetoric, we also ask how certain everyday realities co-habit minimally with other kinds. This is what we call floating, denoting both the process and the nature of implementation of these emergent global dispatches. As floating symbols, these projects are strongly shaped by strategic actions of local actor coalitions and they evince a particular mode of articulation with local situations and institutions. Their impacts are varied and complex but they are modest in their fidelity to policy goals. We turn to illustrate this in the case of REDD+ in Nigeria.

TRANSLATING GLOBAL DISPATCHES INTO REALITY: THE CASE OF REDD+ IN NIGERIA

Activities leading to the commencement of REDD+ in Nigeria began in Cross River State – one of the 37 federating units of Nigeria. The state's 7361.7 km² of tropical rainforest is said to be a significant portion of the remaining tropical rainforest in Nigeria (Oyebo et al., 2010). Cross River Forest is also part of the Guinea Forest stretch, designated a global biodiversity hotspot (Myers et al., 2000). The state is thus an important national and international conservation area.

An Environment Summit was convened in Cross River State in June 2008, championed mainly by environmental NGOs (henceforth ENGOS). The Summit issued

a communiqué with the top three recommendations asking the state governor, Liyel Imoke, to ‘halt [the] revenue target based on timber exploitation’, ‘declare a two-year moratorium on logging’ and ‘initiate action to take advantage of the carbon credit market’. Governor Imoke, who promptly bought into the promise of incentivized forest conservation, removed the revenue target from forestry, imposed a logging ban (which has continued indefinitely) and set up a militarized Anti-deforestation Task Force (henceforth the Task Force) for its enforcement. The governor, together with the team of REDD+ proponents in the state, began demonstrating interest to international REDD+ partners and also successfully lobbied the national government for national representation, which is a necessary requirement in REDD+.

By October 2011 the National Programme Document (NPD) had been accepted by the UNREDD and a US\$4 million readiness fund was approved for Nigeria. More funding (US\$3.6 million) came from the World Bank’s FCPF after the country’s Readiness Preparation Proposal (R-PP) was approved in December 2013. Additional support is provided by the California-led Governors’ Climate and Forests Task Force (GCF). Though various pre-implementation activities and international engagements had continued, programme implementation, especially in Cross River, did not start until January 2014. Two key policy goals for Nigeria’s readiness process are: ‘improved institutional and technical capacity at the national level’ and ‘institutional and technical capacity for REDD+ in Cross River State strengthened’ (R-PP, 2013: 4). So, how are these policy goals, which are national framings of global COP decisions and UNFCCC guidelines, being translated into reality? To understand this, we observed everyday activities around REDD+, reviewed programme documents, and conducted in-depth interviews with diverse actors. For our purposes here, we focus on how REDD+ is being institutionalized in Nigeria and how it is being territorialized in forest communities.

Institutionalizing REDD+ in Nigeria: How Nested is the Nested Approach?

We take institutionalization to mean all that is entailed in rendering REDD+ operational in and through public institutions. Nigeria adopts the nested approach to REDD+, where implementation is expected to proceed simultaneously at the national and sub-national (state) levels. Not only was it assumed that the two levels could act cooperatively as partners to deliver on the project; this arrangement was also thought to be ‘innovative’ and most desirable in a complex terrain like Nigeria. The programme document thus proposed an organizational chart that the World Bank assessors, despite their own affinity with complex bureaucratic systems, considered ‘far too complex’ (Kojwang, 2013: 3).

However, the reality on the ground belies a smooth national–state nesting or the intricate organizational chart. The relationship between the national and the state levels is not exactly that of partners cooperating on clear terms. This is not surprising. The mobilization of the federal government and Cross River State to cooperatively constitute and manage the Cross River National Park between 1989 and 1991, for instance, was mired in tension (Ite, 1998). In REDD+, state actors continue to blame federal bureaucracy for the two-year delay in state activities. Recruitment of personnel to constitute the state REDD+ unit caused another lingering tension between the two

levels. The fragile working relationship here was also in evidence at a personnel training session, where national actors determined that most state actors must leave a joint workshop allegedly because the workshop was funded through the national REDD+ budget. This angered the affected individuals, especially staff of the State Forestry Commission.

While the national level continues to maintain an air of bureaucratic superiority, this is counterweighted by the state's claim to forest ownership and control. This is crucial to debates on the capacity of 'weak' nation-states to drive incentivized forest conservation (Karsenty and Ongolo, 2012). An important condition for the possibility of incentivized forest conservation in tropical forests is national-level accounting, which is critical for addressing 'leakage' (Santilli et al., 2005). However, the reality in Nigeria is that forests are owned and controlled mainly by states and administered through individual state policies under the Land Use Act of 1978. This Act reposes fiduciary right over land in the state governor. It thus renders community tenure potentially alienable (Schoneveld, 2014), just as it limits national forest claims and the effectiveness of national-level forest policy. Under such circumstances, it is ironic that REDD+ expects national governments to drive policy suitable to REDD+ and to pursue national forest carbon accounting. This also means that claims in literature of outright recentralization in REDD+ (e.g. Sandbrook et al., 2010) should be qualified, since in cases like Nigeria, REDD+ may not necessarily concentrate effective control over forests at the federal level, even if it does so from the local to the state level. We now consider institutionalization at the state level, where many of the demonstration activities are taking place.

Institutionalizing REDD+ in Cross River: Doing With and Without the Forestry Commission

The NPD approved by UNREDD in 2011 states that 'the programme will be implemented by two units: the National REDD+ Secretariat and the Forestry Commission of Cross River State' (NPD, 2011: 11). As such, the Cross River State Forestry Commission (henceforth the Commission) was from the start taken to be the sub-national implementing agency. Thus an important part of efforts to prepare for REDD+ since 2008 has involved the restructuring of the Commission. Part of this process involved revising the state forestry law (which was approved by government in 2010). The new law empowers the state to grant carbon concessions, even as it builds on prior state-level conservation and development policy interventions. While the latter, as well as those related to the constitution of the National Park, produced generally poor outcomes, they nonetheless fostered the growth of an NGO sector while encouraging socio-environmental entrepreneurs (Abua et al., 2013). Many ENGO leaders in Cross River were trained, employed or had volunteered in these earlier interventions that sought to promote a more participatory conservationism (Ite, 2001).

The ENGOs had championed the Environment Summit in 2008. Indeed, the interests of two major ENGO groups – one for carbon finance and the other for primate conservation – strongly shaped the resolutions of the Summit. The first signatures on the Summit's communiqué were those of the heads of these organizations, namely the

Nigerian NGO Coalition for the Environment (NGOCE), the American-led primate-conserving Pandrillus, and the UK-registered Centre for Education, Research, and Conservation of Primates and Nature (CERCOPAN). The Summit was convened around the concern that the state's forests were fast disappearing, for which the Forestry Commission was apportioned most blame. The latter was seen as corrupt and abating illegal logging, an allegation that many (including retired) foresters concede is partly true. However, they blame government neglect of the forestry sector, as well as increasing demand for farmland partly linked to industrial agriculture (personal communication; on large-scale agricultural investment in Cross River, see Schoneveld, 2014). It is against this background that the new forestry law provided for the appointment of NGO representatives on the four-year-tenured Board of the Commission (henceforth the Board). The importance of that Board was underscored by its conversion into a permanent and fully fledged body tasked with ensuring efficient policy implementation.

Unsurprisingly, the Board that was constituted in 2009 had as its first Chair a champion of carbon finance as well as a former head of NGOCE (meanwhile, the Task Force is also led by the co-founder of Pandrillus). Further, the newly empowered Board comprised mainly ENGO leaders and private-sector representatives who sought a shift from timber forestry to carbon forestry through REDD+. With this mandate came the zeal to transform and discipline what was thought to be an unruly Forestry Commission. Thus one Board member observed:

When I came in here about four years ago, I went round the whole Forestry Commission in the state and my conclusion was this: most staff here needed to be redeployed to other departments and we [needed to] recruit [new personnel]. We have about 400 staff and most of them are so old fashioned in terms of ideas about forestry practice today. It's a typical civil service orientation ... nobody supervises them and they don't want to be supervised.

But staff of the Commission (i.e. foresters) saw things differently: they were deeply agitated because they felt that their profession had been hijacked by NGOs and political appointees who had lobbied the government to create and occupy offices they knew very little about. One director in the Commission thus lamented:

When there is a war in a place, the vulnerable women and children are raped when the place is conquered. Forestry is conquered, we are the children now left here, they [the Board] are the warriors, they have escaped the bullet and bow. We, the vulnerable are raped every day ... You sit in a meeting and someone who doesn't know anything [about forestry] would tell you that ... teak is a weed.

There is evidently a deep gulf between the Commission and the Board – a gulf that one Board member said 'cannot be mended'. This overriding tension, combined with irregular release of statutory funds from government, the halt of the forestry revenue target, and the takeover of forest protection by the Task Force, has frozen all activities except REDD+ across all forestry outposts and at the Commission headquarters. Irregular allocation of funds is partly due to the state being financially stressed but also partly due to the general tension in the Commission. The Task Force, a supposed enforcement appendage of the Commission, but which now operates independently, has

impressed the state governor with its performance: scores of seized chainsaws, motorcycles and trucks full of illegal wood. It has thus continued to receive its monthly imprest (or cash allowance) of US\$43 750, four times more than the Commission's imprest of US\$9375. Foresters are demoralized not only by the alleged undermining of their profession, but also by the deliberate neglect of public need for wood under a total logging ban. They also lament that the government now loses both the forest and the revenue, since illegal logging continues (but now without the state receiving income in the form of permits and fees). This is confirmed by the Task Force – as one of its key members made clear (personal communication; also Uzundu, 2012). The current state of the Commission thus lends some credence to the claim of one Task Force member that 'the Forestry Commission is dead!'

So how has REDD+ continued to flourish when the implementing agency is 'dead'? The short answer is that REDD+ had to be floated! Floating, as we earlier note, relates to a particular mode of articulation with local situations and institutions where certain everyday realities co-habit minimally with other kinds. This had to be pursued at both discursive and practical levels. In a recent proposal submitted to the FCPF in December 2013, for example, REDD+ proponents made an important change to the role of the Commission in the light of this crisis. Thus, from being the implementing agency in the 2011 proposal to UNREDD, the Commission now takes on the role of 'government oversight'. The FCPF-approved R-PP further states that 'All REDD+ activities in the state will be administered and organised through the Cross River State REDD+ Unit (CRSRU), which is *located* within the Forestry Commission' (R-PP, 2013: 15; emphasis added). In practice, floating then required that the CRSRU be located carefully in the Commission, where it maintains the minimum integration required for its flourishing. To be clear, 'minimum integration' does not denote insignificance. Indeed, it took the Commission, its law, its resources and forests under its mandate to get REDD+ to take off in Nigeria (even if these amount to the minimum required for this purpose).

The CRSRU was staffed through an open recruitment process even though all recruits 'happened' to be from the ENGO sector. But no sooner had they started work than they became caught up in the existing tension in the Commission. This unit is not merely 'leading' the Commission in the implementation process; it is actually carrying out that implementation itself. It thus runs as a parallel structure independent of the Commission except for direct coordination by the Board Chair, who doubles as the state REDD+ coordinator. The significant REDD+ budget for the state alone (US\$3.08 million from FCPF and UNREDD, or more than 12 times the budgetary allocation for all forestry capital projects in 2010) helps insulate the CRSRU from the rest of the Commission, whose monthly office-running subvention was paid only once in 12 months between 2013 and 2014 (as communicated by the Forestry Commission Office of the Auditor). The well-furnished, air-conditioned offices of CRSRU staff thus contrast sharply with the crowded, poorly furnished offices of the rest of the Commission's staff. Though more than one-third of the total capital allocation to the Commission in 2010 was devoted to preparation for REDD+, funding from the project has not crossed the gap into the main body of the Commission. Indeed, and apart from

the few mainly non-management staff of the Commission who are deployed to REDD+ activities from time to time, interest in REDD+ is generally low across the Commission.

The consequences of floating REDD+ in this way is not straightforward. One Board member notes that if the Board's four-year tenure is not renewed come September 2014, 'REDD+ might die' not for any other reason than that 'the institutional memory [of REDD+] is residual within the Board'. Yet floating as a process propelled partly by strategic local agency could be dynamic, causing projects to defy seemingly critical limits. However, what is interesting here is not whether or not REDD+ will die, but that operationalizing REDD+ is based precisely on maintaining a convenient distance from the very institution it seeks to strengthen. Though it might be too early to assay the full impact, it is clear that the current situation does not point towards a meaningful realization of the policy goal of 'strengthening institutional & technical capacity for REDD+'. And clearly, the 'death' of the forestry commission and the drive to implement REDD+ are not mere coincidence.

TERRITORIALIZING REDD+ IN COMMUNITIES

We take territorialization of REDD+ to mean bringing REDD+ to bear on communities and the forests to which they lay claim. A first step here was to render forests and carbon visible through maps, satellite imageries and figures. The 2010 World Conservation Monitoring Centre (WCMC) survey made use of satellite imagery to make the confident claim that Nigeria's biomass and soils store a total of 7.5 gigaton (Gt) of carbon (Ravilious et al., 2010). Measuring, reporting and verification (MRV), a critical aspect of REDD+ in general but which has also received significant attention in Nigeria's case, helps to elaborate such data collection work. Thus, on maps, areas for REDD+ are neatly demarcated, with the extent of the forest clearly specified. But on the ground the situation is different: there is no credible information on the extent of the forest and areas marked out for REDD+. A Board member dryly observed: 'We don't even know how much forest we have in Cross River State because there is no data.' A retired director of the Commission similarly claimed: 'there hasn't been any detailed inventory survey. So, whatever we are even claiming about the boundaries and the sizes of the Cross River forests I think is guess-work.'

Clustering the Forest: Contiguous Forests, Different Peoples

More important is the disjuncture between the forest formation that REDD+ specifies and the social structures that underlie this formation. The Project Idea Note (PIN) for specific REDD+ sites, prepared by foreign consultants, states: 'the project is viable and attractive to carbon finance only if the project area includes the multiple community forests and forest reserves. A project considering only one of these areas would not be viable on its own' (Oyebo et al., 2010: 89). Hence the idea of 'cluster', which is based entirely on forest contiguity and biodiversity potential. Thus, on maps three clusters are set aside by the REDD+ proposals: the Ekuri-Iko Esai cluster of 94 000 ha across 12

communities, Mbe-Afi River Forest Reserve cluster of 50 000 ha across 18 communities and the Mangrove cluster of 58 000 ha (*ibid.*: 53–4). That there is yet no definitive list of all communities covered by the clusters shows how such a reductionist rendering of forests as a continuous, coherent stretch is likely to erase local forest claims while denying community complexities.

Indeed, running across clustered communities are interrelationships based on ancestral kinship, historical competition, contested borders, divergent conservation histories and different stances on REDD+. In practice, communities with contiguous forest are sometimes fierce adversaries. For instance, in Iko Esai, a major community in the Ekuri–Iko Esai cluster, the clan head notes that the greatest threat to the community’s conservation efforts is neighbouring communities. The latter, some of which are members of the cluster, have apparently continued to fell forest for timber despite the logging ban. He claims that some of these neighbours have even begun logging in Iko Esai’s forest while ridiculing the community’s conservation efforts as holding no reward. To the east of Iko Esai, meanwhile, is Ekuri, another major member of the cluster. Ekuri and Iko Esai share a similar historically based commitment to forest conservation, but nonetheless remain at loggerheads over a common forest boundary.

Yet REDD+ has ignored this boundary dispute despite its formal core focus on governance matters and even having been specifically contacted about it. Thus, and fearing that it might lose out to its neighbours, the community of Iko Esai wrote to a REDD+ consultant who had previously visited it, informing him of the dispute. That letter (dated 17 February 2010) requested ‘the sponsors of the carbon credit scheme to really find out the true position of Iko Esai for an appropriate boundary between the Iko Esai and Ekuri people, before a concrete execution of this noble project’. No response to this letter has so far been received; nor has REDD+ made any mention of dealing with the dispute. Yet the warning of the clan head was clear enough: ‘if carbon credit [requires] the communities to trace boundaries, problems may arise’. Since most official documents, including those relating to REDD+, describe forest boundaries that favour Ekuri, this community naturally defends the status quo. Indeed, it warns that any ‘attempt by Iko Esai to ... trespass ... will be severely resisted’ (Ekuri Community, 2011: 11). But REDD+ persists with ‘community engagement’ via meetings that are strictly orchestrated through a fixed agenda and circumscribed discussion. Thus REDD+ implementation represents a floating symbol in relation to both state institutions and community complexities.

A similar situation can be observed in other country projects. For instance, Democratic Republic of Congo (DRC) is widely praised as *the* African REDD+ model. Regional Coordinator for UNREDD+ in Africa Josep Gari thus proclaims: ‘our flagship is DRC, it is a good flagship ... this is a country where you see transformational thinking’. However, a recent study describes a much less rosy picture involving significant illegality, conflict among communities and timber concessionaires, as well as a general lack of transparency in the forestry sector (Lawson, 2014). Hence the rhetoric of success propounded by REDD+ staff is often sharply at odds with messier local realities. Indeed, this disjuncture suggests not only the existence and impact of the sort of floating symbols examined in this chapter, but also of the seeming illegibility of local messiness to the global gaze, which is often isolated by its own singular penchant

to dispatch guidelines to peripheries and by local implementers' correspondingly optimistic narratives of 'progress' in their project areas.

CONCLUSION

In this chapter, we argued that more scholarly attention should be directed at assessing how far and in what ways a globally articulated reinvention of conservation and environmental governance is being realized on the ground. We briefly explored in both conceptual and empirical ways how an engagement of political ecology with research in the field of implementation studies could be a useful starting-point for appreciating at least some of the implications and dimensions of the disjuncture between global dispatches and local realities. Using the example of Nigeria's REDD+, we proposed an understanding of the emergent transformation in relation to its realization as 'floating symbols', highlighting in particular the ambiguous and conflict-prone attributes at stake here, the particular mode of articulation with locales, and resultant minimal realization and variegated impact. By deepening critical engagement along these lines, political ecology could further contribute to wider efforts to go beyond the failing superimposition of capital over nature while devising 'vital alternatives' that make a real difference in real places.

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PART IV

KNOWLEDGE AND DISCOURSE

21. Disaster, degradation, dystopia

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These late eclipses in the sun and moon portend no good to us. (*King Lear* 1.2)

Disasters occupy an increasingly prominent place in our politics, current events and consciousness. Disaster research concurrently plays an important role in academic and policy arenas, as groups ranging from geologists to human rights lawyers turn their respective gazes to understanding, preventing and mitigating the impacts of disasters in daily life. In this chapter, we examine the contributions that the field of political ecology has made, and can continue to make, to a more nuanced understanding of disasters. The term ‘disasters’ is used as shorthand here for catastrophic events with unfortunate consequences, though throughout this chapter we probe the diverse social assumptions underlying common definitions of what a disaster is. We also note how disaster research contributes to political ecology insofar as it illuminates the sheer complexity of relationships between environments and societies over space and time. We ask: what can disaster research contribute to the theoretical development of the larger field of political ecology? Overall, we argue that disasters are revelatory events that accentuate the mutually constitutive relationships among environments, cultures, politics and power – relationships that political ecology excels at unraveling (Bryant, 1998).

Political ecology is particularly amenable to the study of disaster because of its attention to scale-making across time and space and its complication of nature–culture dichotomies. Political ecology elucidates the political dimensions of knowledge production and discourse, and connects environmental landscapes with conceptions of self and other.

The field’s attention to scale-making across time and space provides a useful perspective on disaster research. Often, disasters are considered to represent large-scale exceptional events that stand out of time and represent an aberration of life as usual. Yet, placing these events within historical context often reveals that seemingly unique disaster occurrences are, in fact, nested in larger cycles of perturbation. Rather than events in isolation, disasters are an accumulation of specific economic, political and social histories (Klinenberg, 1999). Political ecology also situates ‘local’ events and cultures across larger geographical scales, complicating the ubiquitous dichotomy of the ‘local’ versus the ‘global’ (Biersack, 2006; Robbins, 2003). Applying this lens to disasters illustrates that, although floods, earthquakes or fires appear to involve very specific places with clear epicenters and boundaries, their effects, the societal responses they engender and their underlying causes can often be traced across geographical and political boundaries.

Additionally, political ecologists challenge the persistent nature–culture dichotomy prevalent in Northern epistemologies and scholarship that presents the environment as something ‘out there’ apart from culture. This dichotomy leads to the classification of disasters as ‘natural’ events removed from human agency. Political ecology, in contrast, emphasizes the linkages between nature and culture (Fairhead and Leach, 1995), revealing how disasters are experienced as a combination of ‘natural’ and ‘social’ forces.

Third, the classification of disasters is often contested. Political ecologists note that the groups in societies that have the ability to define debates exercise considerable influence within this realm (Biersack, 2006). Who decides what counts as a disaster? How are victims identified and compensated? These discursive dimensions of disasters reveal societal power structures (Farbotko and Lazrus, 2012). How groups define (or fail to define) disasters is fundamentally connected to power structures entrenched within societies (Dove and Kahn, 1995).

Finally, as the opening quote from *King Lear* suggests, how a society interprets disasters connects to underlying anxieties, values and perceptions of self. Disasters represent intense moments of upheaval and change, which may cause people to re-evaluate principles and priorities (Pena, 2006). Thus disasters reveal shared frameworks of understanding among social groups. In examining how societies anticipate and experience disasters, political ecologists can consider ways that environmental forces and political power intersect to shape moral frameworks. This approach to disaster research informs a ‘political ecology of self’.

In this chapter, we draw from both academic literature and our ongoing ethnographic research to explore connections between disasters and political ecology. Ethnography, with its qualitative attention to cultural nuance and meaning, can fill in the gaps of prevailing disaster research, which tends to be more quantitative and proscriptive in nature (Hulme, 2011). Throughout our analysis, we pay particular attention to epistemologies, examining how different groups understand disasters.

We begin with an historical overview of intersecting classifications of people, climate and disasters. We note a shift from a nature-driven view that ‘other’ people are different because of their climates to a view that culture determines how we experience and cause climatic extremes. We then turn towards state understandings of and interventions in disasters, drawing from case studies in Japan and India to analyze the classification of disasters as either ‘natural’ or ‘man-made’. Next, we consider development disasters using examples from oil extraction in Peru and climate change mitigation schemes more generally to illustrate how vulnerabilities are first created and then later minimized, naturalized, or made invisible through ‘development’ projects that often negatively impact local communities they purport to help. We conclude with an investigation of anxieties in urban China regarding the Mayan ‘End of Days’, illustrating how cultural responses to disasters reflect dystopian fears linked to political ecologies of the self.

THE SELF/OTHER IN DISASTERS: ANCIENT CLIMATE THEORY AND MODERN DISASTERS

One of the revelations of modern work on disasters has involved showing how they impact identity and concepts of self (e.g. Erikson, 1976). The association between

social identity on the one hand, and disaster, environmental perturbation or climatic extremes on the other hand, extends far back in human history. There is an ancient association of self-identity and environments and climates perceived to be 'temperate' and a corollary association of the opposite of the self, the alien 'other', with intemperate environments and climates. Perceived environmental and climatic extremes long provided a compelling answer to the perennial question: why are human beings different?

This argument was most famously stated in the fifth century BC by Hippocrates, in his 'Airs, waters, places' (1923: 109, 137): 'For where the seasons experience the most violent and the most frequent changes ... So it is too with the inhabitants ...' The thread of this climate determinism can be traced from Hippocrates to the medieval Islamic scholar Ibn Khaldûn (1958: 168–9) – 'The inhabitants of the zones that are far from temperate ... are also farther removed from being temperate in all their conditions' – to Montesquieu (1989: 234) in the eighteenth century – 'As you move toward the countries of the south, you will believe you have moved away from morality itself' – and the anthropogeographer Ratzel (1896: 27) writing in the nineteenth century – who argued that only the temperate latitudes could produce lasting civilization.

Since ancient times, therefore, the idea of climatic extremes has been associated with the ethnic/racial 'other' – removed in both space and cultural identity. In modern times, in contrast, we may have immediate experience of extreme climatic events in the form of cyclones, droughts and the like. Such experiences are seen as extraordinary, however. What was seen as a normal event for the 'other' in ancient times is seen as an abnormal event for us today. What was associated with a dichotomy between self and other in ancient times is associated today with a dichotomy between the normal and the abnormal as it relates to weather. The association of climatic extreme with the 'other' has become an association of climatic extreme with the abnormal experienced by the self.

Scholars suggest that this modern perception of extreme climatic events as abnormal is no more valid than the ancient perception of alien habitats and people as intemperate. The geographer Hewitt (1983: 12) critiques the modern effort to view disasters as 'an *archipelago* of isolated misfortune' (cf. Davis, 1998). Hewitt and other scholars of disasters like Oliver-Smith (1986) argue that disasters are the predictable products of social, economic and political systems. The ascent of this view of disasters over the past generation has been driven in part by a paradigm shift in science, from an assumption of stasis to an assumption of disequilibrium, such that the latter is seen as more revelatory of the dynamics of human society. This shift in view of the role of perturbation in society co-developed in the fields of disaster studies and political ecology.

A pivotal historical moment in this reconceptualization of disasters as something that could be terrifyingly proximate was the great Lisbon earthquake and tsunami of 1755, which claimed 60 000 lives. Far from being the distant habitat of some exotic 'other', Lisbon was close and familiar ground for the great thinkers of the Enlightenment, including Rousseau, Kant and Voltaire. The fact that this city could be leveled without warning raised an existential question: why did they perish and not us? And, if they could perish so, could we not as well? As Voltaire (1756/1977: 15) demanded in his

‘Poem upon the Lisbon disaster’: ‘Did wiped-out Lisbon’s sins so much outweigh Paris and London’s, who keep holiday?’

The historic shift from the extreme climates of the ancient ‘other’ to the disasters of the modern self is associated with a shift in deterministic thinking. In the ancient case, scholars thought that differences in climate made us different, whereas in the modern case, scholars see social differences as causing us to experience climatic extremes differently. Then and now, extreme climates are associated with social differences, but not in the same way. In contemporary times, the marginal ‘others’ experience extreme climatic events differently *because* they are different; but they are not different in the first place because of climate.

In ancient times, as Glacken (1967) tells us, thinking about the relationship between culture and nature focused on the way that nature influenced culture, not the reverse. In the modern era, and becoming ever more pronounced since the mid-nineteenth-century work of scholars like Marsh (1965), there has been greater interest in examining the influence of culture on nature. Still, belief in the influence of nature on culture runs deep. In contemporary disaster discourse, the causal role of nature versus culture is politically contested. Most scholarship on the devastating impact of Hurricane Katrina on New Orleans in 2005, for example, argues that the event and post-event reconstruction exposed and exacerbated the vulnerability of the city’s poorest, most socially marginalized citizenry (Adams et al., 2009).

The modern tension over seeking causal explanation in nature versus culture is most clearly evident in the case of global climate change. Most obviously, a vocal and politically influential band of ‘denialists’ dispute the reality of anthropogenic climate change, harking back to ancient assumptions that nature is beyond the influence of culture. Less obviously, but also redolent of ancient thinking, the modern discourse of climate change often appears to rest on a dichotomy between self and other. This is exemplified by the public as well as academic attention to the distant and exotic – Pacific islands, Arctic regions and fauna, Alpine glaciers – as opposed to the nearby and familiar dimensions of climate change (Farbotko and Lazrus, 2012). This is reminiscent of the ancient distancing of extreme climates as the abode of the ‘other’. There is a sedimentation to human thinking about extreme climates, society and identity, therefore, that offers perspective on contemporary debates about climate change, and may help to explain the extreme fervor of denialists who see the assertion of modern climate change as an existential threat.

NAMING AND CLASSIFYING: STATE EPISTEMOLOGIES OF DISASTER

Political ecologists have noted wide discrepancies in how different groups perceive disasters. An event classified as a mundane occurrence by some is seen by others as a significant disaster. In Bangladesh, for example, people experience some floods as calamities but others as regular features of the environment (Shaw, 2002). Views of disasters differ not only across place, but also over time. Bhatia (1991) notes that famine shifted from a natural calamity to a social problem in India in the mid-1800s.

Variations in the categorization of disasters often relate to changing cultural priorities, such as the advent of consumerism and technological change (Mileti, 1999).

Classification conveys a proposition about the world, and how disasters are named is intertwined with the power and politics of a society. Declarations that disasters are either 'natural' and unavoidable, or unnatural and preventable, determines who is blamed for disasters and why (Dove and Khan, 1995). The informal and formal naming of events encodes social differences – like the 1976 'class-quake' in Guatemala that disproportionately impacted lower classes (Oliver-Smith, 1999). While informal naming often reflects popular sentiment, formal state-sponsored classificatory schemes often affect the availability and extent of post-disaster aid, and occupy particularly contentious ground.

The scientific classifications that appear in disaster studies provide a point of departure for political ecologists investigating the politics of naming disasters. In analyzing disasters, political ecologists ask: what is being named, and how is it being classified?; who is doing the naming?; and what are the implications of such categorization? In this section, we discuss instances in which states judge events to be disasters (or not) and we consider the implications of such disaster classifications for citizens.

Socio-natural Disasters in Japan

In Japan, people have long attributed disasters to human, supernatural, or geophysical agency. Considerable energy is invested in ascribing culpability for disasters, as boundaries are drawn between 'natural' and 'man-made,' and 'predictable' and 'unpredictable' events. Ruling parties, who may or may not be responsible for the conditions that lead to and exacerbate disasters, are especially vulnerable to judgments made in the aftermath of hazard events (Spillius, 1957; Solway, 1994).

Situated on four major fault lines and exposed to seasonal typhoons and floods, Japan experiences predictable disasters each year. Yet the triple-fold Tohoku disasters of 11 March 2011 were uncommonly large. Commencing with a 9.0 earthquake, followed by a tsunami and the subsequent meltdown of a coastal nuclear reactor, '3.11' left 20 000 people dead or missing, displaced another 350 000 residents, and razed over 300 miles of coastline. The economic toll of the earthquake and tsunami was estimated at 210 billion dollars (*Japan Times*, 2012).

As the nation started the long road to recovery, citizens and the state became embroiled in debates over classifying the disasters. It initially seemed that the earthquake and tsunami – as geophysical events – would easily be assigned to the realm of 'nature'. Indeed, the tsunami was quickly characterized as a 'once in a million years event' of a scale so large that it could neither have been predicted nor prepared for. The earthquake, however, was assigned a certain degree of ambiguity. Earthquakes have long been recognized as socio-natural events in Japan, because, although their timing is not entirely predictable, their occurrence is. The state determined the earthquake of 3.11 to be a predictable disaster, albeit one unprecedented in its scale and impact.

There were no quick conclusions about how to categorize the nuclear meltdown, however. Classifying this disaster as 'natural' or 'unnatural' rested on whether the

reactors were destroyed by the unpredictable tsunami or the more predictable earthquake. A few months after the disasters, the government appointed an independent commission to investigate the nuclear accident. This body questioned power plant workers concerning their level of disaster preparedness, reviewed data related to the timing of the geophysical events, and collected testimony from nuclear regulatory committee members. Though the state would benefit from classification of the disaster as an unpredictable, natural disaster, the Committee declared that it was ‘profoundly man-made’ (NAIIC, 2012: 9). With this decision, the state could move forward with recovery efforts.

While the state adopted a clear classification of the disaster, Japanese citizens questioned the extent to which the disasters could be attributed entirely to the domains of either nature or culture. This ambiguity of classification has historical foundations. In the past, earthquakes in Japan were seen as socio-natural disasters caused by large catfish-like creatures, *namazu*, who could decimate the cities they swam under with a flip of their enormous tails. People were implicated in causing disasters if they failed to please Kirin, the god who kept *namazu* pacified (Smits, 2006). After 3.11 citizens wondered if they had upset a cosmic balance between nature and culture by greedily following the path of development. They also questioned if, because of their reluctance to challenge authority, the disasters were a unique product of Japanese culture. Thus, while the state embarked on policy changes founded on clear directives, citizens adopted more ambiguous interpretations of the disaster and articulated the need for cultural transformation.

Floods in India

Bihar is a land of floods. Situated below Nepal and between West Bengal and Uttar Pradesh, the Indian state of Bihar collects water flowing from the Himalayas towards the river Ganga, which then carries it to the Bay of Bengal. The area is the playground of major alluvial rivers, which, in the process of eroding land and releasing their load of sediments to form new land, flood almost every year. During the rainy season, these rivers inundate hundreds of kilometers, resulting in death, destruction and infectious diseases. With 73 percent of its total geographical area being flood-prone, Bihar has become synonymous with floods (Cortesi et al., 2011).

The disastrous pattern of floods is relatively recent and tied to policies. Waves of 20 feet break the embankments – earthen walls supposed to contain the flood waters – and wash away villages and towns of concrete. Yet only a few decades ago the flood season was a time to celebrate the fertility of the river. For centuries, rural inhabitants had been relocating their settlements with the rivers’ movements, living in these mobile lands called *chaur* (low-lying land) or *diaras* (land between) that were fertilized by the natural inundations of the rivers. In the late nineteenth century, the British, having interrupted the knowledge apparatus of the previous rulers, were unable to understand local riverine ecosystems or to extract a regular flow of taxes from these mobile settlements. To stabilize the market value of land as a commodity, they constructed embankments (D’Souza, 2006).

Instead of functioning as flood control measures, however, the embankments aggravated floods, effectively creating a ‘natural’ calamity. The British rulers realized

this, and demolished much of what they had constructed. Nonetheless, the technocratic policy of straitjacketing rivers was revived after independence, and in recent decades, thousands of kilometers of embankments have been built. Embankments, not necessarily harmful per se, negatively modify the hydrology of alluvial rivers with high sediment loads, resulting in adverse ecological transformations and the worsening of floods (Worster, 1987). Embankments trap sediments in a higher and more menacing riverbed, impeding drainage and preventing land accumulation and fertilization mechanisms of the river (Mishra, 1997; Barry, 1997). Most disastrously, embankments breach. High ground in a flooded land, embankments can offer shelter from floodwaters, but they are unstable and frequently collapse under the pressure of water.

Floods in Bihar are now a destructive, multiple catastrophe. Embankments have not only wrecked the alluvial riverine ecology, but have resulted in other negative outcomes. Instead of being technologies of floodwater containment, they worsen floods. Floodwater submerges the lived environment, inundates people's houses and leaves water that remains stagnant for months, causing epidemics of both water- and mosquito-borne diseases. Floodwater also contaminates drinking water, a problem that development interventions have tried to counter by introducing new technologies of water access that instead further jeopardize water quality. As a result, drinking water remains dangerous for consumption even after floods have subsided.

Floods in Bihar result in a multiplicity of disasters, overlapping in their spatial and temporal cycles. The combined consequences of embankments, waterlogging and water contamination across different socio-environmental contexts cause multiplying and proliferating harmful effects. These disasters, and the responses to them by the state and NGOs, with their various discourses on poverty and disaster management, further complicate their understanding. In turn, this impedes the creation of an appropriate set of responses that strengthen flood resilience. Political ecology situates the environmental event of flood into a social, historical and political context, revealing its diverging, power-loaded epistemologies as well as the disastrous consequences of these overlaps.

DEVELOPMENT DISASTERS: CREATING AND OBSCURING VULNERABILITIES

As was the case with floods in Bihar, many projects and policies aimed at 'development' have in fact created vulnerabilities and disasters, especially in cases where lands and natural resources have been expropriated, privatized or otherwise subject to outside control (Peluso and Watts, 2001; Grandia, 2012). The examples of development disasters provided in this section – associated with oil extraction and climate change mitigation schemes – illustrate how vulnerabilities are both created and then minimized, naturalized or made invisible. Obscuring processes are part of the disaster. This covert aspect of disaster formation may become revelatory at a later point, such as when a social or ecological tipping point is reached, when consequences become manifest, or when social movements confront the invisibility of impacts.

Development disasters are often obscured through various 'simplifications' (Scott, 1998), especially through depoliticization as 'technical' (Ferguson, 1994). In favoring

expert management, such projects reinforce the boundary between experts and those 'subject to expert direction' (Li, 2007: 7), exclude alternative ways of thinking that may actually help to reduce vulnerabilities, and may render invisible the claims of local communities to lands and resources (Willems-Braun, 1997). Furthermore, governments or private corporations may manipulate scales of time and space, such as when projects obscure or justify negative impacts at the local scale for the sake of the 'greater good' or 'national interest'. In cases where vulnerabilities are temporally and spatially spread out, the historical roots of disasters can also become more difficult to discern.

Oil in Peru

Oil development in the northeast Peruvian Amazon is a major development initiative that has created a disaster for local people, yet obscured the negative impacts of this industry at the regional and national levels. Oil operations began in this area in 1971 and have been an important source of income for the region and for Peru. However, the government's dual quest to provide an 'investor-friendly' environment and to ensure continued revenue from resource extraction led to minimal regulation (e.g. Kirsch, 2007). Limited environmental protections meant that, among other things, oil companies were allowed to discharge 850 000 barrels per day of oil by-products lined with heavy metals directly into local streams or rivers (Goldman et al., 2007). This practice was only banned in Peru in 2006, following indigenous protests in the Corrientes watershed.

The 2006 indigenous protests prompted an important policy change, but they were exceptional in their success. While indigenous people in the region have long felt impacts from oil operations, their concerns and the contamination itself have remained invisible in the eyes of the broader public and government officials. Since 2011, there has been increased regional coordination among indigenous federations to raise concerns about social and environmental impacts from 40 years of oil operations. Leaders of the movement have emphasized that oil does not bring development for their communities; rather, it has brought poverty, contamination, abuse, violation and death. In particular, indigenous leaders have accused oil companies of contaminating their water sources, resulting in widespread fish die-offs, increased malnutrition and public health risks. They have also critiqued the government for perpetuating a general regulatory and legal permissibility towards the oil industry.

In contrast to indigenous portrayals of the industry, government officials frequently suggest that the communities are happy to work with companies because they know about company social responsibility measures. Governments also reassure the public that any minimal contamination that may have existed from the oil operations has been successfully addressed through enhanced regulations or through remediation.

These widely differing claims about the industry create uncertainty about the actual impacts from oil, companies' social responsibility, and whether oil really brings development to local communities. Yet this uncertainty speaks more to unequal power relations than to facts on the ground. Indigenous testimonies, monitoring data, and video and photographic evidence about social and environmental impacts of oil development are discounted since they are not considered 'official' expert data. Meanwhile, indigenous hopes for meaningful change rest with a government that may

voice a commitment to ‘social inclusion’, yet remains heavily invested in expanding extractive industries. The seeming uncertainty about the impacts of oil is in fact deliberately produced to obscure a long-standing and ongoing disaster for indigenous communities. Through emphasizing corporate social responsibility and appeals to national progress and development, company and government officials alike minimize the urgency of indigenous concerns about contaminated water, soil and fish. Such actions ensure that the disaster itself remains ongoing and largely invisible to those living outside of extraction zones.

Energy, Climate Disaster and REDD

Many development organizations seeking to mitigate climate change advocate for Reducing Emissions from Deforestation and Forest Degradation or REDD (Blom et al., 2010). The goal of REDD programs is to reduce greenhouse gas emissions by providing landowners – often small-scale farmers in developing countries – with market incentives to use their land to create carbon credits, which then can be purchased by companies to offset their own environmental pollution. Advocates for REDD argue that these schemes present win–win solutions to climate change: they reduce emissions, provide income to rural households in developing countries, and also promote biodiversity conservation in tropical forests (Harvey et al., 2010). This market-based framework has become the preferred mechanism of wealthy countries for financing ‘clean’ development and conservation in relatively poorer countries (Agrawal et al., 2011).

Although presented as ‘win–win’, REDD schemes have been widely criticized by political ecologists and other scholars, who draw attention to the displacement of responsibility and lack of accountability for polluters implied in REDD projects (Osborne, 2010). McAfee (2012), for example, points out some common negative outcomes of REDD programs: the benefits of carbon market payments are often unevenly distributed, resulting in social conflict; many participants are often left out of decision-making processes; and carbon markets tend to shift production towards the cash economy and away from subsistence, often altering social networks and leading to intergenerational and gender conflicts. REDD projects may successfully increase cash income in the short term, but in longer timescales they may produce new vulnerabilities, such as amplifying dependence on neoliberal markets and government policy, thus requiring the acquisition of risk by smallholders (Grandia, 2012).

Energy production and consumption more generally – through its linkages with climate change – is a global political-ecological problem (Peet et al., 2011). When it comes to climate change adaptation projects, as with other ‘sustainable imaginaries’ (Boyer, 2011; Rogers, 2012), making the politics of energy legible is key to avoiding the reductionism usually found in economic schemes such as REDD (Barnes et al., 2013). Such reductionism relates to hegemonic discourses that narrowly focus on technical progress and ‘cost-effectiveness’ while rendering invisible the presence of negative externalities, ecological costs, cultural mindsets, institutional barriers, political corruption and other complex ‘people problems’ (Nader, 2010; Sovacool, 2008). Defining the energy problem as technological rather than holistically as part of a ‘total social fact’ (Mauss, 1967; Orlove and Caton, 2010) tends to make alternative cultural

configurations difficult to imagine, forming barriers to enacting multidimensional, long-term energy and climate solutions.

POLITICAL ECOLOGIES OF SELF: URBAN SPACES AND APOCALYPTIC ANXIETIES

Political ecology studies of disasters in cities highlight how natural disasters are inevitably understood and experienced through embedded social anxieties and inequalities. Perhaps more than in other settings, damages from earthquakes and hurricanes in cities frequently represent ‘an affront to civilization’ (Mitchell, 1999: 18). The vulnerability of cities to natural disaster has become amplified in recent years against a backdrop of growing concerns over climate change (Parnell et al., 2007; Pelling, 2012). Urban geographers note that visions of chaos and destruction are often mapped onto existing structural inequalities, and Third World mega-cities are portrayed as especially vulnerable and diseased (Wisner et al., 2004). Natural disasters also reveal urban social issues such as race and ghettoization, as disenfranchised populations suffer disproportionate damages in the wake of disasters, exemplified in the USA by Hurricane Katrina (Comfort, 2006; Giroux, 2006).

Mayan ‘End of Days’

The Mayan ‘End of Days’ – the belief that on 21 December 2012, the last day of the Mesoamerican Long Count calendar, the alignment of the planets would prompt the destruction of the earth – was the most widespread doomsday prophecy since Y2K. The cataclysmic prophecy resonated strongly in China, where the media printed stories about individuals leaving cities and retreating to the countryside to build arks. Officials arrested nearly 1000 members of a ‘doomsday cult’ for disseminating fears of impending disaster (Phillips, 2012). The mainstream media took the threat so seriously that they looked to NASA scientists to rebuff the claims (21 CN keji, 2012). *2012*, a Hollywood film based on the Mayan predictions, was one of the highest-grossing films so far in China.

In China, this fear of a looming Armageddon represents a case where perceived vulnerability is not associated with poverty but with broader anxieties about a society’s rapid development. At the end of the year 2012, many Chinese, poised with unprecedented rising prosperity, became especially drawn to ancient Mayan prophecies to express their shaken confidence in engineered environments. Fear of apocalypse in China offers a contemporary example of a society’s own wariness of the destructive potential of human imposition on nature.

Doomsday cults and millennial movements are a recurring feature of Chinese history and have been understood by scholars as a religiously infused popular movement (Chesneau, 1972). The fixation on the Mayan prophecies at the end of 2012, however, reveals specific fears about the pace and consequences of development and Chinese anxieties about environmental degradation. As one writer put it, despite the fact that *2012* ‘is a movie about the apocalypse, it reveals a powerful lesson, ... the destruction of the environment will surely bring punishment from nature’ (*Southern Daily*, 2012:

2). To many Chinese in the year 2012, natural and unnatural disasters were experienced as inseparable, and natural disaster and apocalypse were symptomatic of fears of punishment by nature.

The notion that nature exacts revenge on mankind has strong historical roots in China. Since the late imperial period, China's traditional moral meteorology attributes punishing weather patterns to immoral human behavior and, especially, the failings of emperors and officials (Elvin, 1998). During the socialist period, people connected famine and drought with the accelerated environmental engineering of China's modernizing project (Shapiro, 2001). Following the 2008 earthquakes in Sichuan, many commenters focused on the political corruption of local officials. Natural disaster, therefore, has often been understood in China as retribution for the failings of the current regime and potentially portends its downfall.

Concerns over the 2012 Mayan predictions of disasters came at a particular moment when, following 30 years of economic reform, environmental issues were increasingly central to public discourse. The threat of environmental degradation along with the dramatic urbanization of China's population frequently produced dystopian imagery. These broader fears reverberated in popular film and media, which circulated images of black skies and tsunamis. These images were eerily echoed by contemporary headlines that alerted readers to 'cities besieged by waste', 'gutter oil' and polluted land. Large sinkholes in urban centers, and the disappearance of people into manholes in Beijing during the 2012 floods, resonated with images and fears of imploding urban infrastructures (Fromer and Wong, 2012). In China, after years of reports on smog so thick that it grounded flights, the Mayans' warning that the end of the world would be signaled by 'three days without sun' carried special weight.

The Mayan 'End of Days' is a cipher, an ancient prophecy of the apocalypse transposed on to contemporary fears that the environmental costs of economic development and wealth conceal a 'coming anarchy' (Kaplan, 1994). Overall, the forecast of a coming apocalypse in media, movies and popular discourse in China offers a modern expression of a larger social anxiety that blurs the boundaries between nature and culture.

CONCLUSION

Political ecology has helped to transform disaster studies over the past generation, moving away from a focus on the individual experience of disaster to its social experience. In particular, political ecology has raised new questions about the operation of power and politics in contexts of disasters. This has contributed to one of the most important contemporary insights into disasters, namely that their impact characteristically varies with social station: disasters can further marginalize those already marginal and further empower those already strong. We have come to understand that the very definition of a situation as 'disastrous' or not can vary with the actor's political resources.

Reciprocally, the increasingly robust field of disaster studies has enriched the development of political ecology. Early studies in political ecology addressed issues of scale and power but were critiqued for delving less deeply into ecology. But we cannot

understand the power dimensions of disasters if we do not understand their critical environmental variables – which have impressed their importance upon political ecologists. The first generation of work in political ecology was also critiqued for the absence of an interpretive dimension. Such study has been encouraged within political ecology by increasing recognition of the importance of the politics of knowledge and identity in understanding disasters.

The modern confluence of development of the two fields, disasters studies and political ecology, raises other novel theoretical questions as well. According to the new generation of disaster studies, disasters have a ‘revelatory’ function. But some scholars (e.g. Malkki, 1997) question the theoretical basis for this presumption. Hewitt (1983) and others similarly question whether disasters are really disasters at all, raising the question: are disasters, thus reassessed, revelatory? And if so, why? We are left with a Derridean paradox: can the presumed revelatory character of disasters demonstrate that they are not revelatory and/or are not disasters? These questions, and the ethnographic vignettes presented in this chapter, illustrate the rich promise of continued work at the confluence of the fields of political ecology and disaster studies.

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22. Contesting hunger discourses

Lucy Jarosz

The question of world hunger has long preoccupied scholars, activists and policy-makers. Mainstream hunger discourses have mainly revolved around a neo-Malthusian discourse of food scarcity and population growth in which growing worldwide hunger is the all-but-inevitable flipside of the human ‘population bomb’ (Ehrlich, 1968). The research field of political ecology has from its inception in the 1970s criticized this population-growth-leads-to-hunger discourse, focusing instead on how unequal power relations reflected through political and economic practices cause human misery, of which hunger is a prime example. Over the years, a political ecology of hunger discourses has developed, pursuing diverse analytical strands that are reflective of wider shifts in scholarly thinking as well as activism. Notably about critique, the field has been somewhat less systematic in making connections to activist agendas emergent in specific locations that seek to materially address hunger.

This chapter situates the issue of hunger-related discourses in a political ecology perspective, arguing that this field has a vital role to play in promoting critical understanding and critically informed praxis concerning hunger. At a general level, political ecology conceptualizes hunger itself as an outcome of social and ecological marginalization and impoverishment on the one hand, and sees hunger discourses as playing a contested role in the management of this problem on the other hand. Given the field’s radical disposition (whether understood in neo-Marxist or post-structural terms), it is hardly surprising that scholars habitually support alternative discourses and practices surrounding hunger notably linked to development of local and regional food systems premised on food sovereignty and food justice discourses.

The question of human hunger is a slippery one, often resistant to easy definition let alone resolution. It has tended to become entwined too with other, equally slippery concepts such as poverty and vulnerability (Watts and Bohle, 1993). Such slipperiness both prompted and has been exacerbated by the proliferation of hunger discourses, particular ways of interpreting ‘hunger’ that circulate through official policy documents, activist reports and scholarly accounts alike. Having both taught about the political ecology of hunger for more than two decades at the University of Washington in Seattle and participated in local activism to combat food hunger over a similar time period, I have nonetheless come to deeply appreciate the ethical and political importance of critically informed intervention in this area – even in ostensibly ‘rich’ countries such as the USA (Jarosz, 2004).

Political ecology has made four main contributions in relation to hunger discourses. First, it challenges neo-Malthusian and other mainstream approaches to defining the problem of world hunger as one based on a population/resource imbalance that therefore requires ‘expert’ intervention via such things as birth control policies and increased agricultural productivity (via Green Revolution or biotechnology solutions).

Second, it develops an historically based appreciation of the global development of industrial food systems that, in the name of ‘development’ (Escobar, 1995), has only increased poverty and ecological degradation for millions of people in geographically and socially uneven ways. Third, an urban political ecology that addresses socio-natural dynamics in Northern cities has alighted on interconnected issues of urban agriculture, food sovereignty, racial and class-based discrimination, as well as rising social inequality even if the topics of agriculture and food remain under-explored (Galt, 2013). And fourth, the research field is increasingly assessing the discursive inter-relationships of food, hunger, consumption and embodiment.

This chapter explores the political ecology of hunger discourses. It argues that the field needs to build systematically on its existing strengths in critiquing mainstream discourses by devoting greater attention to the local activism and personal consumption experiences that increasingly inform the contested hunger discourses of our time.

NARRATING HUNGER IN AN INDUSTRIAL FOOD ERA

Almost from its inception, industrial agriculture has been twinned with narratives about hunger by both its proponents and opponents. For proponents, the industrialization of food production promoted much greater efficiency than under traditional agrarian systems in terms of increased yields. Global output thus soared in the latter half of the twentieth century – and a good thing too, it was argued, inasmuch as human population levels were also soaring, thereby raising the Malthusian specter of ubiquitous world hunger. For opponents, the camp into which political ecologists fall, this argument was plain wrong – it was precisely the ‘tragedy of enclosure’ (*Ecologist*, 1993) linked to the rise of industrial agriculture that deprived millions of farmers around the world of their land, thereby making them hungry.

The political ecology critique here has deep intellectual roots. Indeed, the pioneering Brazilian proto-political ecologist and geographer Josué de Castro (1952 [first published 1946]) argued that mapping world hunger would reveal its social and economic constructions, thereby providing an early counter-narrative to mainstream hunger discourses based on resource scarcity and ‘runaway’ population growth. He emphatically rejected mainstream claims that famine is ‘a natural and incurable phenomenon’ and that ‘our only salvation is a forced reduction in the world’s birth rate’ (de Castro, 1953: 13). Instead, de Castro argued that hunger is a man-made phenomenon based in social, cultural and economic structures that profoundly shape patterns of food production and distribution. These patterns are linked in turn to socio-economic inequalities of wealth, power and resource access and control. In the 1940s, Brazil’s military government characterized de Castro as a political subversive due to such views on hunger and the solution of agrarian land reform.

By the early 1970s, neo-Malthusian population-and-hunger discourse was in the ascendancy, both in the Western popular imaginary and in policy circles. At the same time, the industrialization of agriculture was accelerating, spurred on by the science-led ‘miracle’ of the Green Revolution. While various critical writers took aim at this target, the landmark intervention was made by the British Marxist geographer David Harvey (1974), who argued (among other things) that dominant hunger discourses identifying

resource scarcity, environmental limitations and population growth as key causes of hunger and famine are based on ideas of natural laws that are ideologically charged. And science, he argued, was not ethically or politically neutral either. Rather, detailed examination of the political economy of hunger would more accurately reveal its social construction. Specifically, Harvey argued that Marxist political economy's methodology, which emphasized how everyday activities and social relationships built, reflected and shaped social structures, provided a more nuanced and holistic definition of hunger. Marxist political economy thus emphasized relationships rather than objects and laws within the context of historical processes and materiality (Harvey, 1974: 265). For Marx, the need to eat is foundational to the historical and material processes constituting production and social relationships, thereby inevitably transforming society and nature. The production of food and the necessity of eating shape environment–society relations as well as economic, political and socio-cultural relations within food economies. These relations involve production, processing, distribution, consumption and access (Bryant and Bailey, 1997; Vandergeest, 2012).

A neo-Marxist-influenced political ecology thereafter related the production of food under industrial capitalism to the production of hunger among those disadvantaged by this system. On the one hand, scholars analyzed how agricultural modernization could paradoxically increase marginalization, poverty, hunger and environmental degradation rather than alleviating them. This was above all a critique that was aimed at Green Revolution technologies and discourse (Yapa, 1996). The allure of this discourse is well known: enhanced agricultural production due to adoption of commercial packages integrating irrigation technologies, hybrid seeds, synthetic fertilizers and pesticides increases in turn world food supplies at a time of rapid population growth, while often integrating food systems in poor countries into the global market through export of cash crops such as wheat, coffee, tea, bananas and cocoa to the benefit of both small farmers (higher income) and local states (higher tax receipts). This agro-industrial model emerged from the USA after the Second World War, rapidly becoming the dominant model of food production adopted in much of the world (Kloppenburg, 1988).

Yet as the activist–scholar Susan George (1997) argued, the Green Revolution in practice enabled the accelerated accumulation of profit (often by transnational corporations) and the retention of power by rapacious political elites, while biodiversity was eroded and social relations of production impoverished the most vulnerable. Class differentiation intensified as an elite became wealthier and more powerful through concentration of 'inefficient' small land plots into 'efficient' large landholdings in a process that led to the widespread dispossession of small farmers who then became either urban migrants or landless agricultural workers. Landlessness, poverty and hunger for the many was the result, with women notably disenfranchised (Shiva, 1991). True, agricultural yields in countries like India and Mexico did increase, but strikingly hunger was not eliminated in these countries. Indeed, hunger persisted, particularly among children. Thus this strand of political ecology work criticized the industrial food economy 'success story', telling instead a different story about how the food economy produced hunger and poverty in one place while providing abundance elsewhere (Wisner et al., 1982).

On the other hand, political ecologists emphasized more widely how hunger is a social and economic construction that is firmly anchored in the politics of global capitalism. Here, the concern is to uncover how farmers lose access to land, resources and decision-making power as a result of the actions of more powerful actors, including state agencies, politicians, transnational corporations and wealthy farmers. Such a loss usually means that people also lose their ability to obtain food – what the economist Amartya Sen (1981) calls the ‘entitlement to food’. While no Marxist, Sen’s (1981) concept of entitlements was nonetheless important to a neo-Marxist-influenced political ecology because it further challenged the dominant discourse of hunger as a problem of scarcity and supply. Thus entitlements refer to the avenues by which groups and individuals gain access to and control over food and food resources. Examples here include access to land, credit, living wages and government assistance (Young, 1997). Entitlements thereby precisely highlight the importance of social relations as well as individual identities (shaped by such things as gender, age or ethnicity) in food access and notably helped to explain the seemingly paradoxical existence of hunger in areas where food is sufficient or even abundant. In this view, then, food poverty is defined as a lack of access to resources such as land, credit or decent employment, while hunger itself is explained in terms of poverty rather than food shortages and (low) agricultural yields.

Political ecologists have thus been keen to identify those economic and political mechanisms that trigger environmental degradation, famine and food shortages (Abraham, 1991). The best-known example here is Michael Watts’s *Silent Violence* (1983), which examines how colonial capitalist development and agrarian change triggered famine in Nigeria and how the later initiatives of the Green Revolution did not necessarily increase food supply for the poorest. In particular, he emphasizes the importance of understanding food systems – defined as ‘complexes of human activity and interaction that affect the production, consumption, appropriation, trading and circulation of food’ (Watts, 1983: 521) – through their social relationships of production and distribution in order to understand how food supply is affected by natural hazards such as drought. Explaining how food systems simultaneously produce poverty and wealth, as well as food surpluses and hunger through the commodification of food, land and labor across space, was a major concern among political ecologists in the 1980s and 1990s.

Recent research in the field continues to challenge mainstream hunger discourses while building where appropriate on these earlier political ecology insights, notably through contextualized regional research (Jarosz, 2012; Basu and Scholten, 2012). Thus there is a need to understand micro- and regional geographies of agriculture and food consumption in the quest to build socially and ecologically sustainable futures, in contrast to rural development interventions that privilege increasing yields and technical solutions that may have short-term benefits but do not necessarily alleviate hunger and poverty in the long run. Indeed, the latter usually do more harm than good in that they build on existing inequalities in resource access and distribution – hence simply deepening the plight of poor farmers, pastoralists and fishers. For example, Javdani (2012) demonstrates how HIV/AIDS prevalence in Malawi contributes to inadequate labor resources and thereby negatively shapes the impacts of fertilizer subsidies and

increasing yields in an already unequal community. In Guatemala, the Green Revolution exacerbated the structural inequities underlying land access and ownership. Fertilizer use increased yield but perpetuated debt. Increasing hunger and poverty were linked to increasingly skewed land access and ownership patterns rather than to crop yields (Klepek, 2012). Meanwhile, corporate intrusion into global biotechnology regulation increases the pressure on Southern states and farmers to adopt technologies that enhance the profits of transnational giants such as Monsanto, who monopolize and privatize knowledge and seeds through licensing germplasm and ownership of national seed companies (Middendorf et al., 2000; Weis, 2007). As with the Green Revolution, the contemporary gene revolution has its own hunger discourse that touts the ability of genetically altered and patented seeds to address hunger in a time of climate change, a still-growing human population and increasing pressure on land and water resources to meet world food needs. In reply, political ecologists once more stress how power relations and capitalist accumulation through ‘development’ have only created food systems that impoverish many lands and people rather than nourishing them. Similarly, they have been skeptical of contemporary ‘food security’ discourses doing the rounds of policy-making and scholarly circles in the contemporary era because of the emphasis that these discourses place on food distribution and access in international food policy rather than on other considerations such as how the food was produced and processed in the first place, let alone how inherently fragile and unsustainable today’s global food system is (Weis, 2007; Sage, 2012).

Other research foregrounds the political dimensions of and rationales for hunger discourses, thereby acknowledging the ways in which world hunger is also an inherently political issue. Clearly, this can be seen in the whole issue of international food aid and famine relief with its neocolonial, geopolitical and domestic political aspects, as winners and losers are created through this process (Keen, 1994). But it can also be viewed through the prism of basic security discourses affecting the state: hunger as a threat to the viability of state rule. Here, as Essex (2012) argues using an Indonesian case study, hunger alleviation programs can have quite place-specific (geo-)economic and (geo)political aims linked to the containment of the ‘problem’ of hunger (framed as a problem in a manner somewhat reminiscent of that earlier ‘problem’ to be contained – that of Communism in Indonesia and other pro-Western countries) through politically targeted assistance that concurrently integrates local and regional economies into the global market through the mechanism of food-for-work initiatives. The perceived threat to the state is real enough. For example, the 1997 financial crisis in Indonesia swiftly produced acute food insecurity and intensified poverty, raising fears among the elite of mob violence by the hungry, not to mention the spread of radical Islamism (Essex, 2009).

Indeed, the modern process of state-building itself can be connected to the politics of hunger. However, this is not about the articulation of the state as an institution designed to promote the ‘public good’ in response to the suffering of its citizens. Rather, it is about elites in control of the apparatus of the state seeing a golden opportunity in famine conditions to affect fundamental political, economic and cultural reform that would otherwise be more difficult (if not impossible) to achieve. Nally (2008) beautifully illustrates this point about the politics of hunger discourses in his study of the biopolitics of the Irish potato famine in 1845. He thus shows how the British state

was quite willing to fully exploit the tragedy in order to further its core agenda of systematic socio-economic reform in the colony, encompassing such drastic measures as development of an Irish Poor Law, agricultural modernization, fundamental economic restructuring that involved clearing the land of much of its population, and general 'improvement' of Irish society. In the process, the British state exercised sovereignty through Irish hunger and poverty.

Such political opportunism by states is quite common, and perhaps even integral to the coercive nature of this institution under capitalism. At its core, it reflects a material and discursive strategy that seeks to replace a moral economy of hunger wherein local social relations have traditionally sought to insure at least a basic food provisioning for the poorest and most marginal members of a community with a global and market-dependent discourse of food security in which such provisioning strategies depend on the products provided by transnational agro-biotechnology firms (Nally, 2011). In effect, the hegemonic discourse that asserts that genetically modified seeds and nutritionally fortified foods such as sweet potatoes and 'golden' rice enriched with vitamin A can address the effects of hunger and malnutrition extends hunger discourses of previous decades emanating from the diffusion of Green Revolution technology as a way to address the growing demand for nutrition as the world population increases in general and the meat-demanding middle classes grow in particular.

The fear of hunger-related social strife among political and economic elites noted above is not new and amounts to a 'primordial' elite fear that constantly feeds demands for state action. The classic work here is by the historian E.P. Thompson (1966: 63), who, in his study of the making of Britain's working class, noted that in the seventeenth and eighteenth centuries it was 'not wages, but the cost of bread [that] was the most sensitive indicator of popular discontent'. Little has changed in this regard. Thus, for example, food riots (or the real threat of food riots) were common throughout the 1980s and 1990s as structural adjustment conditions imposed by the World Bank and the International Monetary Fund led to rapidly increasing food prices in countries targeted by these Northern-controlled international agencies. At the same time, those conditions, which were undergirded by neoliberal free market ideology, upended pre-existing moral economies while ushering in new forms of capitalist development based on export-oriented agriculture, natural resource extraction and labor outmigration (Walton and Seddon, 1994). More recently, as food prices dramatically spiked during the global food crisis of 2007–08, more than 35 countries witnessed popular discontent and protest in their streets over the cost of food. These riots clearly concerned the uneven distribution of food even as they vividly underscored the fact that such hunger-related strife was a question of political economy (Patel and McMichael, 2009). Rioters were the urban poor, the unemployed and workers who were challenging local and national politics and associated discourses that tied food access to markets in a globalized food system even while their social and economic benefits were cut as a result of the slashing of social welfare programs. They were protesting about the fact that markets for key foodstuffs such as soy, wheat and corn are today being shaped by financial speculation in the City of London and other global financial centers, biofuels development in Brazil and elsewhere that is reducing land available for food crops, and the short-term and ever profit-oriented calculations of the transnational corporations that now dominate global production. Above all, the rioters held their own governments

responsible for their inability to buy adequate food for their households, thereby prompting a worldwide crisis in the politics and economies of food access that contributed to the collapse of governments in such places as Haiti and Italy (Patel and McMichael, 2009).

Meanwhile, scholars working in political ecology and beyond continue to document the many ills of the globalized corporate food system. That system is now highly industrialized around the world and is designed to produce high volumes of commodities primarily for the food-processing industry as well as for industrialized livestock production and biofuels (Sage, 2012). It is a system that is notorious for being environmentally harmful (e.g. toxic pollution of land and water, the production of significant amounts of greenhouse gases), while exploiting very poorly paid farm workers and employees based in the food processing and food service sectors (Jarosz, 2009; Estabrook, 2011; Galt, 2013). Trade treaties such as the North American Free Trade Agreement (NAFTA) signed into law in 1993 permit the dumping of subsidized US corn into Mexican markets that only serves to drive small farmers out of business (with many then joining the millions in migrant worker streams that criss-cross North America). In addition, intellectual property rights rules promulgated by the World Trade Organization initiated the patenting of plant materials and seed stocks formerly considered as common property by small-scale farmers who had hitherto hybridized and freely traded seed stocks, leaving these people more vulnerable than ever (Escobar, 1998).

These analyses help to link the globalized corporate food system to both the perpetuation and the creation of world hunger, thereby putting the lie to dominant corporate discourses that paint that system as *the* solution to the hunger problem. At the same time, the anti-globalization movements and demonstrations that have flourished especially since the 1990s have drawn into their fold farmers from around the world who insist that their livelihoods are being threatened or even destroyed by deepening neoliberal-style resource privatization and control of the fundamentals of life (e.g. seeds, as well as basic food commodities such as rice, wheat, corn and soy). The result, as scholars highlight, is resistance to the globalized corporate food system, notably via the assertion of counter-narratives and discourses that put forward alternative ways of doing things based on concerns about social equity and ecological sustainability. The chapter next briefly assesses two such discourses relating to the concepts of 'food sovereignty' and 'food justice'.

COUNTER-NARRATIVES: FOOD SOVEREIGNTY AND FOOD JUSTICE

The concept of food sovereignty was born out of the sorts of material and discursive struggles noted above that political ecologists describe. Food sovereignty originally referred to the right of people to access food-producing resources in order to feed themselves and the right of farmers to determine their own production activities and patterns (Desmarais, 2007). As this movement has grown and evolved, it has also come

to be defined by the concerns of consumers to democratically control the operation and development of food systems locally, regionally and nationally, especially in North America.

The concept of food sovereignty was first articulated in Brazil in 1996 among members of La Via Campesina and the Movimento Sem Terra (MST or the Rural Landless Workers' Movement) who were then campaigning for fundamental land reform as a key solution to the growing problem of landlessness and hunger (Desmarais, 2007; Wolford, 2010). It was adopted by many campaigners around the world, as food sovereignty was a notion that was firmly opposed to the global corporate food system and associated World Trade Organization interventions (i.e. intellectual property rights for genetically modified and privatized seeds as well as patented food and medicinal crops). People saw that it spoke to many whose lives were being powerfully shaped by dominant hunger discourses: indigenous peoples whose claims to land and water were being destroyed; and poor women's claims to having a right and responsibility to control their food systems so as to adequately feed their households, families and communities that were being ignored. It also appealed to members of civil society who were campaigning against world hunger and poverty, and who wanted to thoroughly transform multi-scale food systems from top to bottom in order to put people before profits – people who recognized that food is not and should never be seen as a commodity like any other. The concept was seen to be revolutionary as it involved the construction of a new food system that was locally defined, led and oriented (McKay and Nehring, 2013).

In many respects, this quest to construct democratically accountable, economically viable, environmentally sustainable and socially just food systems harks back to earlier critical interventions by the likes of Frances Moore Lappé and Joseph Collins (1986) as well as Susan George (1997) – prominent activist writers who became well known for their work in the NGO world (and beyond) on poverty and hunger. It also resonates with some of the kinds of political ecology research noted above.

Yet the discourse surrounding food sovereignty is also mindful of the latest twists and turns in global capitalism as this rampant system continues to promote profit and control across the world, and through multifaceted forms of what David Harvey (2004) calls 'accumulation by dispossession'. Thus, and in relation to food production and land availability, the rise of an elite-led 'land-grabbing' movement in which prime agricultural lands in poor countries (usually in the South) are acquired for wealthy, often foreign, investors (including states) provides even further grist for the arguments encapsulated in the notion of food sovereignty (Borras Jr et al., 2012).

It thus remains an important discourse for a wide variety of people, not least indigenous people whose claims intermingle such things as access to food-producing resources, self-determination, and recuperation and enrichment of cultural and spiritual relations to nature and the nonhuman world (Moreton-Robinson, 2007; Alfred, 2001). Here, the discourse stresses cultural and spiritual dimensions between animals, land, water and food-provisioning activities and rituals (Daigle, 2014). In recent years, food sovereignty has also been linked to national initiatives such as those in Canada and Australia that are led by grassroots organizations, even as the term has also been written into the national constitutions of countries such as Venezuela, Ecuador and Nepal (McKay and Nehring, 2013). Political ecologists have explored diverse aspects

of the food sovereignty discourse as it is being articulated around the world – for example assessing how emphases on such things as fair trade, cultural processes, as well as regional cuisines and food-ways shape it differently in different places; such work examines similarities and differences among far-flung empirical articulations as they relate to questions of urban agriculture, rural land tenure or modes of provisioning – not all of which are socially inclusive (Page, 2002; Boyer, 2010; Alkon and Mares, 2012).

The concept of food justice displays a broadly similar set of concerns to that of the notion of food sovereignty, although it is centrally concerned with problems of hunger and poverty in the more ‘affluent’ cities and countries of the North, especially the USA and Canada (Agyeman and McEntee, 2014). Indeed, when world hunger is mapped, the situation in wealthy countries is generally invisible. And yet, nearly 40 million Americans and one in six Canadians (i.e. approaching 6 million) are food insecure. Here, political ecologists examine how neoliberal policies result in often severe cutbacks to social services provision that in turn only increase poverty and food insecurity among the most vulnerable people in these countries. These include single women with children, people of color as well as indigenous people, and children living in poor households. The plight of such people living in lands of relative plenty has prompted both outrage and calls for food justice. This concept – echoing work done in the field of environmental justice (Walker, 2011) – recognizes that racism and other forms of discrimination are key barriers to food security and access to food-producing resources for many indigenous people and African Americans, as well as other immigrants such as undocumented farm workers. As such, food justice advocates tend to focus on the distributional and consumption aspects of the food system in their examination of how access is constrained by social and economic inequalities. They argue that these inequalities can and should be addressed by government, while acknowledging that grassroots political movements and organizations often play a vital role here too (e.g. the Black Panthers school breakfast programs in urban America) (Fairbairn, 2012; Heynen, 2009).

DISCOURSES ABOUT EATING AND THE BODY

While the battle lines between narratives and counter-narratives are ever more clearly drawn in contesting the discourses that surround and inform the global corporate food system, political ecologists have also begun to note how such discourses are being increasingly joined by other discourses that relate to eating and the body. Taking advantage of advances in molecular biology and genetics, increasing research attention has been focused on the relationship between molecules and genes within and outside the human body – as the body itself becomes a battleground in struggles over hegemonic and counter-hegemonic food systems.

A promising avenue of research involves exploring the material and discursive relationships among governance, unequal power relations and the body in relation to food and eating. One question here is: what kinds of bodies does the global corporate food system produce? Evidence that has so far been collected is not encouraging. Thus one outcome of the global industrial food system run by transnational

corporations is the growing prevalence of undernutrition and malnutrition linked to the overconsumption of highly processed fatty and sugary foods and beverages. The scale of the problem is staggering: this condition affects nearly 2 billion of the world's 7 billion people (Patel, 2007). And then, considering how industrial foods may produce obesity due to their low and subsidized costs for key ingredients such as high-fructose corn syrup firmly links the global political economy of food production and farm policy to rising obesity levels in the USA and beyond (Guthman, 2011).

Scholars also highlight how the global food system penetrates the body itself in that it chemically transforms it, raising questions about how industrial food, health and risk are combined. In examining research in endocrinology, for instance, Guthman (2011) begins to link obesity, cancer and diabetes to toxins absorbed by the body and directly related to agricultural production. Research thus emphasizes the porosity of the body's boundaries between inside/outside in a way that challenges views about obesity based on ideas of self-discipline and the making of individualized health choices. Here, a nightmarish vision of the produced body under the global corporate food system emerges – one in which eating and digesting industrial foods disrupts the borders between body and environment. And, critical of dominant corporate discourses that stress food safety (as well as individual 'responsibility'), writers are also raising questions about the whole issue of individual risk and safety in a context where the reliability of both science and government to mitigate and address these risks is in doubt (Lavin, 2013). In this way, a new literature emphasizes that critical analyses of the material and discursive dynamics of contemporary food politics and eating enable us to begin to question ideas of a discrete and bounded subject that is 'sovereign over itself and separable from the world that surrounds it' (Lavin, 2013: xvii). It also raises wider questions about the roles and responsibilities of states to protect individuals from not only hunger but also from illness-inducing industrial food. A state thus acting in the public interest would introduce a systematic set of social policies ranging from much more stringent food safety regulations and taxes on unhealthy food products (e.g. soda and other processed beverages, fast food) to safeguarding food-producing resources while promoting a more equitable, inclusive and sustainable food system. Such a state response would take the 'fast' out of the 'fast food nation' (Schlosser, 2002), and might even begin to address some of the demands of campaigns for healthier eating such as the 'slow food' movement and other promoters of 'food transgressions' in the alternative food sector (Goodman and Sage, 2014).

CONCLUSION

As this chapter has highlighted, ideas of supply, demand and scarcity continue to shape the mainstream hunger discourse underpinning the global corporate food system, while the counter-discourse emanating from civil society, social movements and political ecology concerns the themes of justice, powerlessness and poverty. In these sharply contrasting discourses, the role and responsibility of the state in particular is tussled over through largely non-critical notions such as food security on the one side, and critical concepts like food justice and food sovereignty on the other. States are criticized both for what they do (notably taking advantage of the hunger of its citizens)

and for what they do not do (especially for not intervening to end a highly destructive global corporate food system).

While political ecologists have underscored the dark side to this situation – in particular describing how many states are deeply embedded in that global food system – this is not to say that states cannot sometimes be a force for good. Their work could thus usefully focus here more in the years to come. After all, most hunger discourses point to governance arrangements in which the state must ultimately play some role in insuring the human right to food and to food sovereignty. The case of Brazil's Zero Hunger Campaign as first instituted in the city of Belo Horizonte is perhaps illustrative (Lappé, 2009). State intervention here through regulations, subsidies, food transport serving those unable to get to markets, as well as education and nutrition programs especially targeted at the city's poorest residents, was crucial in reducing hunger and addressing poverty in the city (and beyond in the country, as this example became known). The concepts discussed in this chapter come together in a clear recognition that eradicating hunger is a political and economic action that involves state intervention, public funding and support, as well as official recognition that poverty and vulnerability are intimately tied to (among other things) a lack of access to food-producing resources. Echoes of the Belo Horizonte project can be found elsewhere too, albeit in different forms – as for example in both Canada and Australia, where national food sovereignty initiatives have been undertaken.

These examples suggest a role for multiple actors, including the state, as part of the governance process. This is especially so, given the political and ethical presumption of locally oriented and controlled food systems that stress democratic accountability and ecological sustainability. Here a collective and alternative food network might eventually form that could begin to unravel much if not all of the harm that the global corporate food system has done to people's livelihoods, environments and bodies around the world. In the process, there would be space for a politics of hope in the food sector in which hunger discourses would finally be banished for once and for all. While political ecologists must maintain a suitably critical stance, this is nonetheless an area where their research could build deeper synergies with activist agendas in aid of the 'liberation ecologies' (Peet and Watts, 1996) long touted in this field.

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23. Green governmentality

Ting-jieh Wang

Political ecology is marked by a continuous effort to draw on theoretical insights from elsewhere. Early on, political economy was used to theorize problems of access to and control of natural resources (Blaikie and Brookfield, 1987). Subsequently, both the objects of study and the conceptual arsenal have become pluralized, reflecting expanded interests and paradigmatic shifts in the social sciences. As Watts and Peet (2004) describe, post-structuralist importations have notably introduced new perspectives on how humanity engages with nature both materially and discursively.

This chapter discusses the thought of the French philosopher Michel Foucault in relation to his growing influence on political ecology, especially concerning the concept of governmentality. The ‘Foucault effect’ (Burchell et al., 1991) is clearly felt in the field as the concepts of governmentality and biopolitics become important references. An appreciation of Foucault’s thoughts is vital here. Hence I begin by introducing Foucault’s thoughts on power, liberalism and security, before considering how his reflections on governmentality and biopolitics have prompted new avenues of research in political ecology. Green governmentality is then further explored in relation to the question of indigeneity, drawing on a Taiwanese case study. The conclusion identifies areas for future research.

POWER, GOVERNMENT AND GENEALOGY

To start, it is essential to give a basic overview of Foucault’s thinking. This philosopher was well known for his investigations of the history of medical and human sciences, as well as discipline and power relations. Questioning his own use of the metaphor of war in describing power, Foucault turned to the ‘art of government’ as an alternative approach in lectures given at the Collège de France in the mid-1970s (Hoffman, 2007). In Anglo-America, a key lecture first appeared in a journal, before later being included in a landmark volume on governmentality edited by Burchell et al. (1991). Recently, other relevant lectures by Foucault have become widely available (Foucault, 2003, 2007, 2008).

Meanwhile, governmentality has attracted much enthusiasm across disciplines, precipitating new lines of inquiry. One reason for this reception is its unique insights into the machinery of power in modern society. Looking for a conceptual structure to describe post-disciplinary society, Foucault proposed to consider government in the sense of the ‘conduct of conduct’, rather than referring mainly to state practices. Here, the exercise of power is ‘action upon action’ through the ‘struct[uring] of the possible field of action of others’ (Foucault, 2001: 341).

This new emphasis is important not only because governmental programmes are so traversed by the ‘will to improve’ the human condition these days (Li, 2007a), but also because theoretically this notion provides a better critique of the idea of sovereignty (and the associated repressive hypothesis) as the pre-eminent model of power (Pottage, 1999). Indeed, one of Foucault’s (1978) longstanding concerns is to show that, with the rise of discipline in eighteenth-century Europe, power relies less on mechanisms of exclusion and public torture, previously the primary means of punishment under a sovereign. Instead, disciplinary measures were directed at the capacities of the body itself. This was aided by the ascent of diverse knowledge fields and discourses dissecting the ‘finitude’ of the human subject while analysing the social, physical and psychological forces that constitute it.

Development in nineteenth-century Europe took a new turn with the rise of what Foucault (1979) terms biopower, which he described as closely linked to liberal theories of politics. Foucault postulates that, while sovereignty is understood as the right to kill or let live, biopower is about causing to live or allowing to die. The central task of biopower is to administer the population for its betterment. Such power takes life as its target, and refines disciplinary measures by supplementing technologies of normalization that ‘do not primarily “repress” anything, but rather introduce a heightened productivity into the disciplinary apparatus’ (Nealon, 2008: 49).

This account of power is radically different from conventional narratives in which power is distinguished by its repressive nature (with freedom meaning liberty from repression). Yet, if power is productive rather than repressive, how are we to engage in a critical study of power relations? Foucault argues that analysis should begin by addressing the question of practices that are granted ‘a reality, a density and a logic of their own’ (Dean, 2010: 33). Focusing on practice helps to avoid seeing social phenomena as secondary occurrences derivative of a ‘deeper’ cause such as ideology. For him, the latter is likely to arrive at a causality model too superficial to account for contingency in the historical formation of modern society.

To examine practices is not merely to empirically document how rule is accomplished, but also to observe how governmental apparatus emerges, consisting of ‘institutions, procedures, analyses and reflections’ (Foucault, 1991c: 98). This is achieved by examining the form of what he called ‘problematization’, which is ‘the development of domains of acts, practices, and thoughts’ (Foucault, 1997a: 114) that defines particular problems and implement practical solutions. The insistence on examining the form of problematization as a method of inquiry is vital because the choice also entails a particular perspective on power. To highlight this point, Foucault (*ibid.*: 118) asserts that confusing his method with deconstruction ‘would be unwise’. Crudely put, the critical gaze of deconstruction falls primarily on conceptual oppositions with the aim to destabilize the hierarchies and exclusions these binaries instigate. For Foucault, deconstruction still exhibits too much adherence to the binary framework of sovereign power, which asks for observance of its laws and banishes those who flout its order. As Nealon (2008) suggests, problematization is a different approach to power. It exhibits a desire to know, classify and establish a category or a profile in order to observe and account for, rather than exclude, particular types of objects. This fits more closely the character of the regimes of practices that inhabit the social field today.

Emphasis on the historicity of problematizations also indicates that governmentality is less meant as a general theory of power than as an analytic to dissect modern government. This is influenced by Foucault's (1998) discussion of genealogy, which, in opposing linear history, investigates conflicts and contradictions in relation to power and production of truth. For Dean (2010: 54), the ethos of genealogy is 'an incitement to study the form and consequences of universals in particular historical situations and practices' that are problematized in specific struggles. In making this choice, Foucault's thinking diverges from conventional analyses focused on sovereign states, political parties or values (Rose, 1999). This is clear from his discussion of liberalism and biopolitics, which also offers new resources for rethinking the ecological question.

LIBERALISM AND BIOPOLITICS

The concept of governmentality connects to Foucault's research into the rise of liberalism in Europe. Although this focus appeared at odds with France's political and intellectual climate at the time, his account of liberalism and biopolitics has become ever more consequential (Donzelot and Gordon, 2008). Liberalism is conventionally treated as a set of political ideas that aim to limit the power of the state and to ensure the rights and liberty of individuals. In contrast, Foucault (2007) considers how liberalism introduced a form of problematization that differed sharply from the concerns of a sovereign.

Relying mainly on 'measures of separation and interdiction' (Donzelot, 2008: 118), the sovereign subtracted tax and labour from people to build up strength against opponents. For Foucault, the rise of liberal thinking since the eighteenth century involved new articulations based on a 'productive rather than a deductive logic' (Dean, 2010: 105). Instead of focusing on the securing of territory, liberal thinkers critically examined the utility and efficiency of government. In ascertaining the right balance between governing too much and too little, liberal government thus lays emphasis on promoting the security and productivity of the population through the 'right manner of disposing things' (Foucault, 1991c: 95) instead of concentrating on coercion. This was aided by new theories of political economy positing the market as a 'spontaneous (albeit historically conditioned) quasi-natural reality' (Gordon, 1991: 41) with its own autonomous processes. Liberal theories criticize the sovereign's control of goods and people, raising instead a concept of economy best governed through the principle of *laissez-faire*.

Liberalism thus values self-restraint in governmental matters, while not being opposed to state intervention to 'optimize' economic conditions. Ironically, liberal thought thereby widens rather than narrows the scope for such intervention. In the twentieth century, though, the destructive consequences of National Socialism in Germany led liberals to seek 'an economic rationality capable of nullifying the social irrationality of capitalism' (Donzelot, 2008: 123). For neoliberal thinkers after the Second World War, inequality is postulated as the hinge for a functional and competitive economic system, with an individual's entrepreneurship the antidote to social malaise. This argument resonated with the neo-conservatism of Reagan and

Thatcher, illustrating Foucault's observation of the liberal tendency to treat the subject as a domain for programmes of conduct.

Increasing attention to the subject is also connected to what Foucault calls biopolitics that aims at the promotion of 'species life' (Dillon, 2008). With population becoming a focus for government, life for him is subject to a new form of problematization not targeting 'singular human beings but their biological features measured and aggregated at the level of population' (Lemke, 2011: 5). Biopolitics simultaneously represents a totalizing and individualizing power, as state rationality becomes entangled in the 'revision and reform' (Dillon, 2008: 167) of life and its manifold processes and domains. Elaborating disciplinary measures, biopolitics encases the population in apparatuses of security to improve life (Dillon, 2007). But what is meant by security when the focus of problematization is on life, not territory? Unlike with sovereignty, command-and-control or fortification techniques are not that useful in dealing with life's contingencies because those techniques are averse to circularity and exchange. Instead, modern biopower favours a tactical approach focused on managing probability and encouraging circulation and self-regulation. Hence statistical analysis and risk assessment are essential technologies in the biopolitical regulation of life. In place of the dream of total knowledge and control of reality, it is now more common to rely on statistic abstractions to enact 'a cost calculation inside a series of probable events' (Bigo, 2008: 96) in order to optimize and reform life.

Yet the emerging 'biologization' of politics does not eliminate sovereign and disciplinary forms of power. To the contrary, Foucault (1991c: 102) asserts, 'in reality one has a triangle, sovereignty–discipline–government', stressing that the point is not about defining an epoch but clarifying 'strategic logic' (Foucault, 2008: 42) that forges relations between divergent elements. As Rose (1999: 23) suggests, in modern liberal societies the features of sovereignty, discipline and biopower are recast within 'the general problematics of government'. As the next section shows, we can use these insights to examine contemporary environmental governance from new angles.

ANALYSING GREEN GOVERNMENTALITY

How is the concept of governmentality utilized in political ecology? If Foucault's back is famously turned to nature (Darier, 1999), how is his work related to critical environmental studies? To begin, we note that the answers here resemble more a vigorous dialogue than theory testing. Governmentality is more an analytic strategy than a version of history or an all-encompassing theory. It avoids starting with lofty ideas or 'why' questions, but bases itself on an inquisition into the practical side of government and construction of subject positions. Furthermore, researchers take specific items from the Foucaultian 'toolbox', leaving out others – an act welcomed by the philosopher himself. Recent publication in English of Foucault's lectures at the Collège de France also adds previously less accessible materials that help clarify how he developed his ideas. Meanwhile, new lines of research challenge Foucault's account of Western modernity, direct the focus to new problems or forge imaginative connections with other theories. The result is invigorating and evolving Foucaultian scholarship that is a critical interlocutor for political ecology.

One main point of contact between Foucault and political ecology is the concept of green governmentality (also called ‘ecological governmentality’ or ‘environmentality’, albeit with slightly different emphases). Research in green governmentality questions the state-centred approach and the supposedly recent origin of environmentalism in mainstream discourse. It rejects conventional distinctions such as nature–culture, the neutrality of expertise and technology, or belief in the ‘sacredness’ of wilderness. The proposition is instead that ecological rationality has evolved to entrench modern biopolitical calculations, something that eluded Foucault’s own thinking. Thus recent intensification of global eco-politics is the result of a long and dynamic ‘governmentalization of the environment’ (Agrawal, 2005: 12) that emerged alongside such things as liberal political economy, modern science and colonialism. The term ‘governmentalization of nature’ may sound like an oxymoron. But, unlike the theme of the ‘domination of nature’, here the focus is on how environmental themes infuse diverse discourses, practices and visibilities in modern government. By analysing these dimensions, studies of green governmentality examine how nature is rendered governable, thereby shedding new light on the complexity of environmental issues.

Following Dean (2010), we may analyse green governmentality in terms of three elements. The first element is the *episteme* of government, which concerns the forms of discourse, knowledge and expertise enlisted to advance programmes of conduct. In highlighting connections between truth and power, the concept of green governmentality signifies a qualitative change in what may be considered ‘political’ in political ecology. It broadens the scope of the political by making plain the stakes involved in the use of knowledge and practices conventionally considered neutral and technical (cf. Foucault, 1991a). Here, the importance of ecology and other earth sciences in the formation of green governmentality cannot be overemphasized. As Luke (1999: 151) argues, ‘Conservation ethics, resource managerialism and green rhetorics ... congeal as an unusually cohesive power/knowledge formation’ that serves as the ‘regime of normalization’ in contemporary society.

However, this is not a recent phenomenon but relates to what Foucault (1997b) identifies as a core attribute of European modernity, namely the inseparability of the advancement of capabilities and the intensification of power relations. This perspective differs notably from critical theory’s account of the emancipatory potential of truth against the distorting effects of power and ideology. For Foucault, the focus is instead on how the production of truth is intertwined with how we govern or are governed, without presupposing that knowledge necessarily serves power. As Luhmann (1995) argues, modern society features the autonomy of each social system (such as law, politics and science), which is crucial to their differentiation from and interactions with other systems. Instead of speaking of immediacy between knowledge and power, then, it is better to characterize their relations in modern times as both aleatory and mutually influencing since each responds but never totally succumbs to the other.

The second element is the *techne* of government, namely the practices and techniques involved in its functioning. Practices are of interest because they are the primary means by which forces are generated for specific governmental purposes (Foucault, 1991b). As mentioned, one principal feature of liberal biopolitics is its reliance on mathematical and statistical abstractions to understand and, on that basis, act on the reality that is problematized as the domain for intervention. Practices such as

statistical indicators, imaging technologies and risk assessment procedures help render nature intelligible and amenable, thereby framing policy debates (Demeritt, 2001; Rydin, 2007). The complex and often hybrid nature of environmental protection practices thus cannot be apprehended solely by referring them to specific doctrines. Useful here is Li's (2007b: 263) proposition to examine practices of assemblage that are the 'on-going labour of bringing disparate elements together and forging connections among them'. Insights from studies of science, technology and society (STS) also stress the importance of understanding the distributed and networked nature of technologies. It is through the translation, migration and standardization of practices and technologies that 'governing at a distance' becomes widely possible (Rose and Miller, 1992).

The question of the 'subject' is the third element. However, this is not a return to the humanist concept of the subject (with its emphasis on ethical self-conduct), but rather an attempt to understand how the self becomes traversed by multiple techniques and discourses that take the subject as their domain of problematization. This is pertinent to liberal rule since such rule is distinguished by its insistence on governing through the freedom and capacities of individual and collective actors, a trend accentuated by neoliberal reliance on individuals, communities and other forms of private authority (such as the market) to achieve governmental goals. In environmental management, this is illustrated by the rise of neoliberal government that moulds the behaviour, mentalities or attributes of individuals and collectivities. Such government includes diverse policies or market-oriented tools such as decentralization, ethical consumption and community-based conservation – all characteristic of what Fletcher (2010) calls 'neoliberal environmentality'. These practices respond in part to criticisms of the fortress model of conservation and associated coercion. Yet, *pace* Foucault, the response here emphasizes the need to delegate power to individuals and communities to advance conservation. Here, community is understood as an invented institution designed to promote self-management and new forms of expertise to tackle prior governmental failures (Rose, 1999; Li, 2011).

GOVERNING NATURE, GOVERNING SOCIETY

The green governmentality framework discussed above has been used by diverse scholars to examine the politics of environment and development. Key early work here includes Hajer's (1995) analysis of ecological modernization discourse and an edited volume by Darier (1999) probing the analytical possibilities of green governmentality in environmental research. A subsequent surge of scholarly output coincided with the publication of further lectures given by Foucault on governmentality and neoliberalism (Rutherford, 2007).

There are several main directions to the green governmentality literature. First, scholars draw on Foucault's thoughts and methods to examine diverse topics in development and environment. As mentioned, one 'Foucault effect' is the expansion of what counts as 'political', thereby increasing the array of objects fit for political ecology study. For example, there is better awareness of the constitutive role of knowledge in environmental governance over time. Work on environmental history

shows that advances in ecology and other earth sciences closely relate to colonial attempts to understand and control the population and the physical environment in new territories (Griffith and Robin, 1997; Braun, 2000; Crosby, 2004). Biopolitical discourses and practices from colonial times not only still shape world politics, but also influence how nature is imagined, represented and governed today (Cronon, 1996; Adams and Mulligan, 2003; Morgensen, 2011).

As Rutherford (1999) adds, ecology can be seen today as an expression of biopolitics that attends to the supporting environment necessary for life to survive. For Luke (1999), environmentalism is thus understood as a form of biopower whose reach now extends around the globe. Prominent examples include biodiversity conservation and climate change, where state agencies, scientists and advocacy groups are crucial in producing discourses and ‘visibilities’ that identify environmental problems and solutions at national and international levels (Bryant, 2002; Pettenger, 2007; Biermann and Mansfield, 2014; Stripple and Bulkeley, 2014). Here, the point is not to valorize or denounce the role of knowledge, but to examine how production of truth delimits new governmental spaces while shaping programmes of conduct across time and space. Indeed, even understanding and government of life – the primary object in Foucault’s account of biopolitics – is undergoing de-territorialization due to advances in molecular biology, biomedicine and digital technologies (Dillon and Lobo-Guerrero, 2008).

Second, research also addresses how the rule of nature is enabled or enhanced through use of specific practices as well as the promotion of environmental subjects. Putting the spotlight on practice allows scholars to assess how nature is ‘rendered technical’ for governmental purposes (Li, 2007a). For example, instead of seeing forests as ‘natural’, they investigate how forests are subject to different practices of representation: scientific forestry, nationalist discourses, environmental education and so on. In this way, forests are problematized variously as a source of national pride, a threatened resource crucial to environmental security, or sacred ‘wilderness’ to be absolutely protected (Darier, 1996; Neumann, 1998; Demeritt, 2001). Then there are the practical, sometimes hybrid, means used to achieve goals identified through such problematizations: fortress-like national parks, scientific forestry schemes, market-oriented green consumption and so on. Concurrently, the question of the subject is raised by these solutions as each one creates different subject positions entailing specific rules and expectations. The latter range from threats of violence, through disciplinary and surveillance measures, to ‘voluntary’ participatory programmes – all designed in different ways to turn recalcitrant villagers into acquiescent if not cooperative environmental agents (Peluso and Watts, 2001; Agrawal, 2005).

One way to apprehend diverse practices in the government of nature is to ask how authority is constructed. The environmental politics literature often answers this question by focusing on the state. While not denying this actor’s role, studies of green governmentality emphasize instead how authority is constructed through a series of practices and programmes aimed at the conduct of conduct, many of which do not originate with the state. Take the issue of climate change, for example, where much social science work focuses on the policies of states and coordination among them. In contrast, from a Foucaultian perspective, climate governmentality is understood as involving the formation of a global power/knowledge complex that is not necessarily hierarchically ordered. There exist not just competing claims about climate change, but

also different proposed solutions and authority relations. In advanced liberal countries, climate change is often portrayed as state failure that is hence best addressed via market-based solutions such as carbon markets (Oels, 2005). In contrast, environmental authoritarianism in some developing countries (notably China) is sometimes considered to be more capable of confronting severe environmental pressures (Beeson, 2010).

Yet, for Foucaultian scholars, the question is not really about identifying the ‘best’ form of green governmentality. Unlike mainstream social science, it is rarely about ideal-typing a certain phenomenon and then putting it into a neatly defined ontological category with normative implications – a scholarly process at odds with Foucault’s methods (Dean, 1998). As Rose et al. (2006: 99) observe, governmentality is above all about ‘empirical mapping of governmental technologies and rationalities’. It is the combination of such factors that often comes to the fore, requiring multi-method assessment. Thus Ferguson (2009: 171) notes how the outcomes of neoliberal policies may often have more to do with the ‘contingencies of democratic politics’ than with ideological precepts. Collier’s (2011) work on neoliberal practices and post-Soviet social modernity similarly reminds us of how governmental practices can combine to prompt a complexity in reality that brings into question the use of ideal-types.

Third, research involves the question of resistance – something that is vital to political ecology yet for some appears to be peripheral in the green governmentality literature. Here, the challenge is: what is the use of examining governmentality if it does not lead to emancipatory truths and politics? This question has prompted much debate, as well as further elucidation of the Foucaultian approach. In analysing the conduct of conduct, there is indeed a temptation to adopt the viewpoint of the ‘programmer’ in thinking that discourse can easily create ‘reality’. But careful reading of Foucault would suggest a different approach. Thus his account of power is not predicated on a zero-sum game between power and resistance, while it addresses the topic of counter-conduct and counter-discourse.

As mentioned, Foucault’s work prompted a significant broadening of what may be considered political. Once it is realized that liberty may be a technology of government, and that the exercise of power goes well beyond the state while being operated through multitudinous practices and discourses of government and subject-making, then the point becomes how to devise resistance strategies in light of such a novel epistemological understanding rather than forlornly clinging to old ways of thinking and acting. Studies of governmentalities can therefore create new political sensitivities – for example, awareness of the effects of depoliticization in development discourse or even the role of counter-discourses in shaping governmentality. Death’s (2010) study of the 2002 Johannesburg World Summit on Sustainable Development thus critically analyses the deployment of sustainable development discourse at this summit, while also showing how a governmentality approach may be applied to the actions and discourses of involved environmental protesters. As Cadman (2010) further suggests, Foucault’s work may not be emancipatory in the sense of offering ready-to-use guidelines of resistance. Yet it does pinpoint conflicts between rival governmental strategies and programmes, while also exploring the transformative potential of counter-conduct that questions regimes of truth and conditions of government.

FOREST CONSERVATION AND THE QUESTION OF INDIGENEITY IN TAIWAN

Building on the foregoing discussion of green governmentality, the chapter next briefly considers the question of ‘indigeneity’ (i.e. that which pertains to the category of ‘indigenous peoples’) in nature conservation, drawing on a Taiwanese example. This question is indeed important precisely because it showcases how the government of nature is often intertwined with the enactment of subject positions – what Willems-Braun (1997) terms the ‘buried epistemologies’ of colonialism. Discussion here is also concerned with noting the changing emphasis in biodiversity conservation from the fortress model to a more participatory one. The former is notably reflected in large conservation projects such as national parks, which, often created under colonialism, are lands occupied or claimed by indigenous people. Here, scientific research and use of modern technologies are usually privileged at the expense of engaging with indigenous knowledge systems, while such people are treated as potential offenders. Scholars describe enclosure of indigenous lands and policing of an erected border between nature and humanity as ‘apartheid at species level’ usually generating local resentment that may end up defeating conservation (Adams, 2003: 43).

The fortress conservation model is criticized on various grounds. Research thus highlights the complex causalities of environmental degradation, as well as the multiple ecological functions performed by pre-existing human–environmental interactions simply ignored by that model. Further, critics argue that the model actively creates environmental injustice in so far as it alienates and marginalizes local people. Here is where ‘community-based conservation’ schemes surface as a possible solution to both conservation and empowerment goals. In Foucaultian terms, this is a moment of problematization featuring both critical reflections on past practice and a search for alternatives. As Fletcher (2010) suggests, this signifies the rise of neoliberal environmentality in biodiversity conservation, as the utility of sovereign-like national park and associated coercion is questioned.

Yet the advent of the participatory approach presents indigenous peoples with an awkward situation. Definitions of property relations and control of lands and resources have been central issues in many indigenous struggles against colonialism. Participatory or joint management schemes may be an opportunity to partly redress long-standing grievances. Nonetheless, such schemes entail a specific mode of subjectivity that has been aptly labelled the ‘ecological native’ (Ulloa, 2005) – that is, the idea that indigenous people have the requisite local knowledge, disposition and experience for sustainable environmental management. In the process, though, indigenous peoples are invited by these schemes to become active environmental agents, contributing to surveillance of protected areas and their own communities through self-disciplining.

Hence the fortress conservation and community-based conservation models entail different governmentalities concerning the indigenous subject. But analysis can go further here. Thus it can note how the category ‘indigenous people’ is a mobile term – one that is part-and-parcel of the governmental technologies invented to address ‘indigenous issues’. This in turn prompts closer examination of the game of truth that conditions relevant programmes, instead of a more conventional approach aiming to discover what really constitutes indigeneity. As Wilder (1997) explains, talk of

empowerment and inclusion in conservation discourses can amount to a reaffirmation of the otherness of indigenous peoples and, relatedly, the colonial thinking and idioms that lurk in the background. Such an act tends to make indigenous people a transcendental category, taking little heed of the historical trajectories and social conditions that give rise to such representations.

Similar issues are observable in Taiwan's environmental politics after democratization began with the lifting of martial law in 1987. Illustrative of dynamics discussed above, the Taiwan case also merits attention because of its relatively less-studied human-environmental processes as well as its distinctive colonial experience rarely assessed in comparison with the experiences of countries subject to Western colonialism. At the same time, the Taiwan case highlights how discourses and technologies of government (and indeed of counter-conduct) often criss-cross national borders, becoming fused with local circumstances.

Emulating the example of Yellowstone National Park in the USA, Taiwan's national park system is based on the fortress model that excludes local participation and rejects indigenous land claims. Since this system was established in the 1970s, parks in highland areas in particular have attracted widespread protest from indigenous communities, as they are often near those communities. Residents argue that their rights to use local natural resources are constrained by parks, which, from their perspective, stand on traditional indigenous territory. Yet, supported by conservation scientists and non-governmental organizations, the park authorities have long rejected indigenous complaints. This is somewhat curious since, unlike the US parks on which they were modelled, the Taiwanese system rarely evokes imaginaries of pristine wilderness in its park discourses. In contrast, it is cognizant of cultural activities and historical legacies (even in 'remote' mountain areas). But rather than acknowledge indigenous history and culture, the Taiwanese park discourses focus instead on a decidedly nationalist historiography promoted by the Kuomintang (the Nationalist Party), which took over Taiwan in 1945 after Japan's defeat in the Second World War.

Still, some change was afoot in the late twentieth century. Thus, and with the loosening of political control after decades of martial law, 1990s Taiwan saw democratization reforms and nativist campaigns that challenged not only political dominance by the Kuomintang but also its Sinicization policies and discourses, and which culminated with the ending of Kuomintang rule in 2000 (Makeham and Hsiao, 2005). Such political ferment opened space for new discourses on nature conservation, social protest and indigenous rights. And this new set of possibilities congealed around one particular proposal for an upland park that sparked fierce social dissent: the Chilan National Park. From 1998, environmental activists called for such a park to protect remnant primary cypress forests in the Chilan area (with decades of unrestrained logging by both the Japanese and the Kuomintang authorities responsible for most of the losses of the endemic cypress forests hitherto). This call occurred against a backdrop of rapid national biodiversity loss in a context of small-island industrialization that deeply worried environmental scientists (McBeath and Leng, 2006).

Yet once the proposal became official policy under the Democratic Progressive Party (DPP) administration in 2000, it became a major issue for indigenous rights groups that had long been demanding indigenous empowerment, autonomous status and the return

of traditional territories. Trying to defuse the issue, the DPP, working with environmental groups, then proposed a 'co-management' scheme involving indigenous participation in park management. Drawing on lessons from countries like Australia, the DPP sought to make the proposed Magao National Park (an indigenous replacement name for Chilán) a focus for a new participatory management approach in the country. The scheme was welcomed by several indigenous groups who saw this as a step towards autonomy. But it also drew strong protests from indigenous activists, who criticized the DPP for failing to amend the National Park Law in a move that would have ensured legal basis for the reforms (although, to be fair, the lack of action here perhaps reflected the DPP's tenuous situation in parliament in a context of sharp national political polarization). In 2003 the park plan was shelved after Parliament voted to scrap its budgetary provision. But the failure of Magao did not end interest in community-based conservation, as indigenous participation remains a topic in conservation discourse in Taiwan. Indeed, similar projects have emerged in recent years as activists, scholars and administrative agencies seek innovative ways to combine goals of indigenous empowerment and biodiversity conservation (Lu et al., 2006).

Several observations can be made here about the Magao project and other related projects in Taiwan. As mentioned, unlike in the West, Taiwanese environmental discourses are not primarily predicated on strictly separating nature and humanity. Rather, they tend to reference the ideal of a 'homeland' whose natural resources are key to the survival of society, but which have been seriously degraded through misuse. Despite their somewhat critical overtones, the problem with such environmental discourses was sharply exposed when confronted by indigenous demands for a comprehensive rethink on such issues as land rights, equal rights to socio-economic development and the colonial past. Such confrontation is symptomatic of what Vickers (2008) describes as the failure of recent nativist campaigns to critically reflect on the legacy of Chinese colonialism under the Qing Dynasty (1644–1912) and its oppressive effects on indigenous society.

In addition, while many community-based conservation projects are motivated by genuine intentions to empower indigenous communities, they frequently exhibit what O'Malley (1996: 317) calls the 'selective valorization' of certain forms of indigenous governance in aid of governmental goals. The co-management scheme in Magao, for example, was premised on a specific assumption about indigenous agency, namely its supposedly harmonious relation with and better knowledge of nature than outsiders. Here the point is not about the truthfulness of such a description, but rather how such representations become entangled with technologies of liberal government. In other words, such approving descriptions of indigenous culture are forms of discourse and visibilities attributable to the governmental programme that enacts them. Thus, while much is made about the potential benefits of involving indigenous communities, it is vital to also note the cost of such reasoning – for example, the questionable fixation of indigenous peoples as ecologically noble savages (Hames, 2007).

CONCLUSION

In recent decades Foucault's concept of governmentality has been a major driving force behind political ecology. In this chapter, I introduced Foucault's thinking on biopolitics and the art of government, before discussing the pivotal concept of green governmentality. This examination was inevitably selective but nonetheless essential. It was argued that Foucault's thinking is invaluable to political ecology as it provides the research field with alternative frameworks that transcend conventional narratives about power and domination. By attending to discourses and practices of government and subject-making, approaches based on governmentality introduce unique new angles to the study of human–environmental interaction.

In conclusion, I offer a few comments on possible directions for future research. First, there is a need for a continuous and closer engagement with Foucault's writings, lectures and other works, especially those on security and biopolitics that became readily accessible only recently and that contain a wealth of novel insights. For instance, work by Gabrys (2014) and Braun (2014) on urban environmentality points to exciting new applications of green governmentality to contemporary issues. Second, research in governmentality highlights how the rule of nature is conditioned by changes in scientific knowledge as well as other developments in social practice. Given both the pace of environmental change and rapid advances in science and technology, the kind of biopolitics and green governmentality humanity will face in the future is liable to develop new dimensions compared to that which holds today. Hence the critical need for ongoing Foucaultian research in this area. Such work will benefit enormously from continual dialogue with other theoretical approaches (e.g. STS) as additional analytical tools are deployed. Finally, as discussion of the Taiwan case suggests, there is a need to bring in 'other political ecologies' (Kim et al., 2012) so as to examine the emergence of governmentalities in those areas not part of the global North. Much work thus remains to be done to explore further the potentialities of green governmentality as an analytical strategy in the study of human–environmental entanglements.

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24. Whose good living? Post-neoliberalism, the green state and subverted alternatives to development in Ecuador

Elizabeth Bravo and Melissa Moreano

In the constant search for alternatives to development in an era of rampant global capitalism, Ecuador has become a kind of international lodestar held up by radical activists just about everywhere as a possible prototype for a nationally articulated anti-capitalist pathway. Based on the notion of ‘good living’ and the associated idea of the ‘rights of nature’, Ecuador is portrayed as the home of alternativeness in a way that Cuba was for some writers during the Cold War. This quest has long been led by local social movements representing people hurt by neoliberal development and its principal manifestations – natural resource extraction and rampant privatization of the public domain. Yet the election of a left-wing and anti-USA government under President Rafael Correa in 2007 (as in some other Latin American countries) ushered in a new ‘post-neoliberal’ era in which the state was both resurgent and itself highly critical of decades of neoliberalism in the region on social and environmental grounds. A golden partnership of radical civil society and radical state seemed in the offing.

This chapter examines how and why this golden partnership, which held such national and international promise, has failed to take root in Ecuador. First, and drawing on arguments made in political ecology and eco-socialism, we highlight the sorts of international mainstream thinking on environment and development that have underpinned Northern-dominated international political economies affecting Ecuador and other Southern countries since the early twentieth century, as well as radical critiques of such thinking that eventually found expression in the promotion of an alternative ‘good living’ movement. Then the chapter examines the Ecuadorian case in detail, showing how ideas about society and nature there have fluctuated in light of these wider intellectual debates. We argue that a resurgent Ecuadorian state has ended up wrapping itself in a green and socially progressive image under post-neoliberalism the better to camouflage its advancement of a traditional programme of natural resource extraction presented as sustainable development – much to the disgust of radical civil society groups in the country. In the process, the question ‘whose good living?’ has come to the fore as never before.

MAINSTREAM THINKING

Thinking about the environment in Latin America, at least among elites, has been shaped by the importation of concepts from the North, where conceiving nature as separate from humans paved the way for nature conservationism (Escobar, 1995). The

idea of preserving ‘untouched’ nature is habitually linked to the establishment of the first national parks in the USA during the nineteenth century when war was waged against indigenous people who occupied these lands (Jacoby, 2001). A ‘cult’ of wilderness thereafter promoted strict conservation of ‘pristine’ landscapes to be enjoyed by political and economic elites (Martínez-Alier, 2004). While such practices may be traced back to medieval England, where royal hunting grounds coincided with local social discontent (Colchester, 2003), it was the US model that, when combined with penitence shown by erstwhile big-game hunters about the decimation of key species, was exported around the world (Neumann, 1998), and that resulted in the foundation of the first conservation NGOs such as the Sierra Club and the World Wide Fund for Nature (Bryant, 2009). With such conservation thinking ascendant, the original indigenous owners of the new parks and protected areas were usually displaced while being blamed for environmental degradation.

Such thinking was joined in the latter half of the twentieth century by another Northern conceptual export: neo-Malthusianism. This was based on the earlier ideas of Thomas Malthus that human population growth (among the poor in particular) would inevitably outstrip food supplies, resulting in widespread scarcity, violence and starvation. As propounded by US writers such as Paul Ehrlich (1968) and Garrett Hardin (2002, original in English, 1968), neo-Malthusian thinking notably connected worsening environmental degradation to ‘runaway’ population growth in the South as well as to a ‘tragedy of the commons’ caused by unlimited use of commons resources (such as forests or pastures) by profit-maximizing individuals. The proposed solution was dramatic: privatize the commons and strictly control population. Here again, the role of local people in long-term management of commons resources was ignored as a new narrative was found to oppress them by restricting their resource access. Important insights into local sustainability were thus also rejected insofar as residents may have acquired historical ecological knowledge that kept human ecological impacts in check (even as we acknowledge that indigenous people were not necessarily or always sustainable; see Ulloa, 2004). Also ignored in neo-Malthusian narratives were the historical and structural causes that regularly obliged rural populations to degrade surrounding ecosystems (Bedoya and Klein, 1996).

More recently, in an era shaped by neoliberalism, the North has popularized the concept of sustainable development, which combines the dual necessities of conservation and the reproduction of capital (Esteva, 1992). Here, the solution is to further monetize the environment in order to make conservation pay through such activities as eco-tourism, payment for ecosystem services and carbon offsetting – strategies that have lately gathered momentum (Guha and Martínez-Alier, 1997; Castree and Henderson, 2013). Once more, indigenous communities are incorporated into conservation strategies beyond their control and accordingly lose their territorial rights, sometimes bought off with the promise of employment (e.g. as park rangers). Recent moves to privatize protected areas have begun in which the displacement of local populations and the privatization of natural spaces for capital accumulation go hand in hand (Mansfield, 2009). Here, the environmental stigmatization of the poor is mirrored by the ‘greening’ of capitalism under a development model in which economic growth is precisely needed to protect the environment through poverty alleviation (WCED, 1987). In this

way conservation ‘without people’, private initiative and reliance on market mechanisms are stimulated (Dawson, 2010). And the strategic value of hitherto ‘under-exploited’ ecosystems for transnational capital is recognized as they become providers of scarce environmental services, including bio-prospecting, ecotourism, carbon sinks and water provisioning – all activities that tend to adversely impact local populations (Machado-Aráoz, 2011).

The three broad lines of thought noted above have been at the heart of North-dominated international initiatives that aim to seize lands valuable to the conservation industry from local people, converting them into parks or protected areas. Often conservation is not effective, especially when contrasted with how residents managed the area before (Monterroso, 2006) – something that political ecologists and other critics have been pointing out for years.

RADICAL CRITIQUES

Political ecologists have long criticized the mainstream argument linking population growth to environmental deterioration (see Bryant et al., ch. 17 this volume). Among Anglo-American writers, Blaikie and Brookfield (1987) highlighted the complicated relationship between fluctuating population levels and resource depletion, showing that, *pace* Boserup (1965), rising population levels might even lead to environmental improvement under certain conditions. Conversely, areas of low or declining population levels were often associated with intensive resource over-exploitation, as writers such as Bunker (1985) and Hecht and Cockburn (1989) illustrated with reference to the Brazilian Amazon. Indeed, large-scale mining in Latin America has been a favourite example of how it is usually big capital rather than poor rural people that are to blame for ecological catastrophes (Alimonda, ch. 11 this volume).

Then there is also the breakdown in longstanding social *mores* about appropriate use of commons resources, brought about by external appropriation of some or all of these resources – a ‘tragedy of enclosure’ (*Ecologist*, 1993). Such enclosure is connected to the weakening of the social fabric in a community, as some residents get drawn into destructive resource activities. The consequences are often severe, since, as McCay and Jentoft (1998) indicate, all communities have social norms and values of a non-contractual nature that rule access to natural resources in common spaces. These codes are based on custom and customary rights, on relationships of trust and loyalty, and are rooted in commitment and solidarity between community members. Crucially these codes are not designed simply to advance individual interests. But such codes are broken when external actors impose new policies or norms that do not recognize local customary rights. As Pablo Ortiz-T. (1997) argues with reference to Ecuador, this is usually done intentionally. Thus oil companies facing local opposition at production sites resort to divide-and-rule strategies that aim to erode the community’s capacity for collective resistance. Hence they embark on corporate social responsibility programmes that selectively distribute benefits to residents – from jobs and presents to funding projects and providing support for ‘amenable’ organizations – in return for their support, thereby sowing division in the community (Ortiz-T., 1997; Báez et al., 2004).

Political ecologists also draw on neo-Marxist arguments to relate the socio-ecological plight of poor rural communities (notably in the South) to the workings of global capitalism. Such an approach was partly a reaction to the aforementioned mainstream thinking, as well as to apolitical trends within the academy – for example, research in cultural ecology that spoke of human adaptation to the biophysical environment without addressing the historically unequal relationships that underpin society–nature articulations injurious to people around the world (Biersack, 2006). Instead, the aim was to locate the social and political causes of poverty *and* environmental degradation in global processes of capital accumulation involving predatory states, transnational companies and financial institutions. The field also describes the mechanisms by which territories are incorporated into capitalism and with what effect: displacement and impoverishment of local populations, destruction of ecosystems and the substitution of original production systems by market-oriented ones (Comas, 1999).

This neo-Marxist political ecology is a world away from mainstream sustainable development thought, with its faith that all environmental degradation can be rectified through the correct application of appropriate scientific techniques (Guha and Martínez-Alier, 1997; Redclift, 2005). The techno-centrism of the mainstream is ultimately based in the European Enlightenment, with its unshakeable faith in science and technology, even as this faith means that difficult questions about economic practice under capitalism need never be asked (Hajer, 1996; Peet and Watts, 1996; Adams, 2001).

In contrast, political ecologists ask precisely these questions while putting the spotlight on what Martínez-Alier (2004) calls distributive ecological conflicts, in which local communities defend natural resource access while fighting uneven development costs and benefits: struggle that involves ‘the ecologism of the poor’. As research on such struggles in Latin America shows, this ecologism relates more to the defence of local means of subsistence than to an abstract form of conservation management of ecosystems decreed to be ‘natural’.

It is in this intellectual context that attention has been given in recent years to the rise of an ‘alternative paradigm’ to development. Here can be found the notion of ‘good living’ based on new forms of organization related to radical environmental and cultural perspectives that have flourished in Ecuador and Bolivia. As writers note, the stress is on harmonious relationships between humans and nature that are seen to be the antithesis of development based on large-scale resource extraction (Acosta and Martínez, 2009; Chancosa, 2010; Huanacuni Mamani, 2010). At the heart of this movement is a radically different vision of nature from that propounded under European Enlightenment and capitalist reasoning – called ‘the rights of nature’ in Ecuador or ‘the rights of Mother Earth’ in Bolivia (Gudynas, 2009). Yet, as the following analysis focused on Ecuador argues, this distinctive cosmivision contains its own tensions and contradictions, especially as it collides with old-style political economies based on international resource extraction as well as nature conservationism.

NATURE CONSERVATION IN ECUADOR

The idea of nature conservation is a relatively recent import to Ecuador, based on Northern conceptions discussed above. The initial focus was on the country's iconic biodiversity located offshore on the fabled Galapagos Islands, where the first national park was created in 1959. The ethos there was one of conservation without people in order to protect unique but vulnerable wildlife starting with the world-renowned Galapagos tortoises.

In theory the park was the responsibility of the Ecuadorian state, but in practice it was under the control of the Charles Darwin Foundation for the Galapagos Islands, an organization based in Belgium. The conservation strategy of this organization was firmly neo-Malthusian. Thus the local population, composed mainly of migrants from the mainland, was stigmatized as being responsible for worsening environmental degradation on the islands. Above all, they were seen to be an affront to the idea popularized by the Foundation that the Galapagos Islands were a natural paradise. The latter imaginary was used to promote in turn an elite tourism industry that was of little or no benefit to the local population. Conflict ensued (Celata and Sanna, 2010).

This early conservation experience did not stop the subsequent expansion of conservation areas in Ecuador. To the contrary, and in step with wider international trends, conservation initiatives took a big stride forward after the Rio Earth Summit (and its Convention on Biological Diversity) when a dedicated bureaucracy was established – first in 1992 as the Ecuadorian Institution of Forestry and Natural Areas and Wildlife (INEFAN) and after 1997 as the Ministry of Environment. The spread of environmental agencies and institutions continued thereafter, reaching right down to the local government level. These new environmental organs of the state worked closely with international conservation organizations and their local NGO partners to create a national network of protected areas subject to detailed management. Territorial acquisition was rapid: by 2007, there were 49 areas that belonged to the Natural Heritage Areas of the State (PANE) covering 19 per cent of the national territory (Ministry of Environment, 2007). And PANE territorialization was not the end of it – national plans exist for a supplementary network of biological corridors, eco-regions and buffer zones designed no less to re-map Ecuador in a conservation idiom. While this network would include private, state and communal reserves (the last established by indigenous people or rural communities), control would clearly rest with an internationally connected scientific establishment.

In neoliberal times, this ambitious conservation agenda was largely directed by NGOs that had both the scientific expertise and international funding to push it through (Ramírez, 2010). Thus the Ministry of Environment relied on international NGOs such as Conservation International, the Nature Conservancy and the IUCN (International Union for Conservation of Nature), as well as domestic NGOs led by the likes of the Natura Foundation to assist in the design and execution of conservation programmes, the declaration of protected areas and the environmental education of local people. Key here was an NGO ability to generate and control large amounts of environmental information (Muñoz and Hidalgo, 2011).

But the fact that NGOs spearheaded this initiative did not prevent it from fast becoming the focus of widespread resistance by residents of the new conservation

areas, often working in conjunction with radical NGOs and writers. For, unlike in the Galapagos Islands where the entire population is a migrant one, most natural areas in continental Ecuador are located in long-settled indigenous territories or coastal areas long subject to small-scale fishing (in the case of marine reserves). Although residents are not usually displaced from their territory, many access restrictions are nonetheless put in place in the name of conservation such that, in practice, local territorial rights are subverted. The situation is especially complex in the Amazon, where many conservation zones overlap with officially recognized indigenous territories – as well as a growing network of petroleum concessions (Fontaine, 2007; Ortiz-T., 2011). An emblematic case is that of Yasuni National Park, which contains a half-dozen petroleum blocks while being home to the Waorani people, some of whom live in voluntary isolation from the outside world. Conflict has been the inevitable result here (Varea and Barrera, 1997). Yet this case is not unique – as much as 30 per cent of the total area belonging to PANE is subject to bitter conflicts over land tenure (Ministry of Environment, 2007).

The election of the left-wing President Rafael Correa in 2007 augured dramatic change in Ecuadorian conservationism as the country now entered a ‘post-neoliberal’ phase (Escobar, 2011; Radcliffe, 2012). A new era of state-building began, apparently shaped by radical social and ecological demands – meaning in the environmental sector that state agencies have asserted ever more control over conservation matters at the expense of NGOs. Indeed the latter have fallen out of favour. Thus Natura Foundation, the oldest, largest and most influential national organization, closed in 2012 after becoming insolvent due to an unpaid government fine; Conservation International was accused of labour mistreatment and, along with the Nature Conservancy, had to lower its profile in the country due to a fierce confrontation between President Correa and the United States Agency for International Development in 2012; and smaller local NGOs were starved of funds after the onset of the international financial crisis in 2008, when Northern donations underpinning their activities all but dried up. Stricter administrative controls on the NGO sector further curtailed their room for manoeuvre.

In contrast, state environmental governance blossomed under Correa. New job opportunities there attracted professionals who used to work for NGOs – simultaneously strengthening the state’s scientific capacity and weakening that of conservation NGOs. Yet, in the process, the Ecuadorian state has also absorbed many of the strategies that those professionals developed while in the NGO sector as its own. Hence, in the post-neoliberal state model, biodiversity continues to play a fundamental role as a provider of environmental services and genetic material for biotechnology, even as natural ecosystems underpin elite eco-tourism (National Secretariat of Planning and Development, 2013). In short, the greening of the state has tended to reflect mainstream thinking that is a confection of ideas about sustainable development, techno-centrism and neo-Malthusianism.

HOW GREEN A STATE?

The Ecuadorian state under Correa has certainly sought to build an international profile as a ‘green state’. A flurry of eye-catching initiatives has contributed to such

image-making. Most dramatically, the Ecuadorian Constitution was overhauled in 2008, giving it a much greater emphasis than before on such things as indigenous rights, gender equity and environmental well-being. On the last, the Constitution thus asserts the right of humans to live in a safe environment; declares it to be in the public interest to conserve ecosystems and biodiversity; affirms that water is a basic human right subject to public use and hence not to be privatized; and promotes in both public and private sectors the use of clean technologies and non-polluting, low-impact energy sources (Republic of Ecuador, 2008). Above all, it enshrined the concepts of ‘good living’ and the ‘rights of nature’ at the heart of the Ecuadorian polity. The former was defined as ‘a new form of peaceful coexistence in diversity and harmony with nature’, whereas the latter was described as ‘Nature of *Pacha Mama*, where life reproduces and occurs, is entitled to its integral existence and to the maintenance and regeneration of its vital cycles, structure, functions and evolutionary processes ... Nature has also the right to restoration’ (Republic of Ecuador, 2008). Taken together, these pivotal concepts suggested a new political, economic and cultural direction in which the state interacted with both nature and indigenous peoples.

Other moves appeared equally audacious. Thus the Correa government launched the Yasuni–ITT initiative in 2007, promising to ‘keep the oil in the soil’ in the Yasuni portion of the Amazon, marked by high rates of biodiversity as well as being home to the Waorani people. In return, Ecuador asked for monetary compensation from the international community equivalent to half of the earnings that the country would have received if the area in question had been developed for oil exploitation. In the end, the initiative was cancelled in 2013 due to a failure to collect the requested international compensation. On climate change, President Correa meanwhile had proposed the so-called Daly–Correa tax, which would be applied to each barrel of petroleum sold by member states of the Organization of Petroleum Exporting Countries, and would be paid for by importing countries to thereby discourage their consumption (Correa and Falconí, 2012). But this proposal fell foul of the international economic recession that hit the North hard after 2008. Then, Ecuador has been a vocal supporter of the United Nations Programme on Reducing Emissions from Deforestation and Forest Degradation (REDD+) with its own programme linked to the Socio Bosque initiative (see below; de Koning et al., 2011).

Whatever the vicissitudes of individual initiatives, the overall impression is one of a state keen to green itself through major domestic reforms and international leadership. Not surprisingly, then, Ecuador often appears to be at the environment vanguard (Gudynas, 2009). Ecuador is not alone, of course, in cloaking itself in green garb – countries such as the Philippines and Costa Rica have also done so. And yet it has been the conjuncture of these initiatives with the electoral tenure of a left-wing president publicly committed to social and ecological justice that has so excited radical groups and writers around the world since 2007.

And yet, as with other ‘green’ countries, Ecuador’s record in practice has been less than exemplary. Indeed, ‘green’ (as well as ‘red’) promises have collided with the realities of national development plans still predicated on extracting non-renewable resources, especially petroleum. Thus petroleum extraction occurs in 18 per cent of the total protected area – something strictly prohibited by law – while at least four protected areas feature nearby concessions for open-pit mining in their buffer zones,

once again against the letter of the law (Ministry of Environment, 2007). At the same time, petroleum interests meddle in the delineation of protected areas (Narváez, 2007). And the problem here not only concerns 'king' petroleum. For example, a booming shrimp industry operates with seeming impunity inside 14 marine protected areas, resulting in the loss of 25 per cent of the mangrove ecosystem (Ministry of Environment and Natura Foundation, 2010). Further, protected areas are being ravaged by illegal logging – a 2005 report by the UN Food and Agriculture Organization suggested that as much as 70 per cent of the wood traded within the country is illegal, a figure apparently far worse than in other Latin American countries (García, 2005). Not surprisingly, this problem is linked to chronic underfunding: Ecuador invests only US\$0.82 per hectare per year in the PANE, while the average in Latin America is US\$1.95 (Ministry of Environment, 2007; SBP, 2013). Thus the country's much-admired system of protected areas is not fit for purpose, reflecting the comparative weakness of the Ministry of Environment in relation to the Ministry of Non-Renewable Natural Resources. The official response is to try to reduce rates of deforestation, notably via a 'new model' of forest governance both inside and outside protected areas (National Secretariat of Planning and Development, 2013). Crucial here is the creation of a system of financial incentives for conservation designed to win over local people, with the Socio Bosque Programme (SBP) being the best example of this new generation of initiatives.

SOCIO BOSQUE PROGRAMME

The Programa Socio Bosque (or 'Forest Partner Programme') dates back to 2008 and is under the direction of the Ministry of Environment with the main aim of tackling national deforestation. The SBP is ambitious in that it seeks to conserve 3.6 million hectares of old-growth forests as well as 800 000 hectares of bio-diverse *páramo* (alpine tundra ecosystem). More than that, though; it is also designed to alleviate poverty. Given that a third of the targeted ecosystems are within indigenous territories where extreme poverty is pervasive, these residents are the main social focus of the programme (SBP, 2013).

Meanwhile, the SBP is all about deepening the hold of the market over hitherto peripheral areas and peoples. It does so because it is a programme based on payment for conservation: owners of forests or *páramo* receive semi-annual payments from the government in recognition of their work towards conserving ecosystems. The amount paid is determined based on the size of the area and the state of conservation in it – all of which is determined by SBP field technicians. Participation is voluntary by individuals or communities.

Yet the SBP is not easy money for local people. Participants must sign a 20-year contract in which they agree to preserve the ecosystem intact during that time – with the contract subject to an automatic renewal clause underscoring how policy-makers see this as a long-term mechanism. Crucially, local partners must prevent third parties – for example, illegal loggers and poachers – from degrading the ecosystem. They become, in effect, a de facto police force. And the penalty for non-compliance is harsh: where the ecosystem is found to be degraded, with wood and/or animals extracted for

commercial ends, the SBP will terminate the contract – and may require local partners to return monies received from the programme. In general, participation in this scheme enmeshes local partners in a whole new set of bureaucratic procedures, including the provision of detailed investment plans as well as management plans (Ministry of Environment, 2011).

Still, the prospect of obtaining some legal recognition and control over local resources, as well as sorely needed income, has tempted many indigenous groups to sign up. By January 2013, 11 of the 13 indigenous nationalities of Ecuador had enrolled in the SBP, bringing under contract over 1 million hectares. This uptake is clearly linked to wider considerations. Thus 80 per cent of the total area in question is located in six Amazonian provinces, and mainly those located in the south – indeed, 57 per cent of the forested area within the SBP is concentrated in the three southern provinces (SBP, 2013).

Above all, this uptake reflects looming ‘development’ threats that raise the prospect of large-scale mining and petroleum extraction in the south in a manner similar to practices that have severely despoiled the northern Amazon provinces. The battle lines are already being drawn here. On the one hand, indigenous residents point to the 2008 Constitution, which explicitly guarantees their way of life while burnishing their ecological credentials notably via the SBP. On the other hand, the same Constitution affirms that the state has exclusive ownership of subsurface resource rights throughout the country and need only ‘consult’ indigenous groups about their exploitation (Republic of Ecuador, 2008: Art. 57). In this scenario, conflict is all but guaranteed as the practices of the ‘green state’ are once again found wanting.

In any case, the protective potential of the SBP is highly questionable. Thus, and despite impressive statistics about protection on paper, it seems unable to stop future extractive activities in SBP areas. Then there is uncertainty over the future funding of the programme. Since it is only a project of the Ministry of Environment rather than a policy (the latter enjoying a fixed and regular budget), once the goal of 3.6 million hectares to be designated is reached, only 45 per cent of operating costs thereafter will be covered by the state budget, the rest having to be sought from the market via such things as carbon trading and REDD+ (Seiwald, 2011; Podvin, 2013). This will depend in turn on international agreements beyond the country’s control. Indeed, future Ecuadorian conservation will become intertwined in the fate of these international mechanisms – with a growing number of critics sceptical that they will ever be able to achieve nature conservation goals (Prudham, 2009; Lohmann, 2010; Melick, 2010; Corbera, 2012).

CONCLUSION

This chapter has offered a critical analysis of recent socio-natural developments in one of the world’s most fêted countries – fêted at least in some radical circles as an example of how alternative economic thinking can take root. But how far is such alternativeness occurring in practice in Ecuador? We argued that even under the left-wing Correa government, the greening of the state has been more apparent than real. Indeed, this period has been associated with the deepening of a capitalist model of

development based on the accelerated extraction of non-renewable petroleum and mineral supplies (Ospina, 2006; Ruiz and Iturralde, 2013), but also encompassing such agricultural exports as palm, cut flowers, cacao and sugar cane (Bravo, 2006).

Central to this paradoxical process has been elite appropriation of the flagship concept of ‘good living’ that has so attracted activists both within and without Ecuador (Ramírez, 2010). Under a resurgent state, it has in effect fallen to the (relatively less powerful) Ministry of Environment to manage how this concept is understood in practice in a quest to reconcile diverse stakeholders across the land, as well as to retain international support (and funding). To do this, it has equated ‘good living’ with ‘sustainable development’ – thereby depriving the former of all of its force as a critique against pro-capitalist development. The result is that good living becomes a state-led mantra that describes a form of post-neoliberal resource development almost imperceptibly leavened by ecological sustainability concerns (Mansilla, 2011; Radcliffe, 2012). In the end, it is about the promotion of a good living for some people but not others under ongoing capitalism – that is to say, old wine in a new bottle (Acosta and Martínez, 2009).

Disillusioned radical groups are thus now involved in a battle for control over the meaning of ‘good living’ in Ecuador. Duped by a left-wing ‘green’ state seemingly wedded to an intensified resource extraction model, these groups are once more fighting the notion that it is poor people who are to blame for environmental degradation (Esteva, 1992; Escobar, 1995) – something notably embedded in the SBP and its demonization of local partners held responsible for environmental degradation in their area.

In short, this chapter has cautioned about being seduced by the green rhetoric of states ultimately still dependent on old-style destructive development paths. The post-neoliberal Ecuadorian state is thus scarcely an example of the kind of eco-state that some scholars advocate (Meadowcroft, 2005). Instead, this case serves to underscore just how vital it is that struggles based on ‘the ecologism of the poor’ (Martínez-Alier, 2004) persist and receive support from like-minded people around the world. Only in this way will a paradigm of good living based on ‘territories of difference’ (Escobar, 2008) ever be attainable.

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25. Assessing South Korea's Green Growth Strategy

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The remarkable rise of South Korea as a developmental state since 1970 has attracted considerable academic attention (Amsden, 1989; Wade, 1990). However in political-ecology terms, the success story of the so-called developmental state can be seen to have exacted a heavy environmental toll (Peet and Watts, 1996). Indeed, such states – Japan, South Korea and Taiwan – have all experienced heavy environmental degradation. In South Korea, economic growth and environmental conservation have long been considered to be irreconcilable. But following the advent of democratic governments under presidents Kim Dae-Jung and Noh Moo-Hyun, precisely such a task of reconciliation was envisioned, notably through establishment of the Presidential Commission of Sustainable Development (PCSD) in 2000 (and goaded on by the country's growing environmental movement). The PCSD soon got down to business addressing diverse high-profile issues including large-scale wetland reclamation, the location of radioactive waste disposal sites, the pathway of bullet-train construction and the expansion of nuclear power plants. Yet controversy surrounds whether these issues were ever successfully resolved, thereby calling into question the green credentials of the PCSD and the government that created it (Lee, 2005).

The 'greening' of South Korea has nonetheless continued. Thus, on 15 August 2008, South Korean President Lee Myung-bak announced a major new policy initiative and national vision – the 'Low Carbon and Green Growth Strategy' (hereafter, Green Growth Strategy) – as the country's main response to climate change over the forthcoming 60-year period. This initiative replaced the concept of sustainable development pursued by previous governments with the aim of turning a vicious circle of energy–economy–climate–ecosystem into a virtuous one by cultivating 'climate-friendly' industries as a new growth engine, investing 10 billion won (around US\$10 million) per year by 2012 in the process. Furthermore, the linked 'Green New Deal' initiative, involving extensive public investment in environmental industries (notably new and renewable energy), simultaneously tackled the national economic recession and high unemployment rate. As part of this ambitious multifaceted initiative, the 'Four Major Rivers Restoration project' was alone slated to spend 22 trillion won (around US\$22 billion) over three years – even as this project provoked a storm of controversy over both its planned economic benefits and possible ecological costs. Similar skepticism was expressed about the plan to increase the number of nuclear power plants in operation, once again under the rubric of the Green New Deal. And yet this package of official measures was portrayed as South Korea's belated response to climate change, and to international criticism of it for past inaction given that the country's GHG (greenhouse gas) emissions had almost doubled between 1990 and 2005 (Kamal-Chaoui et al., 2011).

South Korea's strategy forms part of a larger international trend in which states promote a 'green agenda' based on the principles of ecological modernization – in essence, promoting new forms of economic growth (and hoped-for social prosperity) that are supposedly compatible with environmental sustainability. Yet scholars working in both political ecology and ecological economics have criticized this agenda and the associated notion of the 'green state' – partly by debunking the flawed assumptions underscoring ecological modernization theory (Healy et al., ch. 41 this volume), and partly by showing how this agenda masks a business-as-usual approach (Bravo and Moreano, ch. 24 this volume). Such critical scholarship builds on prior work in political ecology that explored the historical contradictions of state environmental claims (e.g. Peluso, 1992; Bryant and Bailey, 1997). The present chapter contributes to this literature by assessing the South Korean experience – a country whose green record has been little explored in political ecology (at least in English), and yet one whose distinctive economic status (once 'developing', now 'developed') invites wider attention.

In this chapter, I thus critically examine the Green Growth Strategy (and linked Green New Deal) – exploring its discursive as well as material tensions and ambiguities as a major national initiative of an economically advanced country that purports to take seriously such epoch-defining issues as climate change and peak oil. I first draw together theoretical insights from work on environmental fixes, decoupling growth and neo-developmentalism as part of a consideration of the purported greening of the state, before turning to the analysis of South Korea's Green Growth Strategy. In that analysis, I suggest that the Strategy indeed displays all the hallmarks of ecological modernization, even as it raises troubling political, economic and ecological issues that will shape the country's future.

THEORIZING THE 'GREEN STATE'

A green growth strategy such as that promoted in South Korea reflects a specific set of factors that have shaped its design and introduction as well as associated political and ecological challenges and implications. In theoretical terms, the political ecology of the green state notably involves: (a) consideration of how this discursive and material political 'transformation' is embedded in larger struggles by capitalism to overcome accumulation crises through nature; (b) assessment of how far a decoupling growth ethos will address chronic fossil energy dependency; and (c) inquiry into the neo-developmentalism of contemporary state practice.

Environmental Fix

The 'greening' of the state under ecological modernization comes at a historic juncture in the history of capitalism. As Marxist scholars in particular note, ecological crises and accumulation (economic) crises are now thoroughly interrelated. Perhaps best known here is Neil Smith's (2007) analysis of nature itself as an accumulation strategy under capitalism, and specifically the way in which the subsumption (or incorporation) of nature by capital is shifting from a formal to a real status. In the former, subsumption

enables capital accumulation by a 'continual expansion in the conversion of extracted materials into objects of production', whereas in the latter capital directly reforms nature in order to intensify nature's productivity (Smith, 2007: 32–3). Under real subsumption, then, nature itself functions as a force of production (Choi, 2009).

To appreciate this dynamic in greater detail, it is useful to draw on the argument of Noel Castree (2008) about 'environmental fix' – that is, the strategies of capital that are designed to expand or reorganize the subsumption of nature in order to overcome accumulation crises. There are four such fixes. The first fix directly relates to neoliberalism, and hence emphasizes conservation of resources and ecological systems via a privatization strategy. This is all about market environmentalism whereby economic growth and environmental conservation are linked via corporate actions that are unimpeded by state regulation. Such a capitalization of nature accords monetary value to nature, redefining it in the process as an exchangeable object (O'Connor, 1994; Escobar, 1996; Hong, 2008). Newly emerging forms of 'fictitious' capital, such as that involved in carbon markets, can also result from this environmental fix.

The second fix relates most clearly to what David Harvey (2003) has termed 'accumulation by dispossession' – that process by which accumulation practices occur directly at the expense of others (Castree, 2008). By accumulation, Harvey here follows what Marx called 'primitive' or 'original' accumulation during early capitalism. Examples of this have long populated political-ecology analyses (Bryant and Bailey, 1997; Robbins, 2012) and include such things as: the commodification and privatization of land; the expulsion of peasant populations; conversion of various forms of property rights into exclusive private property rights; suppression of rights to the commons; colonial, neocolonial and imperial processes of appropriation of assets (including natural resources); monetization of exchange and taxation, particularly of land; the slave trade and usury; the national debt; and the use of the credit system as a radical means of 'accumulation by dispossession' (Harvey, 2005: 159). Privatization of mining industries, opening the doors to foreign capital in general, or even agricultural trade liberalization enacted under a World Trade Organization regime can all be categorized under this second fix.

The third environmental fix aims at sustaining the formal and/or real subsumption of nature despite the often vociferous public opposition these dynamics engender. Here, a depoliticization process occurs as a genuine politics linked to such things as popular national-based protectionism or alternative economic practices (e.g. de-growth) is not seriously entertained by political and economic elites, who instead assert consensus-style management of the environment in aid of the worldwide pursuit of profit (Swyngedouw, ch. 10 this volume). By entrenching free-trade regulations and profit-seeking activities as the basis of much social conduct, neoliberal strategies here enable firms to exempt themselves from responsibility for a myriad of environmental degradations (e.g. groundwater contamination, soil erosion) while safeguarding their privileged access to nature (Castree, 2008).

The fourth fix works by shifting around the state's responsibilities for environmental protection, thereby transforming one of the key traditional roles of the state as a 'guardian' of the environment (Bryant and Bailey, 1997). Under this fix, it is still incumbent upon the state to conserve essential natural resources, albeit not out of any general quest to serve the 'public good', but rather in order to sustain the capitalist

economy. However, and faced with this immense financial burden, the state delegates responsibility to the private sector or to civil society at large. For the former, new profitable activities are thereby created via environmental consultancies and/or outright privatization (e.g. waste or water management) (Castree, 2008).

Thinking in terms of how states become implicated in the elaboration of environmental fixes yields important insights for analyzing accumulation logic underpinning the Green Growth Strategy. Yet these insights need to be complemented with theorizing emerging from ecological economics that assesses how capitalism and associated state practices seek to deal with the possible physical limits of nature itself.

Decoupling Growth

Everything about the modern development of South Korea – from its status as one of the original newly industrializing countries (NICs) in the 1970s to its current record as an advanced twenty-first-century economy – bespeaks a political economy predicated on ignoring all talk of environmentally related limits to growth. Yet such ecological bravado has been in turn firmly based on a complete reliance on imported fossil fuels. In general, having a global energy system premised on intensive fossil fuel use shapes capitalist relations to nature in at least three ways. First, fossil energy enables the transformation of pre-capitalist spatial practices and patterns into capitalist ones, particularly with regard to the location of production. Second, it allows for the organization of production processes in any given location regardless of biological and natural rhythms. Third, fossil energy can be flexibly used in production, consumption and transportation. In the process, socio-economic life is individualized, even as accumulation and indicators such as economic growth (or the ‘wealth of nations’) seemingly become more independent of natural conditions and their possible limitations (Altvater, 2007: 41–2).

Yet the notion of unlimited growth driven by fossil energy is not feasible – there is, after all, a limited supply of such energy linked to the very long time periods needed to produce fossil fuels in the first place (Altvater, 2007). Debates about the politics, economics and ecologies of peak oil amply demonstrate this point (Bridge and LeBillon, 2013). At the same time, energy production and use are shaped by natural laws, notably the Second Law of Thermodynamics – that is, as energy (such as oil) is put to work, the amount of useful energy inexorably declines (notably via heat loss), an irreversible process referred to as increasing entropy. Due to its complex and long-distance production, transport and consumption arrangements, the use of fossil fuels is particularly prone to this process. These sorts of natural limits thus collide with the logic of capital accumulation, which emphatically rejects such limitation in favor of the allure of endless economic growth. But fossil fuel capitalism has not only severely disrupted global ecologies while aggravating social inequality; it has provided few, if any, long-term benefits:

In the face of the fabulous promises of economic growth, at the beginning of the 21st century we are confronted by an awful fact. Despite high and sustained levels of economic growth in the West over a period of 50 years – growth that has seen average real incomes increase several times over – the mass of people are no more satisfied with their lives now than they were then. If growth is intended to give us better lives, and there can be no other purpose, it

has failed ... The more we examine the role of growth in modern society, the more our obsession with growth appears to be a fetish – that is, an inanimate object worshipped for its apparent magical powers. (Clive Hamilton, cited in Speth, 2008: 141)

And yet the response to this multifaceted crisis has not been a fundamental re-think of either fossil fuel use or capitalism. Instead, there is talk of decoupling growth from environmental degradation – that is, to make capitalism ‘smarter’ or more ‘efficient’ in its energy use and environmental impacts such that environmental degradation is no longer a by-product of economic growth. Technical discussion of decoupling here distinguishes between ‘relative’ and ‘absolute’ varieties: the former refers to efforts to restrain GDP growth to levels at which they are attuned with the realities of resource sustainability (though, it is recognized, inevitably thereby exerting *some* negative impacts on natural resources), whereas the latter refers to a strategy of a decreased impact on natural resources in absolute terms (Jackson, 2009: 67–8). Not surprisingly, state initiatives such as the Korean Green Growth Strategy refer solely to the shallow option of relative decoupling.

A similar story exists with regard to calls from ecological economists that states adopt policies and practices based on the idea of ‘throughput innovation’. Throughput refers to the total amount of energy and materials that are taken from the ecological system to be processed through the socio-economic system before being returned to the biophysical environment (Cho, 2009). The first part of this process is useful (low entropy), whereas the final part of it is not useful in that discharged throughput in the form of waste degrades the environment. As such, it becomes essential to reduce the scale of throughput and transform its characteristics into environmentally innocuous ones, something called ‘throughput innovation’ (Cho, 2009: 12–13). While policies sometimes reflect aspects of throughput innovation (via talk of dematerialization and detoxification), in reality the few improvements made in this direction have been invariably offset by an overall increase in economic activity (Jackson, 2009: 71).

However, talk of decoupling and/or throughput innovation does occur in narratives surrounding South Korea’s Green New Deal. As Cho (2009: 16) suggests, for example, that Deal aims to ‘harmonize growth, employment (distribution) and environmental conservation, using throughput innovation, resulting in the creation of relevant markets, industries and employment, thereby decreasing environmental burdens’. This is the promise of a multifaceted growth strategy – that is, growth in good jobs, availability and efficiency of health services, education and training, security (against risk of illness, job displacement, old age and disability), investment in public infrastructure (e.g. transport, water, waste management), deployment of green technologies, and so on (Speth, 2008: 148).

Thus the Green Growth Strategy apparently reflects new thinking about the environmental impacts of the country’s development path, even sometimes invoking selected ideas and concepts put forward by ecological economists (while studiously omitting others – for example ‘de-growth’) in the hope of decoupling growth from environmental ills. Yet such thinking needs to be related to other impulses shaping state discourse, in particular those relating to persistent developmental thinking.

Neo-developmentalism

Despite all the green talk of late, the South Korean state remains firmly committed to a core policy of ‘developmentalism’ that has been the defining feature of the country’s economic strategy for most of the post-Second World War era. As Myung-Rae Cho (2003: 34) explains, developmentalism is a foundational political approach: ‘an expression that ideologizes exploitation and the utilization of the natural environment and, by so doing, fosters activities for technological, economic and industrial development and associated values’. It has shaped overall national policy as much as it has conditioned the individual behavior of citizens, and has been a hegemonic discourse for at least 40 years. From the 1990s, it was combined with neoliberal thinking that posited that improvement of human welfare can best be achieved by allowing maximum individual freedom in the market. The result has been an ever deeper commodification of national space and environments – a tendency labeled ‘neo-developmentalism’ (Cho, 2003: 36).

Scholars highlight how this latest trend coincides with a growing emphasis by the state on large-scale infrastructural development projects. Indeed, such is this emphasis today that some writers call it a ‘construction-oriented State’ (Hong, 2005), while others describe it as a ‘neo-developmental state’ that pursues construction-oriented development while paying lip-service to environmental conservation (Cho, 2003, 2006; Byeon, 2005). A coalition of powerful stakeholders defines this approach, including politicians, state officials (notably senior bureaucrats in key departments, agencies and research institutes), business leaders (particularly those associated with construction and land development firms), media commentators and even some academics (Park, 2011).

Drawing on work by Bob Jessop and Neil Brenner, Bae-Gyoon Park (2011) suggests that the neo-developmental construction state and its projects are best understood through notions of a ‘state spatial strategy’ and a ‘state spatial project’. The former represents the mobilization of state institutions to regulate the geographical patterns of capital accumulation and political competition. The latter, in contrast, represents the ways that the state secures territorial integration: internationally by stipulating a state-regulated space as a closed territory and internally by differentiating state activities according to different levels of territorial administration while coordinating policies across diverse regions and scales. The outcome is ‘spatial selectivity’, whereby specific regions and spaces are favored over others (Park, 2011: 195–6). There is a dialectical interplay here of inherited institutional patterns and ongoing political struggles related to them that induce further change (Brenner, 2003).

Spatial selectivity thus operates through a fiercely contested territorial politics. The role of capital is crucial here. Thus it simultaneously has a tendency to chase new locations for production (to protect or enhance profitability), even as it seeks to consolidate monopolistic control over previously obtained location-based advantages (as well as superior technologies) by creating ‘structured coherence’ within a specific region or city via production activities, technological deployments, social relations, consumption patterns and labor processes (Park, 2011: 199). In the face of such territorial politics, it is exceedingly difficult to stop specific developmental projects due to locally powerful class coalitions based around certain factions of capital (e.g.

construction, land development, media), with close ties to senior local officials (Park, 2011), and who are all socially connected (notably via educational pathways), and mutually dependent through clientelist relations (Park, 2002).

The Asian financial crisis that began in July 1997 hit South Korea particularly hard and only served to reinforce neo-developmentalism in the country. At the behest of the International Monetary Fund (IMF), neoliberal thinking deepened its hold on state policies and practices, notably manifested in the spread of public–private partnerships in the plethora of construction projects that were initiated as part of the effort to promote ‘appropriate’ economic growth (Park, 2011).

In sum, theoretical explanations linked to environmental fixes, decoupling growth and neo-developmentalism provide a means to better understand the material and discursive dimensions of the Green Growth Strategy, a topic to which we next turn.

LOCATING A GREEN GROWTH STRATEGY IN SOUTH KOREAN DEVELOPMENT

A political ecology of green growth needs to critically assess the political, economic and ecological dynamics of such strategizing in specific national contexts even while it remains alert to broader trends in the shifting role of capital in relation to the appropriation of nature. As the South Korean example shows, it is also important to relate such strategizing to pre-existing practices notably concerned with development – one of the more powerful discourses of the past 60 years (Escobar, 1995).

Subsuming Climate

The Green Growth Strategy sees global environmental crisis, manifested through intensifying climate change, as an opportunity to engineer a ‘big fix’ that uses nature itself to sustain capital accumulation in the context of recurrent accumulation crises. Indeed, and as a result of global environmental initiatives (e.g. the Kyoto Protocol), ‘climate’ has been fictitiously subsumed by capital: global carbon markets that trade in diverse carbon products and services.

South Korea’s Green Growth Strategy and associated Green New Deal are part of a wider international movement linked to the promotion of ‘green economies’ by states keen to revive growth in crisis-hit economies through environmental fixes. Thus countries such as the USA, the UK and France (among others) have recently announced major multi-billion-dollar stimulus packages in this vein (Do, 2009). Under the Lee Myung-bak administration, South Korea has similarly sought to reverse a serious decline in capital accumulation (originating with the 1997 financial crisis and subsequent IMF interventions) through the Green Growth Strategy, which is partly framed in terms of the promotion of the subsumption of climate (Hahn and Kim, 2008). Indeed, the country has sought to promote itself as a leader in the Asia-Pacific region (alongside the likes of Singapore) in establishing a new policy framework based on low-carbon development, with the Strategy apparently a blueprint for the transition from a traditional energy-intensive model of development – with an initial investment over 2009–2013 of US\$83.6 billion, and a target of reducing GHG emissions by 30

percent by 2020 while increasing renewal energy to 11 percent of total energy use by 2030 (Brown, 2013). Such investment is notably manifested in the diffusion of low-carbon technologies in key sectors, including renewal energy, waste, large-scale construction and public transportation, while generally promoting greater carbon-related efficiency in industry. In this way, new forms of capital accumulation are developed using financial instruments and technological innovations aimed at tackling climate change.

Yet big fixes carry equally big risks – three of which are noted here. First, the Green Growth Strategy is liable to intensify industrial and technological dependency on foreign industry if not handled very carefully. This is because South Korea's green energy industries are still in their infancy, with weak capacity in the renewable energy sector in terms of such technologies as PV (photovoltaic), LED (light-emitting diode) and CCS (carbon capture and storage). In 2007, for example, the country managed only a production level of US\$1.8 billion (comprising 0.2 percent of GDP and 1.4 percent of global market share), exports of US\$1.1 billion and 9000 employees in the sector. Not surprisingly, then, there was a strong reliance on imports: 75 percent for PV and 99.6 percent for wind energy (Kim, 2008). By 2012, the renewable energy sector was still very small – amounting to production of US\$5.4 billion (0.4 percent of GDP), exports of US\$2.5 billion and 11 836 employees in this sector. Moreover, the rate of growth here in terms of the level of production (minus 31 percent), exports (minus 47 percent) and employment (minus 19 percent) had by then tailed off sharply (Korea Energy Management Corporation, 2014).

Thus, while some writers wax eloquent about the win-win nature of this strategy – the so-called 'double-dividend hypothesis' whereby green growth policy enables investment concentration in new sectors leading to development of new technologies and industries, eventually filtering through in terms of green economic growth and employment – it is nonetheless much more difficult to achieve for technological laggards in a highly competitive global economy. Moreover, and to overcome such a technological gap, there is a need for massive state investment in R&D, targeted technological development and associated skills training, inducements for skilled workers to move into these new sectors, and a more general business environment designed to encourage private capital in emergent green industries (Kim, 2008). However, the level of investment here has been disappointing – thus the amount invested in 2012 (US\$1.3 billion) was even less than that made in 2008 (US\$1.9 billion) (Korea Energy Management Corporation, 2014).

Second, the Green Growth Strategy is liable to generate mainly low-quality jobs when compared with the higher-quality manufacturing jobs that underpinned South Korean development in the past. Thus jobs on offer under the Green New Deal are mostly in sectors employing unskilled labor and requiring low levels of education. Indeed, research notes a national decline in the relative educational attainment of workers, failing to catch up with the productivity of other advanced countries in non-manufacturing sectors. As a consequence, unskilled job creation in the Green New Deal cannot support knowledge-based economic growth in the future (Hahn and Kim, 2008). This problem was recently acknowledged by the South Korean government itself inasmuch as it has sought to encourage the development of a private educational sector

that will conduct advanced technological training for green industries (Korea EXIM Bank, 2013: 81–2).

Finally, the Green Growth Strategy risks foundering on skepticism in the business sector about the benefits of the new green economy as compared with other options. On the one hand, some businesses express a conservative attitude – happy to stick with tried-and-tested (if environmentally polluting) arrangements in industry. On the other hand, even some of those private enterprises that are key players in the sector expressed hostility to the presentation of the Strategy – notably, the proposed cap-and-trade system. While such opposition may be overcome with time as new research and social negotiations bring the reluctant around, it nonetheless underlines how this sort of ambitious national economic transformation requires time to build multi-stakeholder consensus – something not allowed for in the hasty deployment of diverse policies under the Strategy.

A Construction-oriented State

Part of that hastiness may relate to the ways in which narratives about green growth become intertwined with conventional development preoccupations in public policy. This can clearly be seen in the Green Growth Strategy insofar as it has not adequately accounted for the material and ecological limits of prominent development initiatives under its banner. In particular, the Four Major Rivers Restoration Project is a compelling example. Despite the title, this Project does not restore the river ecosystems in question but handsomely benefits the politically well-connected construction corporations involved. Indeed, it is doubtful that they needed restoration at all, as the four rivers were already showing ecological improvement without such intervention (Ministry of Environment, 2007: 465–81).

The specific circumstances under which this Project was elaborated under the Green Growth Strategy suggest that it is an output of a construction-oriented neo-developmental state rather than a well-thought-through element in advancing a green economy. Thus proper legal procedures were not followed in the rush to introduce it, prompting even a pro-development and conservative judge to condemn it as unlawful. Basic feasibility studies were not conducted. Yet, as several water-resources experts remarked, certain components of the Project (such as large weir construction projects) would actually cause serious environmental problems like water quality degradation, increasing flood damage and a rising groundwater table (which would in turn prove disastrous for farmers). In addition, such components appeared to be clearly in breach of the relevant legislation (for example, Article 1 of the Rivers Act, which declares that the purpose of the Act is to contribute to the ‘nature-friendly maintenance and preservation of rivers’), including the need for due deliberation and prior environmental impact assessment (with central government claims to have met EIA requirements in modifying overall river administrative plans being met with deep suspicion; see Lee, 2009). Such hasty action was also reflected in parliamentary deliberations that only further underlined the slapdash nature of the government’s planning of the project (as documented in the media; for example see *Kukminilbo*, 2009; *Hankyoreh*, 2009). In short, the Four Major Rivers Restoration Project generated substantial opposition,

notably expressed in an environmental idiom – an ironic outcome given that this Project was articulated by government to be a major part of the Green Growth Strategy.

Despite such opposition, the specific territorialized politics of this construction-oriented state continued to propel the Project forward. A powerful regional class coalition keen to profit from either the large-scale construction activities involved in river ‘restoration’ or post-redevelopment river basin business opportunities prevailed. As it was the best option for regional capital accumulation and economic growth then available, it is little surprise that there was no room for genuine ecological concerns in framing and executing the Project. But, and as many writers had predicted, the end result since the Project was completed in 2012 has been ecological trouble, including water pollution (from algae blooms), an increase in water turbidity and a decrease in the number of migrating birds using the river (Cheon et al., 2013: 93–174).

A throughput Status Quo

The above reflects an even bigger issue with the Green Growth Strategy – it does not meaningfully address the big picture of how climate change is a kind of flare signaling that fossil fuel capitalism is fated to collapse if it continues down the current path. Despite the warnings of ecological economists and others that a fundamental economic re-think is required, the Strategy opts for shallow greening (at best) in the form of a relative decoupling preferring to retain an absolute allegiance to the dream of infinite growth. Worse, and as the case of the Four Major Rivers Restoration Project shows, the construction-oriented state is often politically unwilling or unable to decouple at all – a throughput status quo is the all-but-inevitable result.

Indeed, the linked Green New Deal is even based on a false understanding of the original US New Deal of the 1930s that it uses as a sort of template. The latter was in fact not so much a massive program of construction, but rather a general socio-economic reform effort. As Paul Krugman (2007) stresses, the US New Deal attempted to form a middle-class society by balancing the market economy and stabilizing macroeconomic indicators. To do so, it introduced regulations designed to minimize the gap between rich and poor while implementing a landmark social security system: a process Krugman dubs the ‘Great Compression’. It also included wide-ranging measures aiming to reform capitalism itself – for example currency reform, separation of commercial and investment banking, elimination of unfair competition, social security policies (e.g. unemployment relief) and labor reform (e.g. collective bargaining rights, a minimum wage, banning child labor) (You, 2009). In short, economic recovery through public works such as infrastructure development was only ever a small part of the US New Deal.

In contrast, the South Korean Green New Deal based on a green growth strategy does not seek to reform capitalism in this way. Instead, it offers a business-as-usual approach based on unending economic growth that had served the country ‘so well’ in the past, albeit now with a green coating. Yet even the South Korean development ‘miracle’, as it was long widely seen to be, has increasingly revealed a social and ecological dark side. On the one hand, there has been the growing evidence of ecological crisis associated with such development that prompted official ‘greening’ efforts in the first place. On the other hand, rapid development has been intimately connected to growing

socio-economic polarization – a ‘Great Separation’ rather than a Great Compression – that reflects the preeminence of the *chaebol* (economic conglomerations) in national economic activity and economic growth. That preeminence was underpinned by government collusion that ensured such firms could never be challenged (Park et al., 2013). Not surprisingly, only major construction companies that belong to the *chaebol* could participate in Green New Deal construction projects and charges of collusion over the bidding process have recently been raised in public.

This affirmation of the political-economic status quo is mirrored in a throughput status quo. Thus, for example, integral to the design of Green New Deal construction projects is the use of a great deal of steel and cement, materials that produce high GHG emissions: their use actually increases throughput. At the same time, ongoing reliance on a highly centralized (and polluting) system of logistics and transport that sustains the national economy and its export prospects represents another failure to significantly reduce throughput. Here, an alternative strategy based on the systematic transition to localized production and consumption systems would facilitate a move to a low-carbon future – but scarcely figures at all in government calculations. Indeed, while an occasional nod is made to dispersed energy systems (as in the Presidential Committee on Green Growth's 2009 report *Korea's Future in Green Growth*), it is at best a muted call for change – and is usually linked to a contradictory call for expanded nuclear generation in the country. This sort of official thinking is really about environmental fixing: the creation of new markets and hence opportunities for capital accumulation. In the end, therefore, the Green Growth Strategy and the Green New Deal fail to promote the throughput innovation essential in any move towards a low-carbon society. Hence they do not reflect deeply enough on the political, economic or ecological problems now confronting a South Korea still addicted to the illusion of unlimited growth.

CONCLUSION

The present chapter has examined the Green Growth Strategy and associated Green New Deal – South Korea's formally ambitious initiative to promote a green economy based on a low-carbon future. Part of a growing political-ecology critique of this latest phase of capitalism (e.g. Castree, 2008; Peet et al., 2011; Swyngedouw, ch. 10 this volume), this chapter combined theorizing on environmental fixes, decoupling growth and neo-developmentalism to argue that this greening of one of Asia's economic powerhouses is at best an example of very shallow greening, and at worst a smokescreen for a business-as-usual approach centered on a construction-oriented state. In a depoliticized environment, the subsumption of nature proceeds through an environmental fix that seemingly obviates the need for stronger measures as advocated by radical critics, such as an absolute decoupling of economic growth and environmental degradation in conjunction with a throughput innovation that privileges small-scale production and consumption practices.

And yet, intensifying climate change and other environmental crises point to the urgent need for an end to fossil fuel capitalism in favor of a green transformation. The latter would demand a *real* Green New Deal – as one writer put it:

A Green New Deal demands scrapping military Keynesianism. Only investments and transfer measures which aim to sustain life on earth are acceptable. All production of nuclear energy must be cancelled; all public investments that aggravate waste, or lead to an increase in greenhouse gases, should be avoided. When additional costs incurred via production of alternative energy are transferred from the producers towards the consumers of all electricity, this accelerates the transition away from an economy based on fossil fuels emitting a massive amount of CO₂. Privileging producers of renewable energy creates employment, especially with companies that manufacture alternative energy technology. (Custers, 2009: 10)

In effect, this is a call for what ecological economists call de-growth – a transformative agenda resonant with political-ecological implications (Healy et al., ch. 41 this volume).

In promoting that sort of agenda, political ecologists need to continuously monitor and critique ongoing permutations in the accumulation strategies of capitalism, being particularly alert to the environmental fixes that are deployed both to try to avert accumulation crises and to discursively colonize the terrain of green thought (thereby potentially weakening the environmental opposition). As this chapter illustrated, the ‘greening’ of Asia’s giants is no exception to this rule. Indeed, further research is needed into the ways that environmental fixing becomes manifest in different political, economic and cultural contexts. At the same time, how resistance to such fixing occurs, and with what socio-political variability and impacts, also needs a better understanding. Finally, how post-capitalist transformative agendas are articulated in different national and ecological contexts merits closer scrutiny as part of a wider attempt to think through the political ecology of what some call ‘Nowtopia’ (Carlsson and Manning, 2010).

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26. Nature™ Inc.: nature as neoliberal capitalist imaginary

Robert Fletcher, Wolfram Dressler and Bram Büscher

The global conservation movement is currently ‘reinventing’ itself to a degree that is not yet clearly understood. What is clear, however, is that this reinvention is aligned with broader dynamics in neoliberal capitalism (Igoe et al., 2010). This convergence is represented by mechanisms such as ecotourism, payments for ecosystem services and biodiversity derivatives, and enabled through various financial and technological instruments such as species and wetlands banking, carbon trade and conservation social media. With wildlife populations and biodiversity riches threatened the world over, new and innovative methods of addressing these threats are necessary – and none, we are told, are newer and more innovative than those drawing and/or relying on ‘the market’. As public funding for conservation grows scarcer and organizations increasingly turn to the private sector to make up the shortfall, market forces have found their way into conservation policy and practice to a degree unimaginable only a decade ago. Building on Arsel and Büscher (2012), we refer to this trend as ‘Nature™ Inc.’ With much at stake, it is critical to investigate how Nature™ Inc. is reshaping human–nature relations fashioned over two centuries of capitalist development.

Drawing on critical political ecology, this chapter examines the role of inequality in access to wealth, and the natural resources on which wealth is based, as one of the principal drivers of the interrelated dynamics of human discord and ecological degradation. Our analysis also reflects a characteristic political ecological concern to elucidate the interconnection among the various actors involved in environmental governance at different levels or scales – from the global to the regional to the national to the local – within seemingly spatially bounded contexts, as well as contestation among actors at each of these levels (Watts, 2000). In its fusion of a Marxist political economy with a Foucaultian concern with governmentality, the chapter represents an engagement both with the original (post-)Marxist strain within political ecology as well as the alternate poststructuralist current that has, in recent years, developed concurrently and in dynamic discussion (see, e.g., Escobar, 2008; Peet and Watts, 1996; Peet et al., 2011). (This chapter is a synopsis of material presented in our recent edited volume, Büscher et al., 2014).

We begin by outlining the growing academic literature analyzing contemporary neoliberalism, describing how this analysis has been applied to environmental policy and to describe the phenomenon we refer to as Nature™ Inc. We then trace the development of Nature™ Inc. over the past several decades, identifying a trend toward increasing abstraction and financialization in order to facilitate the global circulation of ‘natural capital’. This grounds our call for consideration of ‘Vital Alternatives’, wherein we outline a variety of emerging perspectives and possibilities that may help us to

transcend Nature™ Inc. in pursuit of a world beyond the impoverished (and impoverishing) promises of neoliberal capitalism. We conclude by suggesting several directions in which future research concerning such ‘Vital Alternatives’ might proceed.

THE (MIS)USES OF ‘NEOLIBERALISM’

We see capitalist development as a powerful dynamic that originated in sixteenth- and seventeenth-century Europe and has since gone through a long and complex process of intensification, expansion and struggle to encompass nearly all facets of life in virtually all areas of the world (Meiskins Wood, 2002). This dynamic, in short, centers on a particular mode of production, circulation, application and consumption that entails a continuous need for capital accumulation and growth of private profits. Neoliberalism, by contrast, has been enacted in earnest since the 1970s and refers to a particular ideology, governmentality and set of practices that aim to replicate capitalist market dynamics across social and public landscapes (Fletcher, 2010). Capitalism and neoliberalism, thus, are not the same and should not be confused conceptually (Foucault, 2008; Fletcher, 2010). Yet they are intimately intertwined in that both thrive on and stimulate similar principles such as commodification, competition, financialization and market discipline.

As Flew (2011: 44) observes, neoliberalism ‘has been one of the great academic growth concepts of recent years’. From a mere handful of references in the 1980s, Boas and Gans-Moore (2009) identify a dramatic surge in scholarly attention to neoliberalism in subsequent decades: between 2002 and 2005 the term appeared in more than a thousand social science academic articles yearly. The concept’s popularity has only increased in the intervening years, rendering its usage increasingly diffuse, ‘such that its appearance in any given article offers little clue as to what it actually means’ (Boas and Gans-Moore, 2009: 139). At its worst, neoliberalism has become ‘nothing more than a vehicle for academics who like to criticise things that they do not like’ (Igoe and Brockington, 2007: 445), while, at its broadest, the term is used ‘as a sloppy synonym for capitalism itself, or as a kind of shorthand for the world economy and its inequalities’ (Ferguson, 2010: 171).

Neoliberalism defined more strictly is commonly identified with the widespread trend toward increasing relaxation of state oversight over political-economic affairs and reliance on the ‘invisible hand’ of the market to efficiently allocate resources across the social landscape. Castree (2008), building on Harvey (2005), characterizes neoliberalism as promoting the interrelated processes of decentralization, deregulation (or, rather, *reregulation*), marketization, privatization and commodification. This is not to imply a homogeneous and static process. Rather, it implies that neoliberalism diffuses sporadically, unevenly, in articulation with local sociocultural patterns and institutions (Harvey, 2005; Foucault, 2008; Dressler and Roth, 2010; Steger and Roy, 2010; Roth and Dressler, 2012). Hence many scholars have taken up the call to describe the diversity of ‘actual existing neoliberalisms’ (Brenner and Theodore, 2002) rather than positing some pure ideological edifice from which existing institutions are presumed to deviate (see esp. Roth and Dressler, 2012). Likewise, as neoliberalism is a partial, uneven and ongoing process, analysts increasingly speak in terms of neoliberalization rather than

neoliberalism per se (see esp. Peck, 2010). Yet, as Brenner et al. (2010: 332) point out, 'empirical evidence underscoring the stalled, incomplete, discontinuous or differentiated character of projects to impose market rule, or their co-existence alongside potentially antagonistic projects, does not provide a sufficient basis for questioning their neoliberalized, neoliberalizing dimensions'. Notwithstanding pronounced diversity in practice, similar dynamics can be observed in a wide variety of contexts, informed by a coherent set of theoretical prescriptions (Harvey, 2005; Foucault, 2008; Peck, 2010) and manifesting in policies and practices with a distinct family resemblance. Indeed, neoliberalism's very flexibility can be seen as one of its most important characteristics (Peck, 2010).

So characterized, neoliberalization has been analyzed in a number of interrelated ways. Most broadly, there is a strong distinction between treatments inspired by neo-Marxist and poststructuralist thought, respectively (Castree, 2008; Ferguson, 2010; Fletcher, 2010; McCarthy, 2012). The two perspectives primarily diverge in terms of their analysis of the nature and motives of neoliberal governance. In Harvey's (2005) paradigmatic Marxist reading, neoliberal *economics* is an ideological smokescreen concealing a more fundamental class project of accumulation by dispossession aimed to employ free-market policies for private appropriation of the commons. Hence Harvey (2005: 119) asserts,

It has been part of the genius of neoliberal theory to provide a benevolent mask full of wonderful-sounding words like freedom, liberty, choice, and rights, to hide the grim realities of the restoration or reconstitution of naked class power, locally as well as transnationally, but most particularly in the main financial centres of global capitalism.

Foucault (2008), by contrast, sees neoliberalism as a broader approach to human governance in general, a particular 'art of government' or 'governmentality'. More than a class project or ideology, then, in Foucault's (2008: 218) reading, neoliberalism – particularly in the US context – is a 'whole way of thinking and being', a 'general style of thought, analysis and imagination'. In contrast to conventional understandings of governmentality (see Rose et al., 2006), a specifically *neoliberal* governmentality operates through the construction and manipulation of the 'external incentive structures within which individuals, understood as self-interested rational actors' (Fletcher, 2010: 173), make decisions among alternative courses of action. Thus Foucault (2008: 260, 271) describes neoliberalism as an 'environmental type of intervention instead of the internal subjugation of individuals', a 'governmentality which will act on the environment and systematically modify its variables'.

We strongly believe that the contemporary situation makes it necessary to engage the term in one way or another in order to tackle the power dynamics that influence so many facets of modern life, including biodiversity conservation. We describe next how these debates have played out in analysis of environmental policy, charting the emergence of debates concerning neoliberal conservation in particular.

FROM NEOLIBERAL ENVIRONMENTS TO NATURE™ INC.

Following McAfee's (1999) prescient description of emerging dynamics focused on 'selling nature to save it', the critical academic literature addressing the process we refer to as Nature™ Inc. became centered on analysis of neoliberal *nature* (e.g. McCarthy and Prudham, 2004; Heynen and Robbins, 2005; Heynen et al., 2007). The first efforts to conceptualize neoliberal *conservation* soon emerged (Sullivan, 2006; Büscher and Whande, 2007; Igoe and Brockington, 2007), which, analysts pointed out, demands unique mechanisms in order to harness the value of resources *in situ* (see Büscher et al., 2012). While the neoliberal nature literature has continued to develop fruitful insights (e.g. Bakker, 2009; Castree, 2010a, 2010b), the neoliberal conservation discussion quickly expanded as well, soon producing several books (Brockington et al., 2008; Brockington, 2009; Duffy, 2010), as well as a variety of special journal issues (Brockington and Duffy, 2010; Arsel and Büscher, 2012; Büscher and Arsel, 2012; Roth and Dressler, 2012; Fairhead et al., 2012; Corson et al., 2013) and individual articles too numerous to mention.

Arsel and Büscher's 2012 Forum issue of *Development and Change* first advanced the concept of Nature™ Inc. There the authors highlight the three interrelated dimensions of this term ('nature', 'trademarked' and 'incorporated'), observing that it follows a long line of similar attempts to highlight the increasingly corporate nature of a variety of socio-environmental processes designated by such monikers as Life Inc. (Rushkoff, 2011), Green, Inc. (MacDonald, 2008) and Environment, Inc. (Bosso, 2005). Yet they also highlight the double meaning of the 'incorporated' qualifier to signify as well the fact that within neoliberal conservation 'nature needs to be rendered a distinct "corpus," an "entity" that stands outside of society and economy' (Arsel and Büscher, 2012: 59). Meanwhile, the 'trademarked' dimension of the term emphasizes the fact that, within the framework of Nature™ Inc., the 'nature' in question must be 'protected, legalized, and institutionalized by particular systems of power and associated symbols' (ibid.: 60). Finally, use of the contentious term 'nature' (see Latour, 2004; Goldman et al., 2011) is intended not to designate some inert force external to human affairs, but to highlight the entanglement of humans and nonhumans within complex 'socio-natures' as well as to emphasize nonhumans' agency as 'actants' in such networks rather than as the passive objects of human manipulation.

The Nature™ Inc. frame was subsequently employed in a volume co-edited by the present authors (Büscher et al., 2014) that identifies three dominant lines of critical analysis in the neoliberal conservation literature thus far. The first explores the ways in which neoliberal principles such as commodification, competition, financialization and market discipline articulate with earlier conservation strategies, local sociocultural dynamics and rural livelihoods, producing novel mechanisms and major landscape changes *in situ* (Dressler and Roth, 2010). The second investigates the discourses, perceptions and representations of neoliberal conservation and how they work to legitimate and 'sell' novel relations between humans and nonhuman natures. The third line of analysis investigates the combined effects of these trends by assessing the mechanisms that transcend the conservation of particular *in situ* natural resources to allow for the abstraction and circulation of 'natural capital' throughout the global

economy. Considered together, these dynamics have produced a truly global conservation frontier: a suite of networks, activities and regulations that are rapidly changing the relations between people and nature worldwide. Next we chart the emergence of this trend and its evolution over the past several decades.

THE EVOLUTION OF NATURE™ INC.

The commodification of natural resources is, of course, not a new phenomenon (Bellamy Foster, 2000; Harvey, 2006; Peluso, 2012). The rendering of nonhumans as ‘fictitious commodities’ (Polanyi, 1944) has occurred for at least as long as a capitalist mode of production has pursued its relentless quest to colonize new spaces, times, peoples and processes across societies and landscapes (Harvey, 1989, 2005). What is relatively recent, however, is the widespread effort on the part of capitalist industry to internalize natural resources as an integral component of production for ‘sustainable’ management in the long term rather than simply externalizing environmental (as well as social) costs in the interest of short-term profit (Brockington et al., 2008). O’Connor (1994) calls this capitalism’s ‘ecological phase’, which began in earnest in the 1970s – the very period of neoliberal consolidation (Harvey, 2005; Peck, 2010) – with the acknowledgment of the environmental ‘limits to growth’ (Meadows et al., 1972) and the convening of the first major international conference (United Nations Conference on the Human Environment) in the same year.

This coincided as well with a growing recognition of the human costs of traditional approaches to conservation, entailing state-centered ‘fortress’-style management commonly prescribing the coercion and displacement of large numbers of resource-dependent peoples who were thus justifiably hostile to those responsible for their condition (Wells and Brandon, 1992; Brockington, 2002; Igoe, 2004; Dowie, 2009). Out of this recognition grew the integrated conservation and development (ICD) and community-based conservation (CBC) campaigns. These campaigns sought to reconcile formerly competing concerns for conservation and development, incorporating the local peoples most dependent on and knowledgeable about immediate resources as integral ‘stakeholders’. MacDonald (2010a: 527) points toward the crucial role in this mission of the Convention on Biological Diversity in 1992, as an ‘active political space ... in which rights and interests may be negotiated and new social relations configured around those negotiations’.

Central to this effort was the need to generate revenue from natural resources without substantially degrading them over time. Hence the first seeds of Nature™ Inc. were sown. While resource commodification in the form of extraction and processing had been (and still is) seen as a relatively straightforward process, achieving the opposite – commodification through conservation, or what West (2006) calls ‘conservation-as-development’ – required novel ways of thinking and performing. How could value be generated from resources preserved *in situ* when value had almost always previously been created by transporting resources from their place of origin and thus moving beyond the localized environmental and social impacts caused by this displacement? Novel institutional approaches were soon developed in pursuit of this agenda, with earlier devolved (CBC) strategies now taking on new market mechanisms to conserve

‘ecosystem services’ by placing an imputed market value on them, the income from which would purportedly provide local users with incentives to curb the extensive use of natural resources (Dressler et al., 2010).

Of course, once again, this was not an entirely new phenomenon. As Brockington and colleagues (2008) contend, protected conservation areas, while commonly framed by proponents as bastions of pristine nature standing opposed to the base forces of predatory capitalism, have, in fact, always been connected with processes of capitalist commodification, particularly in the form of the nature-based tourism (e.g. safari trips) commonly promoted inside them. Yet, in the neoliberal age, this commodification has intensified and transformed to a degree unimaginable in those halcyon days of yore. Hence one of the first moves of Nature™ Inc. was to magnify and transform this nature-based recreation – now relabeled ‘ecotourism’ – as an ostensibly ‘non-consumptive’ (and thus sustainable) form of income generation. Other means of harnessing the value of *in situ* resources, from bioprospecting to ostensibly sustainable forms of resource extraction (i.e. logging), were promoted as well.

The chief problem with such mechanisms in terms of commodification is that the value they generate is fundamentally tied to the environments they address, requiring either the movement of people to the site of production (in the case of ecotourism) or the transport of resources to the site of consumption (bioprospecting, sustainable forestry). Moreover, scholars keep pointing out the enormous ‘gender costs’ of these initiatives in terms of women’s livelihoods and ‘lost spaces’ (Harcourt, 2012). The ‘friction’ resulting from this movement increases transaction costs substantially, reducing both potential profit and the ecological gains such mechanisms ostensibly provide. Thus a major innovation in the development of Nature™ Inc. came with the formulation in the 1990s of the payment for environmental services (PES) mechanism. This, of course, built on the growing framing of ‘nature’ as a ‘service provider’ in general, a perspective also promoted by the Convention on Biological Diversity initiated in Rio in 1992 (Robertson, 2006; Sullivan, 2009) and popularized by Costanza and colleagues’ (1997) ambitious effort to quantify all the environmental services provided by the planet. Through PES, ‘consumers’ of ecological services could now pay their ‘producers’ remotely, allowing for the spatial separation of consumers from the resources they (non)consume and thus a partial abstraction of value from any particular landscape, given that within the PES framework environments are rendered equivalent such that degradation in one location can be ‘offset’ by preservation elsewhere (Brockington et al., 2008; Sullivan, 2009). This initiated a bold new era in conservation, a shift from hybridized forms of CBC–Nature™ Inc. to increased reliance on so-called market mechanisms.

Yet even in PES there are important limitations to the accumulation process. Essentially, conservation is still tied to a particular piece of land, inhibiting the abstraction of value from dependence on any particularities of place and thus nonhuman nature’s transformation into full-fledged commodities that could circulate globally. Hence Nature™ Inc. is truly coming of age with the recent development of innovative financial mechanisms that facilitate this abstraction, separating the creation of value from connection to any particular environment and thus allowing natural resources’ proxies in financial markets to circulate freely around the globe as fungible stores of value (Bracking, 2012; Sullivan, 2013). The rise of the global carbon market,

facilitated by the ‘flexible mechanisms’ of the UN Framework Convention on Climate Change’s (UNFCCC) Kyoto Protocol (also from Rio), in which abstract carbon credits are traded between spatially disconnected players, is only one aspect of this trend (Bumpus and Liverman, 2008). Species and wetlands banking, in which destructive development in one area can be offset by purchasing credits ostensibly representing equivalent preservation elsewhere (Sullivan, 2013), signifies its intensification. Environmental derivatives take Nature™ Inc. to new heights by trading not in any particular conservation mechanism at all, however abstract, but rather in markets only loosely linked by other conservation mechanisms to actual existing landscapes (Büscher, 2010; Cooper, 2010). In this spirit, major international initiatives such as Reduced Emissions through avoided Deforestation and Forest Degradation (REDD+) have pumped millions of dollars into the national treasuries (of developing countries) with the hope of working through decentralized structures and local institutions to pay or provide (livelihood) benefits to users to avoid deforestation by sequestering carbon in anthropogenic forests. Facilitating and sustaining carbon sequestration via a range of market incentives for local behavioral changes now draws on, or works through, existing institutions from earlier interventions and dramatically reinforces the circulation of finance and capital that helped stoke climate change in the first place – effectively, new forms of carbon capitalism (Bumpus and Liverman, 2008).

Capitalism now endeavors to accumulate not merely in spite of but rather precisely through the negation of its own negative impacts on both physical environments and the people who inhabit them, proposing itself as the solution to the very problems it creates. Büscher (2012: 29) thus characterizes neoliberal conservation as ‘the paradoxical idea that capitalist markets are the answer to their own ecological contradictions’. This contradictory process signifies both a partial reversal of familiar capitalist engagements with nature and an intensification of capitalist dynamics at the same time. It is this trend, both intensifying historical patterns and transforming them in important ways, that we call Nature™ Inc.

Through all of this, Nature™ Inc., like the neoliberalism that underpins it, continues its global ascendance. As MacDonald (2010b) notes, it was at the World Conservation Congress in Barcelona in September 2008 that serious debate concerning the appropriateness of market mechanisms and corporate partnership within the sphere of ‘mainstream conservation’ was finally displaced to the margins (Brockington et al., 2008). By the time of the Convention on Biological Diversity’s 10th Conference of the Parties in Nagoya, Japan, in October 2010, such debate had all but disappeared. The campaign to calculate and create markets for trade in the earth’s environmental services had culminated in the conference’s uncritical endorsement of the United Nations Environment Programme’s (UNEP) The Economics of Ecosystems and Biodiversity (TEEB) initiative (MacDonald and Corson, 2012). As a ‘grounded’ extension of this, the prime objective of conservation policy is now to ‘grab green’ locally, or ‘the appropriation of land and resources for environmental ends’ (Fairhead et al., 2012: 237). Hence neoliberal conservation has become part of a discursive process manifesting materially as broader resource and land grabs (Fairhead et al., 2012), the main goal of which is the appropriation of value of seemingly anything material and important as basic ‘inputs’ for life. As such, there is less space for ‘nature’ to function as its own actant: it

is needed for its ‘services’. This is well captured by the slogan ‘Nature is Dead! Long live Nature™ Inc.’ (Arsel and Büscher, 2012: 53).

At present, the future course of conservation is being charted yet again by the outcome of the Rio+20 conference held in June 2012. Discussions at Rio+20 centered on the concept of the ‘green economy’, advanced via a recent UNEP report (2011) as a purportedly novel replacement for a ‘sustainable development’ increasingly pronounced dead on arrival. By all appearances, green economy discourse represents yet another intensification of Nature™ Inc. (Brockington, 2012). At the same time, resistance to neoliberal conservation is growing, signified not only by the rise of the critical literature surveyed above endeavoring to problematize the trend, but also by the rise in social movements throughout the world concerning the perils and pitfalls of increasing commodification of socionatures.

How this contest will play out remains to be seen. With so much at stake, it remains critical to continue to investigate how neoliberal conservation actively reshapes human–nature relations in the context of several centuries of capitalist development. Yet, while acknowledging the need to keep problematizing the neoliberal order in the face of its increased promotion in global environmental governance arenas, we agree with a growing chorus of thinkers, practitioners and activists that it is necessary to also promote serious discussion of alternative forms of (re)production and ways of being that go beyond Nature™ Inc. in all its proliferating forms. This entails, first, moving the debate on the politics and political economy of conservation forward by outlining and encouraging new theoretical perspectives on the process; and, second, reflecting on and informing empirical practice directed toward non- and/or post-capitalist spaces and possibilities (Gibson-Graham, 2006; Gibson-Graham et al., 2013). Next we seek to identify key themes, issues, directions and initiatives involved in starting to move discussions and practices beyond neoliberalism in pursuit of what we call ‘Vital Alternatives’.

THE LIMITS OF NATURE™ INC.

Neoliberal conservation is highly problematic for a number of reasons, which for the sake of brevity can be summarized under material and discursive dimensions. Materially, a neoliberal approach to environmental governance commonly contributes to economic and other inequalities due to its propensity to redistribute ‘upward’ rather than ‘downward’ (McAfee, 2012a, 2012b). At the same time, neoliberalism’s reliance on economic growth means that it necessitates environmentally destructive dynamics and activities, thus often forcing into opposition the very conservation and development concerns it ostensibly seeks to reconcile (Fletcher, 2012). In addition, provision of economic incentives to encourage conservation can backfire when those incentives are meager or unevenly distributed (West, 2006).

Moreover, an incentive-based approach has difficulty countering large-scale activities such as mining and logging since such activities are already highly profitable and their opportunity costs often preclusive, given the limited resources market-based conservation mechanisms are able to marshal (Fletcher, 2012). Relatedly, in other instances, resource extraction and market-based conservation (e.g. ecotourism) are increasingly

drawn together as associated interventions, where the latter are supposed to (but in practice often do not) offset negative externalities and so reinforce the growth potential of the former (Büscher and Davidov, 2013). Finally, it is questionable to what extent common faith in the potential of undiscovered commodities for which sustainable local markets can be developed (e.g. via bioprospecting; see Neimark, 2012) is in fact realistic.

In terms of discursive dimensions, neoliberal conservation's reduction of a highly complex 'nature' to single-dimensional 'natural capital' evinces a striking 'cultural poverty' (Sullivan, 2009), foreclosing the far different means of valuing 'natural resources' found beyond the realm of monetary exchange value (Singh, 2013). Likewise, neoliberal conservation's characteristic promotion of successful 'win-win-win' outcomes in the interest of satisfying donor and business partner expectations frequently conceals the contradictions and discrepancies operating beneath this rhetoric (Büscher et al., 2012; Fletcher, 2012). Further, virtual 'nature' encounters and creative consumption encouraged by celebrities and business-centered conservation (e.g. buying a Happy Meal to help endangered species) function as a form of commodity fetishism obscuring the often-dubious results of such strategies in practice (West, 2006; Igoe, 2010; Igoe et al., 2010).

Obviously, these two dimensions of neoliberal conservation's problematic nature are only schematically presented and cannot be treated adequately in several short paragraphs. Yet the extent and scope of such issues suggests that there are clear and immanent limits to the efficacy of Nature™ Inc. to achieve conservation on a significant scale. This is a conclusion to which several recent analyses are beginning to point (Fletcher, 2012; McAfee, 2012a, 2012b). It is in line with Peck's (2010: xiii) overarching assessment that neoliberal policies in general tend to evince limited efficacy in practice, functioning instead as 'repeated, prosaic, and often botched efforts to *fix* markets, to build quasi-markets, and to repair market failure'.

If this assessment is correct, it becomes all the more urgent to challenge the continued hegemony of Nature™ Inc. and open spaces for the vision and practice of more equitable and efficacious approaches to managing human-nonhuman relations. This is central to the search for 'Vital Alternatives', a term intended in two interrelated senses: (1) to refer to the urgent necessity of developing viable alternatives to the current neoliberal order, particularly in the face of the growing environmental/economic crisis (Büscher and Arsel, 2012); and (2) to emphasize that these alternatives must be founded on a more expansive understanding of the value and politics of life, both human and nonhuman, than capitalist economic rationality affords (Gibson-Graham, 2006). Our conclusion points towards tangible steps in this direction.

CONCLUSION: TOWARD A RESEARCH AND PRACTICE AGENDA AROUND VITAL ALTERNATIVES

A good starting point for discussions of 'post-capitalism' is the recent work by Gibson-Graham and colleagues (2013) in which they advocate 'taking back the economy'. The authors suggest that this involves 'revisionist thinking' and action that can create alternative spaces within which to buffer and reverse the destructive nature

of neoliberal practices. While these authors acknowledge that the neoliberal economy is made up of decisions and choices that become normative common sense, they note that, despite this, it continues to be based on fallible human discourse and action that can be challenged and transformed. In other words, there is nothing inevitable about the long-term presence and impact of neoliberalism. New and important perspectives are thus emerging not only to critically engage neoliberalism in advocacy writing, but also to inform action in terms of ethical practice, the equitable distribution of surplus, respectful and conscientious relations and consumption, as well as the need to invest in protecting and/or revitalizing the commons (Wolff, 2012).

Other work takes a more geographical turn in tackling capitalism's structural features and ingrained modes of power and being. David Harvey's *Spaces of Hope* (2000) is a good example, while Neil Smith's (e.g. 2008) work has led to a flurry of analyses trying to understand how we could 'produce' nature and space differently. Yet others explore how we can subvert and change 'high-technology capitalism' to make space for 'communications commons' focused on the 'public financing of a multiplicity of decentralized but collectively or cooperatively operated media outlets, licensed on the basis of commitment to encouraging participatory involvement in all levels of their activity' (Dyer-Witheford, 1999: 204).

When these (and other) alternatives to capitalism are extended to alternatives to neoliberal conservation, one can take further inspiration from the many debates that explicitly link capitalism and ecology. These, too, are very diverse and range from radical Marxist socialism (Magdoff and Bellamy Foster, 2011), strategies for economic 'degrowth' (Kallis, 2011), anarchist geographies (Springer et al., 2012), and less radical 'steady state economics' (Dietz and O'Neill, 2013) to 'bioregional' economies (Scott Cato, 2012). Moreover, there are calls for 'living with' biodiversity (Turnhout et al., 2013) and emphasis on affective hope and ways of relating with nonhumans that are different from the destructive capitalist ratio (Singh, 2013). Allied with this are growing calls for the legitimation of non-dualist ontologies that, for example, adopt the perspective of 'dwelling' (Ingold, 2000), or 'embodiment' (Valera, 1992), or Amazonian cosmovisions, among many others (Descola, 2005; Viveiros de Castro, 2004). These approaches work best in particular contexts reflecting the unique natures and diversity in which they are immersed. Yet when appropriately linked – for instance, through grassroots conservation initiatives that nurture 'bottom-up' governmentalities rooted in non-dualistic indigenous cosmologies that involve collaboration between local stakeholders and participatory action researchers in challenging neoliberal hegemony (Singh, 2013) – then, in concept and action, they offer tangible and inspiring alternatives to Nature™ Inc.

Overall, critical inquiry in the social sciences – spanning disciplines from anthropology to pedagogy – has perhaps a greater responsibility than ever before to move critique into vision and action by allying itself with movements, collectives and interventions both 'on the ground' and 'in the mind'. Here is the means by which diversity might (re)sustain and reinvigorate itself (against homogenizing tendencies) and so create spaces for Vital Alternatives. Movements throughout the 'global South', particularly in South and Central America, have fused critical intellectual thought and writing with creative resistance in order to forge relatively autonomous spaces for thinking and acting out against the 'burden of neoliberalism' (Grugel and Ruggirozzi,

2012). At their best, these movements reveal and produce ‘landscape[s] of radical heterogeneity populated by an array of capitalist and non-capitalist enterprises; market, non-market, and “alter-market” transactions; paid, unpaid and alternatively compensated labor; and various forms of finance and property – a diverse economy in place’ (Gibson-Graham, 2011: 2).

In conclusion, we hope our chapter will help to direct future political ecology inquiry into Nature™ Inc. and its alternatives through engagement with the following sorts of questions (among others): what initiatives, existing in the interstices of the current neoliberal order, effectively challenge or subvert this order? How might such initiatives be supported and scaled up in the future? How can they provide productive models for innovative efforts elsewhere? How might new possibilities beyond current practice be conceptualized? What novel theoretical frameworks, or re-articulations of older ones, might offer inspiration for such efforts? How might theory and practice be combined into a productive new praxis? How, finally, might all of this be brought together in pursuit of a world beyond the myopic horizons of neoliberal capitalism?

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27. The cultural politics of waterscapes

Amitangshu Acharya

TURNING SWEET WATER SALINE

Chilika Lagoon is located in the eastern Indian state of Odisha and, covering 1100 sq km, is the largest lagoon in the country. A popular tourist destination, it is well known for its bountiful seafood, rare wildlife such as the Irrawaddy dolphin (*Orcaella brevirostris*) and vermilion sunsets beloved by camera-toting visitors (with photos often posted on social media). Many photographs artfully include the silhouette of a fishing boat with a fisher balanced gracefully on its edge. Yet the fact that this lagoon supports the livelihoods of at least 300 000 fisher folk remains uncelebrated in such tourist narratives.

Indeed, the gentle waters of Chilika are an efficient façade to the stormy politics of land and water that constitutes its backdrop. A boat ride across the lagoon reveals multiple political and ecological issues that have crystallized there. Unregulated shrimp farms, bird habitats under formal state protection, strictly regulated ecotourism zones and traditional fishing nets that lattice the lake surface – these all amount to a dense mosaic of practices and policies that characterize this place. Conflicting trends shape its fate. Thus, on the one hand, Chilika is a commons that is being ‘de-commonized’ as community fisheries are driven out by state-sanctioned export-oriented shrimp culture (Nayak and Berkes, 2011: 137). On the other hand, it is a prized site of conservation success where a threatened ecosystem was restored through technical interventions funded by the World Bank and other multilateral institutions (Ghosh et al., 2006). Scholarly work is equally conflicted here. Thus some writers condemn both neo-liberal market behaviour and the modernist state for displacing community-based fisheries institutions and associated knowledge systems that have historically nurtured local ecologies (Nayak, 2010; Nayak and Berkes, 2011). Other scholars emphasize the need for outside intervention through ‘scientific’ management (Ghosh et al., 2006) based on ‘expert’ monitoring aided by GIS technology (Meaden, 2008). Overall, there is a ‘thickness’ of actors and claims that render Chilika a continuously evolving ‘politicized environment’ (Bryant and Bailey, 1997: 27).

Such an environment poses a challenge to scholars working in political ecology – a challenge embedded in the very material properties of water constitutive of such contested sites. A ‘boundary-blurring’ agent, water is one of the most difficult resources to study, let alone manage, given its ability to operate across a wide range of ‘scales, sites and social actors’ (Baviskar, 2007: 2). In the process, it produces complex ‘hydrosocial networks’ (Mustafa et al., 2010: 601). At the same time, the ‘transmutability’ of water shapes discourse (Kamash, 2008: 225). Thus, in the case of Chilika, the changing quality of water is a focal point of contestation between fisher folk and management authorities. While the latter stress the need for a process of re-salinization

(Ghosh et al., 2006) to restore ecosystem integrity, fisher folk point instead to decreasing ecological diversity – as sweet water turns saline thanks to state intervention (Nayak, 2010). Furthermore, water ‘speaks’ different things at the same time. Chilika water quite simply holds different meanings for fisher folk and state managers. Such ‘multivocality’ (Kamash, 2008: 225) in turn produces and reproduces new forms of political struggle. Discussion about water’s transmutability and multivocality is leading to a wider recognition among scholars that water cannot be reduced to simply being an artefact of human agency. Thus Mosse (2008: 941) deems it to be an ‘actant’ (in terms of Bruno Latour’s actor network theory) in suggesting that ‘human agency operates through the effects of water and its flows’ – a point underscored in understandings of the ‘sweet’ and ‘saline’ material properties of Chilika.

Control over Chilika’s material resources is attempted through control of the ‘public transcript’ (Scott, 1992). Here, conflicting academic and scientific arguments on ecological restoration ‘success’, agitation of fisher folk against multinational shrimp industries, conflict among fishers pitting long-term residents claiming historical user rights against new arrivals, all come to the fore (Dujovny, 2009). Meanwhile, a complex interplay of global and local issues takes place in the ‘background’: such things as changing local property regimes, the influence of global aquaculture markets and foreign investment, local caste-based politics, the role of ‘experts’ in wetland management, and a host of other ‘power geometries and social actors’ (Swyngedouw, 2009: 57) that configure how conflict and collaboration occurs. Thus ‘gentle’ Chilika waters inform turbulent social relations even as those relations reconstitute the lagoon’s water and its ‘rightful’ use as well as adjoining land use and ownership. In this way, Chilika is a water-produced landscape or ‘waterscape’ (Swyngedouw, 1999) that emerges through complex calculations and interactions; it is a phenomenon whereby water and power shape each other to generate a continuously evolving socio-nature.

UNDERSTANDING WATERSCAPES

This chapter explores how water has come to play a bigger role in political ecology even as it seeks to understand how attention increasingly centres on the concept of the waterscape to explain complex dynamics such as those found at Chilika Lagoon. But I argue that scholars need to widen their analytical lens even further to better appreciate in particular how culture intersects with politics in creating a waterscape.

Water and its human appropriation was a topic just waiting for political-ecology analysis. Thus, and whether a lagoon, lake, river, reservoir, wastewater treatment plant, irrigated paddy terrace or network of pipes, all adhere to an everyday language of apolitical ecologies – that is, objects amenable to technical intervention by ‘experts’. In contrast, articulating the concept of waterscape is precisely designed to reject ‘apolitical ecologies’ that obscure conflicts over meaning and practice (Robbins, 2004: 5). Recognizing such objects as waterscapes helps to bring the thick network of politics, shaping them from back- to foreground while teasing out meaning from both stated and unstated stakeholder interests. A key aim here is articulated by Robbins (*ibid.*: 12–13) when he invokes metaphors of ‘hatchet’ and ‘seed’ in political-ecology research. Thus the waterscape concept helps take the hatchet to apolitical narratives on lakes, dams,

rivers and so on – the sort that speak of lake conservation, dam construction, embankment and riverfront development or the creation of piped water networks (i.e. any form of hydro-development) in technical problem-solving language. Such critical scrutiny in turn becomes a seed for new research that promotes the combined concerns of ecological sustainability and equitable development.

To do so, though, is to be wary of the pitfalls of earlier geographical work that was environmentally deterministic. Thus Wittfogel's *Oriental Despotism* posited a highly deterministic understanding of 'hydraulic society' where water management was seen as the principal reason for historically centralized 'despotic' Asian bureaucracies. Indeed, the problems that emerge with excessive 'materialist efforts at analyzing ecological influences' on society are well understood today in political ecology (Robbins, 2004: 47). It is rather interaction between the messy materiality of water and the complexity of social relations shaped by unequal power relations that most interests political ecologists when interrogating mainstream narratives of water management (Bakker, 2003, 2004, 2013; Baviskar, 2007, 2009; Swyngedouw, 1999, 2005, 2009), explaining urban water dynamics (Gandy, 2008; McFarlane, 2008) or assessing multi-scale water governance (Bakker, 2011; Swyngedouw, 2005, 2009). The volume of research on such topics has expanded rapidly, with case studies now conducted all over the world, thereby exploring both the intrinsic analytical possibilities of waterscapes and the shifting (often global) trends influencing them. For our purposes, three elements shape this research: water and power; water's unruly materiality; and water as an emancipatory project.

First are analyses of water and power that build on perhaps *the* key concept in political ecology – namely, that of power (Bryant and Bailey, 1997; Robbins, 2004). Discussions here increasingly explore the 'mutually constitutive' relationship between the two, drawing heavily on Foucault and Gramsci to understand how power is deployed, contested, negotiated and reworked in a waterscape. For instance, Swyngedouw (1999) investigates the material production of 'waterscapes' (thereby introducing this term to political ecology) in Franco's Spain, identifying this process as a modernist project achieved through hydraulic engineering that enabled specific groups to consolidate political power. Bakker's (1999: 212) interrogation of the purportedly benign designs of hydro-development in the Mekong Basin leads her to see them 'as a means of commodification, and simultaneously as a means of extending state control into predominantly rural areas'. That hydro-development and state-building are mutually constitutive is also central to Kaika's (2006: 276) discussion of the 'iconography and symbolism of dam construction' in Greece. Hence hydro-development emerges as a tool for statecraft, seeking to either reinforce or reconfigure power relations.

Recent research also explores the diffuse, distributed and productive characteristics of power in relation to water (Ekers and Loftus, 2008). For instance, as Mosse's (2005) work on irrigation in South India shows, when a centralized irrigation scheme is imposed on a landscape already subject to intricate social, political and cultural relations, it does not necessarily obviate it; on the contrary, it often simply creates tensions between what is legal and what is legitimate. The case of the Umiam waterscape in north-eastern India (discussed further below) shows how deployment of power by a new nation-state to engineer a vast dam only ended up working against its carefully built image 50 years later: chronically beset by pollution and siltation, the

waterscape is used by citizens to condemn a state seemingly powerless to protect a 'national' heritage. Page (2005: 302) meanwhile uses a Cameroonian case study to show that resistance to water payments was not against paying for water per se, but rather because such payments reified acquiescence to a social relationship determined at a national scale as against the community's preference for a 'local scale of politics'. Finally, the Loftus and Lumsden (2008) study of domestic water dynamics in urban South Africa suggested that applications of power are not necessarily aimed at transforming the physical environment (i.e. water supply) as much as shaping how people relate to their environment, something that itself arises from everyday practices.

Such complex understandings of water-power dynamics are complemented by a growing appreciation of water's unruly materiality – that water is no static backdrop to 'choreographies of social and political power' (Swyngedouw, 2005: 91), but plays a significant role in its own right. A personal anecdote comes to mind here. In my early years as a rural development worker, I remember a discussion with a local administrator in central India about the failure of a major government watershed programme. Despite ample scientific research and extensive local consultations, the water table in this drought-prone area was not improving. In the middle of our conversation, and with a wry smile on his face, he lamented, 'water, Amitji, is a researcher's dream and a manager's nightmare'. Such anecdotes attest to wider evidence that attempts to make water subservient to human design are failing.

Indeed, the ecological and material qualities of water play a significant role in deciding the fate of all waterscapes. As the Chilika example shows, the contest can centre on the material properties of water – and, because such materiality can bring about unintended changes in social and political power structures, it invites careful scrutiny. As Bakker (2011: 363) asserts, the 'focus on the materiality (or "biophysicality") of resources' allows political ecology to move beyond generic understandings of 'nature' as notably found in much political-economy research. This focus requires instead understanding not only of the materiality of water, but also of how it interacts with other processes captured in terms like biodiversity and (especially in groundwater-dependent areas) litho-diversity because that focus appreciates that water interacts with the non-human as well as the human. Thus, and just as water-power analyses have enabled greater nuance in understanding the diversity of power dynamics, including its uneven spread across human–water interactions, a stress on the materiality of water has prompted a more nuanced understanding of complex interactions of non-human entities.

The latter often operates under the radar of human knowledge, even though it plays a significant role in shaping social and political outcomes. Take the example of groundwater contamination linked to arsenic and fluoride. Given strong dependence on groundwater for drinking purposes in many parts of India and Bangladesh, such contamination raises serious public health concerns as well as requiring enormous public remedial investments. However, water's unruly materiality is compounded by the way it interacts with different geological layers, which, in turn, leads it to frustrate modelling predictions that aim to manage the problem. The mystery of 'what lies beneath' (Kamash, 2008) is not only an obstacle to safe water provision, but also complicates such things as state internal politics and water privatization efforts. Through its complex interaction with non-human elements, water thus poses serious

questions to both states and markets as a complex assemblage of technologies, approaches, institutions and knowledge systems gets mobilized to address its unruly materiality. The socio-economic consequences are enormous too. Thus, and given that contaminated water disproportionately affects the poor, the complex bio-physicality of water connects with political-economic processes in ways that usually deepen social inequality. But, and to borrow from Fontein (2008: 749), political ecology needs to cut a judicious path 'between the pitfalls of environmental determinism and the extremes of social constructivism' in conducting research on this topic.

A final element of political-ecology research addresses water as a project devoted to social emancipation. Social struggles over water have loomed ever larger in both the scholarly and popular imagination. In 2000, for example, a high-profile struggle against water privatization in Cochabamba, Bolivia became an international scholarly and activist referent – even as it influenced the storyline of the James Bond movie, *Quantum of Solace* (2008). Building on insights of the sorts of research noted above, and inspired by diverse Cochabamba-like struggles around the world, political ecologists increasingly seek to marry analysis to activism:

Rather than taking it as a given that some will have access to water and others will not, or rather than finding solace in technical solutions or high-profile pledges, political ecology seeks to politicise understandings of the distribution of water as a first step in an emancipatory project to ensure that all are able to live in environments free from the daily injustices of stagnant, polluted water sources. (Loftus, 2009: 953–4)

Such a call resonates with the Peet and Watts (1996: 5) argument for a 'liberation ecology' in which political ecology is asked to 'raise the emancipatory potential of environmental ideas' while following a path of 'equity and sustainability research' (Robbins, 2004: 13). In this vein, scholars now attempt to understand: (a) how mainstream environmental narratives of freshwater 'crisis' and 'scarcity' are socially constructed (Mehta, 2011); (b) what types of solution are then promoted (Bakker, 2011; Swyngedouw, 2005); (c) what happens to such solutions when implemented (Loftus and McDonald, 2001); and (d) how the solutions impact unevenly on society. A key focus here is on narratives that see privatization as the 'only' solution to freshwater scarcity and safe water provision – an argument that political ecologists keenly refute. Instead, privatization is but the latest capitalist incursion into a terrain previously outside its domain that inevitably results in social inequity (Bakker, 2011; Loftus, 2009; Swyngedouw, 2005; Loftus and McDonald, 2001). Such writing also documents people's resistance to privatization as well as the scant evidence that service, supply or conservation improves. Activist organizations respond by demanding that water be recognized as a basic human right. While sympathetic to this call, some political ecologists nonetheless urge caution since 'human rights are [quite] compatible with capitalist political economic systems' (Bakker, 2011: 362). The danger here, then, is that such organizations may end up in the paradoxical situation whereby it becomes impossible to sustain a basic human right to water without privatized water supply.

Clearly, scholars (and activists) need to tread carefully in promoting an 'emancipatory project' based around equitable water governance. Part critique and part advocacy, this effort needs to be based on a fine-grained understanding of the materiality of water, including its complex interactions with both non-human and human entities.

A CULTURAL TURN

While research in political ecology on water provides many key insights, it nonetheless remains uneven in its treatment of this vast topic area. This chapter now turns to an assessment of certain lacunae and how this research approach can be further strengthened through a cultural turn.

First, a strong urban bias means that political ecologists do not give sufficient attention to rural water dynamics. Take, for example, coverage of the privatization issue. Thus the focus is squarely on centralized urban water supply as a ‘primary battleground’ (Bakker, 2011: 353), but this means that privatization of decentralized rural water supply is thereby often relatively neglected (but see Sultana, 2013 on drinking water in rural Bangladesh). Yet a fast-changing rural landscape in many developing economies (such as India) where the ‘neoliberal project’ involves firms becoming providers of ‘safe water’ – such as reverse osmosis plants, ‘cheap’ water filters or bottled water – is yet to feature seriously in political ecology. In this regard, recent work on desalinization (e.g. Swyngedouw, 2013) needs to expand further to encompass how entire regional landscapes are being redefined – for instance, desert ‘greening’ projects using desalinated water to produce food.

Second, political ecologists do not engage nearly enough with the cultural politics of water, as recent work attests (e.g. Baviskar, 2009; Boelens, 2014). This is a gap since scholars suggest that ‘cultural beliefs trump material realities in stunning ways’ (Orlove and Caton, 2010: 403). Thus discussions about ethics, religion, spirituality, aesthetics, imaginations, memory, identity and symbolism are still quite limited in political-ecology work on water. Instead, a cultural politics approach treats culture itself as an important arena of political struggle, suggesting that control over water can be a means of cultural conquest, and not simply a way to assert political-economic power over a resource (Baviskar, 2009).

Third, and in order to accommodate such a cultural turn, political ecologists need to widen their unit of analysis to permit greater conceptual elaboration and empirical depth. An obvious choice here is that of a ‘waterscape’ – a concept, as noted above, regularly used today (e.g. Swyngedouw, 1999, 2005, 2009; Loftus, 2007; Loftus and Lumsden, 2008; Budds, 2013; Sultana, 2013), albeit one in need of further refinement via systematic linkage to cultural matters.

The concept of waterscape is mainly seen today to be a product of the interplay of water and social power: ‘a produced socio-natural entity’ (Loftus, 2007: 49), production of which is an ‘accumulation strategy’ (Loftus, 2009: 959), and whose core constituents include ‘flows, allocation, infrastructure, institutions and framings’ or ‘instances’ of water (Budds, 2013: 303). Production of waterscapes also involves the internalization of ideologies in so far as they emerge as sites where hegemony is both reified and questioned (Loftus and Lumsden, 2008). In short, such scholarship promotes understanding of (a) the production and constitution of waterscapes, (b) the processes and technologies that are harnessed to produce them, and (c) the ideologies and agendas that drive such harnessing.

And yet, further ‘disciplinary transgression’ (Bryant, 1999) is required. Thus cultural politics adds conceptually to an existing water ‘toolkit’ that features notions of power, materiality and emancipatory dynamics. Specifically, the addition of a cultural politics

approach involves four important new elements – namely, symbolism, consumption, belonging and landscape. Together, these elements constitute what I term the cultural turn in the political ecology of waterscapes.

Symbolism

At the TEDx ('Technology, Entertainment, Design' events) Summit in Doha in 2012, Fahad Bin Mohammed Al-Attiya, Chairman of Qatar's National Food Security Programme, was making a presentation on how Qatar was transitioning towards food security. As an image of a desalination plant appeared on the screen, he effusively proclaimed 'So that is our lake, if you can see it. That is our river. That is how you all happen to use and enjoy water. This is the best technology that this region could ever have: desalination' (TEDTalks, 2013). Desalinization, at that moment, ceased to be a technology producing potable water. Instead, it became symbolic of Qatari aspiration, progress and wealth – a vivid example that his country had finally 'made it' globally.

In this scenario, it is not enough to see desalinization as only generally symbolic – for instance, 'modernization as a geographical project' (Swyngedouw, 1999: 451) – but also to acknowledge that water *by itself* is a symbol that is desired, appropriated and consumed. Water in this case is not only a symbolic means to help legitimize the authority of a potentially beleaguered monarchy; it simultaneously portrays this place in a progressive light, providing water to all citizens as a Qatari birthright. Similarly, a well-known study of irrigation tanks in South India identifies them as 'repositories of symbolic resources', which are 'expressive of social relations, status, prestige and honour' (Mosse, 1997: 472). At the same time, 'struggles over water are simultaneously struggles for power over symbolic representations and material resources' (Baviskar, 2007: 1). Thus research by Anand (2011: 559) on water supply in a Mumbai slum shows that keenness to get connected to piped water emerges as symbolic of something larger, such as gaining newfound dignity, citizenship and entitlement by becoming part of the 'municipal public'.

Discussing the symbolic aspects of waterscapes in these and other ways opens up a window to understanding what water means to different people in different times and places, as well as how such meanings may relate to its social display as cultural capital. It requires researchers to understand the socio-political processes and agendas involved in the production of symbols and the complex cultural contexts that inform their consumption. Like water, symbols are also uncooperative as they shift continuously to mean new things, sometimes even opposite to what they may have initially meant.

Consumption

A cultural turn also raises the question: how are waterscapes *consumed*? The framing of a waterscape in terms of a particular image is designed to play into the popular imagination so that it will be appropriated and consumed by diverse stakeholders (such as local residents, a nationwide public or tourists). Yet consumption of a waterscape is closely tied to its production, and this interrelationship merits close scrutiny. For instance, a waterscape attempting to establish 'the local presence of national government and water as a national rather than a local resource' seeks to produce 'citizens in

nation-building projects' (Mosse, 2008: 945). Similarly, that the commodification process is also embedded in hydro-development (Bakker, 1999) means that such waterscapes also become associated with the turning of citizens into consumers (Swyngedouw, 2005).

Such consumption is rooted in a cultural politics that continuously plays on a kaleidoscope of popular images, imaginations and identities. And this politics is notably at play when symbols need to be consumed in any contest aiming to control the 'public transcript' (Scott, 1992). As discussed below, the grand spectacle of a dam is consumed through its image being circulated in school textbooks, tourist brochures, TV documentaries and so on. Hence, while state hydraulic politics produces vast dams, these engineering 'marvels' are subsequently 'naturalized' – becoming for example a 'lake' – through the production and consumption of images rooted in cultural specificities. But once it is thus consumed, such a waterscape then produces new forms of socio-cultural politics. This process of production–consumption–production is continuous and relates to what Bakker (2011: 363) calls 'issues of reproduction' in the political ecology of water.

In this manner, culture becomes a terrain of appropriation just as much as water, with the two simultaneously a target for capitalist capture. The case of bottled water is perhaps iconic here: its wide use and acceptance (but also contestation) today being not just about the commodification of water but also concerning a cultural reconfiguration of how people relate to water (e.g. Wilk, 2006). Similarly, a cultural turn in *waterscape* research that addresses consumption adds nuance to the political ecology of water, thereby also connecting to other work in the overall field of political ecology that takes consumption seriously (e.g. Bryant and Goodman, 2004).

Belonging

A further cultural factor critical to waterscape production is that of belonging. This concept subscribes to 'the construction of locality... as a structure of feeling, a property of social life and an ideology of situated community' (Appadurai, 1996: 199). It thereby contradicts a totalizing logic that views territory as the primary source of identity. The 'quest for belonging' is deeply embedded in human society and politics emanates out of such desires (Geschier, 2009: 1). For example, Hughes's (2006a, 2006b) study of the modification of Zimbabwe's landscapes through extensive hydraulic engineering describes how the produced waterscapes satiated white settlers' quest to belong. This is best seen in relation to the Kariba Dam, which served diverse cultural functions: it satiated personal and emotional needs linked to aesthetics and entertainment; it legitimized the white settler's claim to belong to Africa; and it helped to foster a sense of being home (Hughes, 2006a, 2006b). Belonging can thus profoundly shape the production of waterscapes, which can in turn inspire belonging to larger identities (e.g. 'African', 'Asian'). In such contexts, a claim to water is essentially a cultural claim about belonging, either to a region or to a specific identity.

Belonging as a conceptual tool helps to clarify how cultural claims to material resources seek legitimacy, as well as how a personal need for belonging may be embedded in political desires. It also sometimes brings to the fore the politics involved in conserving waterscapes. The protracted battle to conserve lakes in Bangalore in

South India is a case in point. These lakes were originally large agricultural tanks that lost their economic relevance as the city developed. But for Bangalore's urban middle-class residents who grew up with the lakes as part of their everyday lives, the lakes satiate a sense of belonging. This is one key reason (among others) that galvanized them into taking action – to the extent even of pursuing litigation against the state and corporate entities involved. Unlike most waterscape conflicts that relate to the impact of hydro-development on the poor, there is increasing evidence in cases like this of urban middle-class protest that favours waterscape conservation over state and market development plans. Belonging thus has an important analytical role to play in 'decoding' cultural politics of waterscapes, sometimes in urban areas but often in rural regions, in the elaboration of a more culturally based political ecology of water.

Landscape

A final factor in the cultural turn in the political ecology of waterscapes requires closer engagement with developments in landscape studies. Borrowing Bender's (1993: 3) understanding of landscapes, I would argue that waterscapes too are 'polysemic'. The struggle over a waterscape is indeed not only about its material resources but also about the different meanings and values generated by it. As with landscapes, therefore, waterscapes are a 'concept of high tension' (Inglis, cited in Bender, 1993: 3), even a 'politicised environment' (Bryant and Bailey, 1997: 27). Strategies such as 'accumulation by dispossession' (Harvey, 2004), as well as control over the 'public transcript' (Scott, 1992), are frequently employed to legitimize political control over the symbolic and material resources of a waterscape as well as to alter how people relate to it through everyday talk, text and practice. It is also a masked 'claim to land' (Hughes, 2006a: 269). This polyvalence of a waterscape is shaped not only by the 'complex spatialities of statecraft' (Fontein, 2008: 751), but also by an intricate relationship between the materiality of water and political history of the waterscape. Like landscapes, therefore, waterscapes also need to be understood as a complex assemblage of emotions, worldviews, practices and processes, as well as symbolic and material politics.

At the same time, waterscapes are themselves often directly embedded in local cultural politics of *landscape*, past and present. Thus some waterscapes reflect a political ecology of direct physical imposition – think here of hydro-developments – whereby they literally erase prior culturally infused landscapes below – 'accumulation by submersion', so to speak. And in these cases, a new adjoining landscape surrounding the waterscape is also created.

Waterscapes are certainly regularly linked to processes of social marginalization, just as with landscapes. Indeed, they may even be thought of as a kind of 'shadow landscape' – those 'in-between rural places characterised by historical depopulation and cultural marginalisation' (Bryant et al., 2011: 461). As seen below, waterscapes, as with shadow landscapes, are thus often an 'outcome of marginalization processes' as much as 'ongoing centres of marginalization' (Bryant et al., ch. 17 this volume). For example, dams displace people (and the culturally meaningful landscapes they inhabited), while thereafter exerting a disciplining logic that delegitimizes non-sanctioned land uses around 'catchment' areas. In this way, initial brutal displacement is followed by close

economic and cultural regulation around new waterscapes, usually by diverse experts now tasked with managing such ‘depopulated landscapes’. In short, there are rich analytical possibilities in the exploration of culturally based landscape themes in the interconnected new terrain of waterscape research.

FROM ‘CRYING RIVER’ TO ‘TEAR DROP’

I end this chapter with a short case study that illustrates empirically the sorts of cultural politics integral to a political ecology of waterscapes that I outlined above.

Like most rivers, the Umiam River has its own story. Flowing through the East Khasi Hills in the north-eastern Indian state of Meghalaya, the story of its origin is written into its very name. A popular Khasi folk tale describes a race between two river goddesses, Umiam and Umngnot, to reach the plains of Sylhet in downstream Assam. Umiam loses the race to her sister and, in shame, ‘slackened her speed and split herself up into five branches’ (Gurdon, 2006: 133). It is believed that her grief led to her being named as the ‘crying river’. When this river was dammed in 1965 as part of the Umiam Umtru hydroelectric project, it produced a waterscape covering 221.5 sq km. The first such project in the region, it was considered a notable achievement in independent India’s hydraulic history. It simultaneously aimed to ‘stitch’ the north-east to the ‘mainland’ through ‘nationalizing frontier space’, thereby extending state rule into previously ‘uncontested spaces’ (Baruah, 2005: 34).

Crafting power relations into the landscape in this way has been both a colonial and postcolonial practice. The Meghalaya capital (Shillong) was administrative headquarters during colonial rule, with numerous educational, religious and administrative institutions set up then, giving the city a unique ‘progressive’ regional identity. British settlers involved in the tea trade altered the landscape, introducing such things as ornamental lakes, golf courses and a polo ground. These aesthetic modifications are akin to those carried out in Zimbabwe, mentioned above (Hughes, 2006a). Though not as extensive, they nonetheless facilitated a sense of belonging while ‘demonstrating’ imperial might. Moreover, the presence of Welsh missionaries ensured that most animistic Khasis residents converted to Protestantism before independence. An image of progress thus characterized Shillong via language, religion and education even before the local arrival of a modernist independent state. Hence state-building in the area has long been both a cultural and geographical project.

After 1965, the name ‘Umiam’ faded into the background as the new waterscape was called Barapani (‘big water’) after a nearby village. Barapani was an easier word for non-Khasi (i.e. Assamese, Bengali and Hindi speakers) to use; it thus gained wide currency in popular parlance. There followed a reworked version of the folk story mentioned above. This version discusses how two sisters walked from the heavens towards Meghalaya, and during their journey one managed to reach it while the other got lost and shed tears in grief, forming the Umiam River. Widely circulated on the internet (including sites of tourist agencies), it was also referred to in a documentary made by the state-owned Indira Gandhi National Open University in 2003 entitled ‘Umiam Lake: a gem under threat’. Such reconstruction of folk history also seeps into academic work – notably in Ramachandra Guha’s (2001: 235) book on anthropologist

Verrier Elwin, where he states that the name of the lake in Khasi means 'tear drop'. Consumption of this recast story in turn plays a key role in the 'naturalizing of [an] artificial, anthropogenic waterscape' (Hughes, 2006b: 827). Understanding this transformation from 'crying river' to 'tear drop' in political-ecology analysis requires a cultural turn, as promoted in this chapter.

Ironically, whereas Umiam was meant to be symbolic of Meghalaya's *connectedness* to the nation-state, it has increasingly symbolized Meghalaya's cultural and political *separateness* from India. Partly this relates to modern marketing. Thus tourism advertising features an image of the waterscape beside the word 'Celtic', while referring to Shillong as the 'Scotland of the East'. Such imagery evokes an idyllic colonial past and through it signifies Meghalaya's distinctiveness from the mainland. This re-working vindicates Bender's (1993: 3) claim that 'landscape is never inert, people engage with it, re-work it, appropriate it and contest it. It is part of the way in which identities are created and disputed, whether as individual, group or nation state'.

But it also relates to a growing local environmental crisis. The naturalized dam has certainly generated a sense of belonging for Shillong's residents for almost 50 years. Yet growing lake pollution and siltation have led to fierce public debate about its conservation (Acharya, 2009). Such ecological concern tends to be voiced in a nationally dominant cultural idiom of criticizing local indigenous people. Thus the prevailing rhetoric correlates the effects of shifting cultivation upstream with siltation of the lake downstream. 'Expert' solutions then promote horticulture and floriculture upstream for those 'responsible' for creating the problem. Given that shifting cultivation is embedded in a context of community-based land ownership and management, however, the new conservation agenda queries the entire ethos of such indigenous land management. Similarly, the need for wastewater management to reduce waterscape pollution has also led to public debate about how 'efficient' *durbars* (traditional governance institutions) are in the face of rapid urbanization (Blah, 2014). The waterscape hence mirrors and animates contemporary cultural-cum-political conflict, often pitting a modernizing urban constituency against traditional institutions and practices. Donors such as the Australian Government and the Asian Development Bank meanwhile become involved as they finance urban infrastructure projects and demand urban governance reforms. More interestingly, environmental crisis is linked to the perceived failure of the nation-state to conserve heritage. Thus the waterscape first produced to legitimize the nation-state is now working to delegitimize it in light of that actor's apparent failure to conserve it. And yet the Umiam waterscape can be simultaneously viewed as a 'shadow landscape' (Bryant et al., 2011) in that today it is a 'centre' of marginalization as outside 'experts' intervene ever more deeply in Khasi residents' lives. On the one hand, proposed dredging of the lake-bed to solve the siltation problem is likely to impair the livelihoods of local fisher folk, while, on the other, GIS mapping of land use in the surrounding catchment area will entail further restrictions on indigenous cultivation, thereby putting livelihoods, traditional knowledge and an entire way of life at risk.

Culturally mediated consumption of a waterscape, as in the Umiam's transformation from 'crying river' to 'tear drop', underscores how these phenomena are characterized by polysemy in that they constantly produce and reproduce new meanings and values through a process linked to a 'locus of contestations' (Espeland, cited in Baviskar,

2007: 5). The struggle shaping waterscapes here is enmeshed in complex ‘cross-cutting matrixes of culture, power and history’ (Moore, 1998: 346), as well as the unruly materiality of water itself. The notion of the waterscape is thus invaluable to the elaboration of a political ecology of water. It is already informed by sophisticated analyses of water-power dynamics, unruly materiality and emancipatory projects. But this chapter has argued that political ecologists need to go even further than that: they need to fully embrace a cultural turn that prominently addresses factors such as symbolism, consumption, belonging and landscape in their research. In doing so, they will be promoting an approach that places the cultural politics of the waterscape centre stage.

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28. Greening the job: trade unions, climate change and the political ecology of labour

Stefania Barca

This chapter addresses questions at the intersection of green economy discourse (as well as practice) and work. The green economy, as developed in mainstream economic and political thought, is constituted by three agencies: nature, capital and labour. While scholars have paid due attention to the first two (i.e. climate change/resource exhaustion and capitalism), little consideration has been given so far to organized labour and to a broadly defined working class as those most affected by the process of greening the economy.

Broadly speaking, there is a strong need for political ecology to include work and labour more firmly on its research agenda. Trade unions and organized labour, different groups of workers and working-class communities rarely figure in political ecology narratives as key actors in environmental change and politics. Even environmental justice studies, be they focused on urban working-class neighbourhoods or on rural/global South communities, pay insufficient attention to work-related aspects and to the relationship between occupational, environmental and public health (Barca, 2012). The obliteration of ‘class’ and ‘labour’ in scholarship on environmental issues may reflect broader ideological divisions between labour and environmental movements, but this bias is much less significant in a field such as political ecology, traditionally conditioned by a leftist culture. Therefore a (historical) political ecology of work could be undertaken in order to gain a better view on the political economy drivers of contemporary ecological crisis in its local to global implications.

Such an undertaking, as suggested elsewhere, could occur at three analytical levels: (1) the landscape, to encompass past human labour and social relationships incorporated into the land (Williams, 1980); (2) the workplace, in its multiple forms and settings, as the context in which a working-class ecology unfolds, with its peculiar contradictions and political meanings; and (3) trade unions and labour organizations, as the place where a working-class ecological consciousness takes (or not) expression and evolves (or not) into political action (Barca, 2014).

This chapter concentrates on the third level, and particularly on the mainstream labour movement’s views on climate change and climate action. I first review an incipient scholarly conversation on labour’s place in the green economy, suggesting that the eco-feminist economics perspective should be more fully integrated into it. Then I provide a detailed discussion of ‘climate jobs’ and ‘Just Transition’ discourses on the part of international labour organizations, focusing on the One Million Climate Jobs campaign in the UK and South Africa.

CRITICIZING THE GREEN ECONOMY: THE VIEW FROM LABOUR

Critiques of the ‘green economy’ are now well developed in political ecology (e.g. Castree, 2009; Bumpus and Liverman, 2011; Levidow and Paul, 2011; Bonds and Downey, 2012), while being contiguous to eco-socialist views expressed in such publications as *Capitalism Nature Socialism* or *Climate and Capitalism*. Differences exist, though, among that small group of writers who focus on the issue of ‘green jobs’, and specifically what is labelled the Green New Deal (GND) – that is, proposals for a recovery programme of public spending in the area of green energy and infrastructure, simultaneously aimed at creating jobs and saving the environment. US eco-socialist scholar-activist David Schwartzman, for example, argues that the GND should be embraced as ‘a nexus of class struggle with the potential of opening up a path to ecosocialist transition on a world scale’ (Schwartzman, 2011: 49).

In contrast, *Climate and Capitalism* author Don Fitz rejects both the GND and its global version – what the UNEP calls the Global Green New Deal, launched in 2009 with financial backing from the OECD, WTO and IMF, and political endorsement by the Green Parties in the European Parliament. According to Fitz (2014: 7), the ‘call for measures that will “stimulate job creation,” in the absence of a parallel call to decrease the hours of work, is a *de facto* proposal for economic growth’ even as green production ‘would mean a new influx of poisons from mining, processing, manufacturing, transportation and disposal within the GND’s full life cycle’. And those paying the heaviest price for that plan ‘would be those it claims to help: low income communities of color’ (ibid.: 8).

A still different view is that offered by Jesse Goldstein (2013), who distinguishes between GND and the green economy: the former advocates a massive public works programme and expansion of the capitalist economy, while the latter encompasses more varied and imaginative proposals for private initiatives that may underpin a new economy. Similarly, Nelson (2012) stresses the need for critical scholarship ‘to reframe how we think about cooptation’, in the sense of looking for opportunities to experiment with anti-capitalist projects via the green capitalist movement (thereby reversing the usual direction of borrowing of ideas and practices).

This view connects well with the non-capitalist perspective recently presented in the *Journal of Political Ecology*, and particularly in Boone Shear’s article on the green economy. Due to its ability to ‘accommodate elements of both Keynesian regulation and neoliberal development discourse’, he writes, the green economy may help facilitate a new historical bloc (in Gramscian terms) ‘in which progressive interests could articulate around the idea that the construction of the green economy should benefit all social groups, as well as the environment’ (Shear, 2014: 195). This project, however, could also entail ‘a form of governmentality that seeks to discipline and produce people that will then reproduce capitalism’ (ibid.: 197). Working with union and community organizers of a Central Massachusetts Green Jobs Coalition (GJC), Shear observes and (self-)reflects on what the green economy means to people at the grassroots level. Facing discrepancies between high hopes and often stark realities (e.g. fewer new jobs created than expected), he notes ‘grim resignation’ due to awareness that the green economy’s ability to bring about a more just order of things ‘is at the

mercy of the [capitalist] economy, which is ultimately in charge' (ibid.: 201). Capitalism is thus the equivalent of a 'Lacanian Big Other', the symbolic order that tells subjects how and what to desire, setting the conditions in which to play with such desires. Concurrently, this awareness dialectically generates a drive for transformative action beyond the limits set by 'green capitalism' in order to realize concrete possibilities for a non-capitalist order. A tripartite model resulted from the GJC debate: '1. Alternative economics – initiatives, enterprises, trade and finance that privilege community and ecological wellbeing over individual gain ... 2. Resistance and reform – working against environmental degradation, social inequality, and poverty ... 3. Social inclusion – efforts to end racism, sexism and other forms of oppression and exclusion' (ibid.: 205). Inspired by Gibson-Graham's concept of 'diverse economy', Shear sees this discussion as a manifestation of how 'the green economy is a contingent, undetermined, economic space full of circulating desires, ideologies and fantasies, and a full range of capitalist and non-capitalist relationships and practices' (ibid.: 206).

I return to this matter below, but wish first to enlarge our view in relation to recent work in different though converging areas of investigation. One concerns the sociology of labour, where scholars maintain a critical if nonetheless open approach to green jobs strategies, highlighting both ambiguities and opportunities here. For example, Rätzkel and Uzzell (2013: 9) criticize such strategies for being largely directed at governments and businesses while involving 'unionists and workers as campaigners only, not as makers of their own futures'. Instead, they invoke 'a trade union programme that makes use of workers' skills and knowledge to explore and design ways in which industries (and services for that matter) can be converted' as 'seeds of alternative forms of working and living in practice' (ibid.): this would be a strategy of 'revolutionary reformism' after Rosa Luxemburg. The authors also advocate a new scholarly approach called 'environmental labour studies', whose theoretical rationale is to understand how 'nature and labour are intrinsically linked and equally threatened by globalising capital', while 'the development of environmental trade union policies worldwide provides the empirical rationale' (ibid.: 10). This argument is made in the introduction to a collection of essays on trade unionism and climate change, mainly focused on heavy industry – because this is the focus of most labour organizations in addressing the transition to a low-carbon economy (as shown below). While aware that this focus excludes 'the majority of workers in the countries of the North, who work in the service sector and offices, the requirements of which also make a significant contribution to climate change' (ibid.: 11), the authors still seem to ignore the equally important exclusion of informal, unpaid and meta-industrial work done in agriculture, households and the care sector.

Meanwhile, for Cock (2014: 33), a 'just transition to a low carbon economy could contain the embryo of an alternative eco-socialist social order', provided that labour (and the Left) adopt it as a strategy 'for collective and democratic control of production, decentralized energy systems, production for social needs [rather] than profit, [and a] shift to agroecology'. She notes: 'the "green economy" is an empty signifier. Nowhere is it precisely defined. Everything depends on who claims it and gets to fill it with meaning' (ibid.: 24). Indeed, such an economy is also place-specific, and may take on different forms depending on latitude or other geographical factors. And

yet the global nature of climate change requires ‘building transnational solidarity networks involving labour and environmental activists’ that capitalize on traditions of ‘social movement unionism’ such as that developed in the anti-apartheid struggles of South Africa: these ‘solidarity networks’ are capable of mounting ‘a powerful challenge to the neo-liberal green economy’ (ibid.: 39).

The Eco-feminist Economics Perspective

Missing from this discussion is the eco-feminist perspective – developed since the 1980s by diverse scholars in different fields interacting with eco-socialist and ecological economics scholarship. Feminist ecological economics has developed, for instance, a view of the economy as ‘a complex of individual, family, community, and other interrelationships which each have economic and ecological significance’, centred on the primacy of ‘the work which takes place in households and communities’ (Perkins, 2009: 1). Notable early work here featured Maria Mies, Veronika Bennholdt-Thomsen and Vandana Shiva on the ‘subsistence perspective’, that is, a paradigm centred on that work that the universal spread of the wage-labour regime, and the associated conversion of all things and services into commodities, has undermined and made invisible in public discourse, including in the social sciences (e.g. Mies and Bennholdt-Thomsen, 2000).

For Ariel Salleh (2010: 212), ‘any theorization of labor based exclusively on the experience of working men, is seriously deficient’, as it does not account for the meta-industrial labour class, formed of those ‘workers, nominally outside of capitalism, whose labor catalyzes metabolic transformations – be they peasants, gatherers, or parents’, while ‘supporting ecological integrity and the social metabolism’; she theorizes this labour as ‘relational, flow oriented, and regenerative of biotic chains’. Meta-industrial work, which constitutes the largest labour class worldwide, coexists with capitalism, which could not do without it. By relying on knowledge from sustainability science and economics, with its heavy modernist bias focused on quantitative efficiency rather than eco-sufficiency, the labour movement remains ‘locked into productivism and its technological fixes as much as the profiteering class is’ (ibid.). This perspective is of fundamental importance to political ecologists wishing to make a theoretical contribution to discussions on the green economy. It invites scholars to extend ‘sociological concepts of labour and value that evolved with industrial capital’ by rethinking the relation between productive work and reproductive or regenerative (i.e. care) work, because ‘a globally democratic resistance to capital calls for the recognition of “other” labors and the other value that they catalyze’ (ibid.).

A crucial contribution here is made by the feminist economic geographers J.K. Gibson-Graham and their *Diverse Economies* activist/research project. Going beyond the discursive violence not just of wage labour but of the capitalist economy in general, they emphasize that ‘non-market transactions and unpaid household work (both by definition non-capitalist) constitute 30–50% of economic activity in both rich and poor countries’ (Gibson-Graham, 2008: 615). They thus advocate ‘a new economic ontology that could contribute to novel economic performances’ (ibid.): this ontology is based on the assumption that what is considered ‘marginal’ in mainstream economics and

political economy – notably such things as care of others, consumer/worker cooperatives, community-supported agriculture, local and complementary currencies, the social economy/third sector, informal international financial networks, squatter, slum-dweller, landless and co-housing movements, the global eco-village movement, fair trade, economic self-determination, the re-localization movement, community-based resource management – are ‘actually more prevalent, and account for more hours worked and/or more value produced, than the capitalist sector’ (ibid.: 617). This approach aims to spur transformative research and politics in order to counter the tendency within the Left of marginalizing projects of non-capitalist development to (at best) pre-figuration as part of ‘a politics of postponement’ (Gibson-Graham, 2006, ix). Recently, the authors have proposed an ‘economic ethics for the Anthropocene’ based on the need for a scholarship less focused on criticizing techno-fix or value-shifting ‘solutions’ to the climate crisis, and more on reading ‘the potentially positive futures barely visible in the present order of things, and to imagine how to strengthen and move them along’ (Gibson-Graham and Roelvink, 2010: 342).

Gibson-Graham’s approach is becoming influential in political ecology, as evinced notably by a recent issue of the *Journal of Political Ecology* that invited engaged researchers to contribute to an ecological revolution by seeing current non-capitalist practices ‘as part of a revolutionary politics’ (Burke and Shear, 2014: 129). This approach is helpful in building a political ecology of labour that may help trade unions and the Left in general to envision alternative radical strategies beyond that of the ‘green jobs’ discourse under ‘green capitalism’.

As such, critical scholarship on the green economy should take (eco-)feminist economics and political economy seriously, engaging in a fruitful conversation with its principles and political proposals. An ecological vision of work must therefore include both the blue-collar workers in heavy industry and the workers in agriculture, service jobs and meta-industrial work. This vision would thereby crucially incorporate the large numbers of those who are excluded from the job market but nevertheless do most of the caring activities that make life on earth possible, allowing the reproduction of both human and non-human nature (Federici, 2012). By failing to incorporate this perspective, the GND strategy has implicitly reproduced the dominant gender hierarchy of the capitalist labour market by concentrating ‘on the expansion of sectors such as energy and construction that are traditionally dominated by men’, while ‘unpaid female social reproduction work is thus silently accepted and assumed to be infinitely available’ (Bauhardt, 2014: 61). A detailed look at the mainstream labour movement’s discourse on the green economy will make clear how this is indeed the case.

LABOUR ENVIRONMENTALISM IN THE AGE OF CLIMATE CHANGE

There are two historical phases in organized labour’s environmentalism in industrialized countries: an earlier wave (starting with the birth of trade unionism) centred on the work place and/or the living environment of working-class communities and the built environment at large, thereby stimulating convergence between occupational health and safety on the one hand and the protection of public and environmental health on the

other (Barca, 2014; Mason and Morter, 1998; Räthzel and Uzzell, 2013); and a later wave (starting after the Rio 1992 Earth Summit) centred on concepts of ‘sustainable development’ and, more recently, ‘green economy’ and ‘Just Transition’ (JT). The latter concept expresses the idea that structural changes in the productive apparatus aimed at reducing its carbon content should not be paid by workers through job losses and destabilization of local communities.

Although the above picture does not account for differentiation among trade unions or geographical contexts, let alone between different periods in the industrial era, it nonetheless illuminates the long-term evolution of labour’s perceptions of environmental issues, reflecting both societal and environmental changes occurring over the last 150 years. This evolution encouraged coalition-building between labour and environmental movements, prompting formation of so-called blue–green alliances – that is, between unions representing blue-collar workers in heavy industry, transport and energy sectors, and environmental NGOs. Examples are the Blue Green Alliance (in the USA) involving collaboration between the Sierra Club and the United Steelworkers Union; the One Million Climate Jobs Campaign in the UK and in South Africa; the Brazilian Environmental Justice Network (RBJA) and the Brazilian NGOs and Social Movement Forum for Environment and Development (FBOMS).

Such alliances range from national to local level and represent the latest chapter in a long history of efforts designed to overcome divisions between red and green politics (Barca, 2012). What is new about them is the growing political consensus that they embody on the need to tackle climate change, which has brought greening of the economy centre stage, while encouraging union mobilization on environmental matters as part of a broader social agenda. This process has generated tremendous opportunities but also tensions in labour’s environmentalism. For instance, within a common tendency of many groups to adopt a JT framework, important differences of interpretation persist: from a simple claim for jobs creation in the green economy to a radical critique of capitalism and a linked refusal to tolerate market solutions.

There are clear political implications here. Thus, for example, in analysing US blue–green alliances, Gould et al. (2012) highlight a loss of radicalism that they attribute to a post 9/11 politics centred on repression of dissent that has effectively marginalized anti-systemic strands in both labour and environmental movements. At the same time, concepts of ‘sustainability’ and ‘Just Transition’ have become progressively more popular as common ground for a unified political strategy between the two movements based firmly on a non-anti-systemic platform promoting ‘green growth’ rather than on one based on more challenging environmental or social justice perspectives.

This evolution has reflected wider international changes. Especially important here has been the creation of the International Trade Unions Confederation (ITUC) as a result of the merger of the International Confederation of Free Trade Unions and the World Confederation of Labour in 2006, and the ITUC’s launch of the first international labour’s programme on climate change policies at the Trade Union Assembly in Nairobi in that same year. This step stimulated creation of special union offices dedicated to formulating official positions on climate change, which have been increasingly geared toward the JT concept. It is thus worth briefly exploring this concept.

Setting the Agenda for Social Dialogue: the Just Transition Approach

Just Transition (JT) is defined by the ITUC as a ‘tool the trade union movement shares with the international community, aimed at smoothing the shift towards a more sustainable society and providing hope for the capacity of a green economy to sustain decent jobs and livelihoods for all’ (Rosemberg, 2010: 141). According to ITUC executive Anabella Rosemberg, it is ‘a supporting mechanism of climate action, and not inaction. Just Transition is not in opposition to, but complements environmental policies. This confirms the idea that environmental and social policies are not contradictory but, on the contrary, can reinforce each other’ (ibid.). Further, she says that the JT framework must incorporate: (1) sound investments in low-emission and labour-intensive technologies and sectors; (2) early assessment of social and employment impacts of climate-change-related policies; (3) social dialogue and democratic consultation of social partners and stakeholders; (4) training and skills development; (5) social protection schemes, including active labour market policies, in order ‘to avert or minimize job losses, to provide income support and to improve the employability of workers in sensitive sectors’ (ibid.: 144), while addressing the consequences of climate change and extreme weather events on the poorest and most vulnerable; and (6) local analysis and economic diversification plans in order to help local governments to manage the transition to a low-carbon economy and enable green growth.

The JT strategy incorporates inputs from diverse stakeholders, including government (e.g. economic ‘stimulus’ policies), corporations (e.g. corporate social responsibility policies), academics as well as political leaders (notably propounding ecological modernization discourses), and international organizations such as UNEP, OECD, EU, ITUC and ILO (e.g. their directives, reports and recommendations). All these stakeholder interests and inputs converged at the 2012 Rio+20 Summit in the form of a consensus on the need to green the world economy in order to simultaneously save jobs and the climate but without querying the current political economic system.

The UN’s ILO (International Labour Organization) has been arguably most active in promoting this agenda. For one of its leaders, tackling climate change requires creating ‘a global consensus that involves all stakeholders. Such a consensus will only arise if there is a seemingly “just” sharing of the burden in this battle to keep the planet hospitable to human beings’ (Cunniah, 2010: 121). The role that trade unions need to play in this international process is to propose reduction targets for greenhouse gases obtainable through investment schemes that are driven by a preoccupation with jobs rather than a sole focus on reducing current production levels.

The ITUC has been a key partner of the ILO. Such *realpolitik* reflected an awareness gained by the labour movement, especially after the 2009 Copenhagen negotiations, about the need to develop a ‘job-friendly rationale’ that would spur governments to act (Rosemberg, 2010). This argument, however, renders implicit the idea that trade unions had an inherent motivation to support emission reduction policies in the first place, and that governments alone were in the way of achieving this aim – a stance that is hardly credible given the sector’s past environmental positioning.

Overall, the ILO/ITUC vision of Just Transition emphasizes a strategy of consultation and social dialogue, good governance and enhanced communication that serves thereby to hide lingering tensions and conflicts. It is mainly based on scientific claims

coming from environmental economic and macroeconomic thinking; a notable example here is the Stern Report (2006), which demonstrated how the costs of fighting climate change through mitigation and adaptation investments were far less than the costs of inaction. The ITUC then intervened with the idea that such investments were employment friendly. This focus persisted at high-profile international gatherings. For instance, in the lead-up to the UNFCCC conference in Bali (in December 2007), ‘a strong statement was released by the trade union movement’ raising concerns about the need for climate policies to ‘become “job-literate”’ (Rosemberg, 2010: 129).

Clearly, the ITUC position reflects a vision of government economic intervention aimed at harmonizing costs and distributing benefits of climate change policies among social parties. If carefully planned, the argument goes, both mitigation and adaptation policies can have positive social effects through job creation in ‘infrastructure investments, such as the building of coastal defences, flood protection, drainage containment, road adaptation, etc.’ (ibid.: 134). Indeed, a new economic momentum is to be gained via investments that protect territories and populations from the adverse effects of climate events to come – the latter becoming, paradoxically, employment ‘opportunities’ – even as the impacts of massive infrastructure projects on local communities and ecosystems are not considered.

In general, though, this ILO/ITUC plan is unrealistic. For instance, it does not take into account the fact that the Washington Consensus has forced virtually all governments to terminate social policies wherever possible and ignore (when not destroying) local economies, while adopting a competitiveness model based on ever lower labour costs and the hobbling of union power at the behest of global capital. No wonder, then, that (as Rosemberg herself concedes) the ‘virtuous circle’ between climate action and labour policies promoted by the ILO, ITUC and other UN agencies has failed to gain any traction in climate negotiations.

Another problem with the ILO/ITUC plan is that the potential to create jobs from investments in climate change mitigation (e.g. substitution of fossil with renewable energy) is quite uncertain. Indeed, as such investment will be differentiated across time and space, it is all but certain to thereby create more (and not less) uneven development and inequality – something that is scarcely even considered in the plan. Instead, emphasis is placed on ‘the expansion of renewable energies such as solar, wind, geothermal and agro-energy’, with roughly 6 million jobs estimated to be created in solar power, 2 million in wind power, and 12 million in biofuels-related agriculture and industry by 2030 – a sector where every billion dollars invested is expected to create 30 000 new jobs such that it will be ‘generating more jobs than the fossil fuel-based energy sector per unit of energy delivered’ (Rosemberg, 2010: 139). And yet, the two empirical studies that are available on this aspect – ‘one global assessment [prepared by UNEP, ILO, IOE and ITUC in 2008] and one [multi-country] macroeconomic study [i.e. concerning the European Union and produced in 2006]’ are both ‘cautious regarding the net employment impacts of “green” policies’ (ibid.: 137).

But the greatest problem that the ILO/ITUC plan tends to gloss over is that ‘green energy’ is notably about biofuels and hydropower production, whose sustainability and contribution to tackling climate change are (at best) disputable. Indeed, green labelling via the simple renaming of old activities (e.g. cash-crop farming) as ‘sustainable’ might account for a very large share of the green economy balance sheet. Consider, for

example, the ‘green jobs’ sector in Brazil – where biofuels (mostly produced from sugarcane) represent more than 50 per cent of total employment (Muçouçah, 2009). Further, as a dedicated literature has amply demonstrated, labour conditions in the *canaviais* (sugarcane plantations) are way below international standards, even as basic human rights are violated; meanwhile, planned mechanization in the sector will mean that thousands of workers will soon become unemployed without compensation or alternative employment (Penha de Araújo, 2011); in addition, sugarcane monoculture and processing constitute serious environmental and public health threats while replacing local food production, prompting in turn environmental conflict with local communities and indigenous people (Firpo de Souza Porto et al., 2013). And yet the Brazilian biofuel industry garners ongoing government, trade unions and ILO support due to its ‘green energy’ producer status – something that is today only reinforced further in order to sustain its competitiveness in the face of the recent discovery of huge offshore crude oil deposits (Muçouçah, 2009).

A big part of the problem in all of this is that, in assessing policies and envisioning solutions, both the ITUC and ILO clearly prioritize scientific research (of an institutional kind) over politically minded work. Thus social movements and political parties, ecological distribution conflicts, social metabolism or radical perspectives such as de-growth, eco-feminism or eco-socialism are never mentioned by them. While research questions are formulated on the base of current ‘knowledge gaps’ in terms of foreseeing impacts of climate policies in different national contexts, economic sectors and so on, none of the ILO/ITUC statements implies that interlinked ecological/economic crises arise from the current global politico-economic system, let alone that addressing the former necessitates transforming the latter. On the contrary, that system can apparently reform itself from within by way of a highly unlikely international coordination of different national schemes, each calibrated to that nation’s development stage. Such coordination is unrealistic, as the failure of carbon schemes proves.

Indeed, in placing unconditional faith in ‘green growth’, the ITUC and ILO seem unaware that such growth is already taking place, not despite the economic crisis but precisely because of it: it is how capital produces new possibilities for accumulation, notably via investment in new technologies (e.g. renewable energy) and markets (e.g. carbon), just as the Second World War and post-war reconstruction were capital’s way out of the Great Crisis of the 1930s. Parallels could be drawn between the staggering number of deaths and sheer amount of destruction that were required in that war with those that are already happening due to the combination of extreme climate events and long-term changes in resource availability and ecosystem functioning.

Moreover, nothing links the (purported) greening of the capitalist economy to decent work conditions and stable employment for labour. On the contrary, employers will probably take advantage of this transition or ‘restructuring’ to eliminate residual workers’ rights, as the case of the Brazilian biofuels industry makes clear. True, perception of such risks is not completely absent from supporters of the ILO/ITUC position. Thus, for example, Olsen (2010: 297) admits ‘that the winning tender may well be the one which pays the lowest wages, does not offer safety equipment or coverage for accidents, and which has the largest proportion of informal workers, for whom no tax or social security is paid, and who are not covered by any legal or social protection’, a possibility increased by the tendency of public authorities towards

‘outsourcing public and support services via contract, and financial investment in public–private partnerships’. Yet the response here is unconditional faith in international conventions such as the ILO No. 94, which sets out ‘a universal labour standard in the area of public contracting’ (ibid.). Such faith, though, flies in the face of evidence that such conventions are notoriously ineffective and indeed blatantly ignored by most of the private sector.

Reclaiming the ‘Green Economy’? The OMCJ Campaign

The most interesting example of JT as a labour-based coalition strategy is given by the One Million Climate Jobs (OMCJ) campaign. It was launched by a UK coalition of trade unions oriented towards ‘green growth’, before also being claimed by a South African labour/environmental/social movement coalition in 2011; it originally promoted a Keynesian investment scheme designed to create ‘climate jobs’. The latter are distinct from generic ‘green jobs’ insofar as they specifically seek to produce drastic cuts in the emission of carbon dioxide, methane and other greenhouse gases. In the UK, these proposed climate jobs were linked to the 8 tons of annual CO₂ emissions produced by the electricity, construction and transport sectors – seen to be the most obvious initial target of climate action. Aimed at creating blue-collar jobs in these sectors, the campaign thereby remained silent on agriculture – a striking omission given that agriculture-related deforestation and grazing produce vast quantities of methane gas that in turn account for about half of total greenhouse gas emissions at the global level. While most such emissions are not produced in the UK (where, it is true, agricultural employment is today much reduced from the past), there should nonetheless still be an accounting of the UK’s contribution towards the carbon footprint and social impact of the global agriculture economy, given its substantial agricultural imports. Such an omission can only be explained by remembering that this campaign is solely focused on job creation in the UK, and hence not on solutions to global ecological crises. Even within the UK context, though, the campaign does not pay attention to care, reproductive and domestic work, which are vital to overall social and economic well-being in any economy (i.e. green or otherwise).

At the same time, the conspicuous lack of any anti-systemic language within the UK OMCJ campaign is not surprising, given that the entire JT discourse on which it is based aims at consensus-building across trade unions, ENGOs and governmental agencies at the national and international level. And yet, as discussion of the South African version of the OMCJ campaign next shows, the campaign has indeed the potential to mobilize different, more critical and ultimately transformative approaches.

According to Jacklyn Cock, South Africa embodies two global crises – rising socio-economic inequality and climate change – thus experiencing tremendous tensions between official commitments to de-carbonize the economy and to reduce poverty (including energy poverty): this has pushed the labour movement to uniquely orient Just Transition towards ‘demands for deep, transformative change meaning dramatically different forms of production and consumption’ (Cock, 2014: 24). Such change requires ‘an integrated approach to climate change, unemployment and inequality, as well as a rejection of market mechanisms to solve these problems. Unlike some other formulations of the green economy, in this model the link between social justice and

climate change is acknowledged, and the need for radical, structural change is emphasized' (ibid.). This approach to JT is driven by an anti-capitalist stance that worries that a de-carbonized economy might simply reproduce current relations of power and inequality, based as it is on highly 'conservative' thinking surrounding sustainable growth and 'financialization' of ecosystem services.

South African unionists developed this critical perception in light of their recent experience in the sector: specifically, after signing a Green Economy Accord in November 2011 based on a 'social dialogue' approach that bound government, business and labour together in the planned creation of thousands of jobs in a new green industrial base. Noting the many flaws and limitations in practice with this Accord – inflated claims not supported by evidence, persistently low standards and wages, job losses etc. – they realized that these deficiencies derived from the fact that 'green jobs (for example in the privatized renewable energy programme) are driven more by the interests of the market rather than by social needs' (Cock, 2014: 30). Consequently, the national unions federation COSATU (representing 20 South-African trade unions) resolved to adopt a Climate Change Policy Framework of 15 principles, among which were identification of capitalism as the underlying cause of global warming and (hence) rejection of market mechanisms to reduce carbon emissions (i.e. carbon trading). Departing from the ILO/ITUC definition of JT, COSATU argues that this concept must be 'developed further to fully incorporate our commitment to a fundamentally transformed society' (ibid.: 32). Similarly, the National Union of Metalworkers of South Africa (NUMSA), one of the biggest COSATU affiliates, rejected green jobs as a component of a new green capitalism in favour of an alternative vision of JT, 'based in worker controlled, democratic social ownership of key means of production and means of subsistence' (ibid.). The Food and Allied Workers Union (FAWU) also expressed support for 'class understanding of a just transition to a green economy' and for 'radical alternatives to industrial agriculture, particularly agro-ecology' (ibid.).

Concurrently, COSATU and the National Council of Trade Unions (NACTU) joined with ENGOs and diverse social movements to launch a South African OMCJ campaign in 2011. Aiming 'to exclude attempts by capital to use the climate crisis as an opportunity for accumulation', the campaign was strongly influenced by environmental and climate justice organizations, while also being based on 'a number of prefigurative projects in order to demonstrate the viability of policy proposals' put forward by the campaign (Cock, 2014: 36).

In the South African vision, the shift to renewable energy forms part of a wider transition towards publicly owned small-scale and localized energy production and autonomy at the household/village level. Firmly under decentralized community participation and control, this arrangement would grant everyone access to energy through low prices (OMCJ, 2011). A similar approach is applied to food production and distribution, where a shift away from industrialized agriculture towards agro-ecology is envisioned, since climate change is understood as a seriously aggravating factor in food insecurity. Cock (2014: 40) concludes: 'While there is no consensus, there are elements of the transformative model of the green economy within the labour and environmental movements' and 'the embryonic alliance that is developing between these movements is a hopeful site for an effective challenge to the "corporate capture"

of the green economy discourse'. This in turn may generate transnational solidarities between labour and environmental movements (Cock, 2011).

For Leonardi (2012: 312), though, the 'explicit and welcome politicization' of the South African OMCJ campaign with its 'complete rejection of any technocratic rhetoric' may be nonetheless impaired by its heavy reliance on the state as the only social agency opposed to capital and the market. The campaign thus assumes that local economies and communities must be protected from the potentially adverse effects of international trade rules as well as transnational corporations by state policies such as 'subsidies to local producers, non-price-competitive contracts, and import tariffs to help make foreign products uncompetitive' (ibid.). This author contends that the problem here 'does not concern the necessity to limit the market's all-pervasiveness but, rather, the very possibility that such a crucial task might be performed by the contemporary, heavily neoliberalized state ... deeply entangled in the cogency of the carbon trading dogma'. Instead, 'the prefigurative dimension of the *OMCJ* campaign would benefit from a non-state-based perspective such as that grounded on the notion of the *common/s*' (ibid.: 314).

While giving such criticism its due, it is important to note positive features in the South African OMCJ campaign. For example, it is the only initiative, among those mentioned herein, of a large-scale green jobs coalition that includes 'community caregivers' as its most relevant employment sector, foreseeing up to 1 300 000 jobs to be created in domestic/health care, land restoration and urban farming; similarly uniquely, the programme is written with a significant contribution from women (i.e. 16 out of the 36 authors) (OMCJ, 2011).

CONCLUSION

On 21 September 2014, while this chapter was being written, a People's Climate March of 400 000 participants took place in New York City – a demonstration of mass discontent with climate negotiations and injustices. Successful in getting such a sizeable population on the streets despite contradictions and criticisms surrounding the campaigning process itself, the march marked a historic convergence of disparate social movements and interests, including labour movements, towards the common goal of reducing CO₂ emissions in order to save life on earth. As with other historical cases (e.g. the nuclear disarmament campaign), large coalitions were enabled by a common survivalist perspective, prioritizing mass mobilization as the only way to overcome political and economic divisions at the decision-making level. 'To change everything we need everyone', the march slogan claimed.

Extensive involvement of different trade unions here reflected such a 'we need everyone' perspective, with the latter accommodating everything from radical anti-capitalist to green capitalist visions. This episode epitomizes the sorts of challenges and opportunities that arise from the current climate/economic crisis, and that must be faced by organized labour, as this chapter has suggested. This topic also prompts intriguing research questions for political ecologists. Organized labour is indeed a vast and varied reality worldwide, whose diversity is scarcely covered in the present chapter, where the focus was on the official positions of large mainstream organizations such as the ITUC.

At the same time, there is a wide array of campaigning and organizational politics, including that of a more radical persuasion that was only hinted at here. Thus discussion of South Africa's OMCJ campaign gives us an initial sense of the possibilities for reclaiming Just Transition and even Green New Deal strategies from a radical political perspective, filling them in with new anti-capitalist and (possibly) eco-feminist meanings. This case study also suggests that one way of investigating organized labour's role in climate change politics is to look at the diversity of labour/environmental strategies occurring around the world today, linking them to different economic and place-based geographies as well as to shifting political opportunity structures in their continuous struggles to renegotiate social and ecological practices at the local and/or national levels. A feminist perspective on the possibilities of becoming – as offered by Gibson-Graham and the Diverse Economies research collective, for example – is a great point of departure for political ecologists who aspire to contribute to an 'ecological revolution' by researching, helping to develop, and intellectually supporting alternative visions and practices of work–nature relationships, of which organized labour can and ought to form part.

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29. Eco-cities and the promise of socio-environmental justice

Harvey Neo and C.P. Pow

Although political ecology as a field of study has empirical roots at the intersection of environmental degradation and rural political economy in the developing world (Bryant and Bailey, 1997), it has since greatly widened its focus (Zimmer, 2010). For example, one can now speak of a political ecology of food and consumption (Bryant and Goodman, 2004), water (Bakker, 2003; Bill and Ferguson, 2003), health (King, 2010) and even insects (Biehler, 2009). More apropos here is the burgeoning subfield that assesses how politics, nature–environment and urban space interconnect. Such work retains much of the spirit and political ethos of early political ecology while expanding its theoretical and empirical horizons to interrogate new urban forms. Thus urban political ecology is principally concerned with understanding differential access to environmental resources and benefits, as well as how environmental degradation disproportionately affects marginalized social groups.

This chapter will draw on research in urban political ecology even as it challenges this subfield to expand its critique to encompass new phenomena that are shaping the urban. Thus our focus is on an emergent urban form, the ‘eco-city’, which is an increasingly important material and discursive battleground for the future of the city that positively cries out for urban political-ecology analysis. At the same time, this emergent phenomenon provides an intriguing platform from which to interrogate the possible limits and contours of urban political ecology itself. If the eco-city is seemingly a serious environmental and technological response to the deficiencies of contemporary urbanization (including widespread ecological degradation) and might thereby be for the greater good of all urban residents, then how far, if at all, might this phenomenon fit into the radical framework of urban political ecology?

The present analysis begins by briefly discussing the links between political ecology and its urban variant, before turning to an assessment of the roots and evolution of the eco-city as an ideal type. Here, the political and normative roots of the eco-city concept will be highlighted to show its possible affinities with urban political ecology and related work on urban environmental justice. Such analysis is then grounded via a case study of the development of eco-cities in China, where this concept is seen by many writers and urban planners there as being central to the resolution of this country’s chronic urban pollution problems. But this empirical account also shows how the eco-city phenomenon is embedded in the circulation of global capital via consultancy and technological support (as the role of Singapore’s Keppel Group in the Tianjin eco-city project shows). Overall, the chapter demonstrates the utility of urban political ecology in the essential work of unraveling the limitations of eco-city building in developing-world contexts, while underscoring how this subfield can expand its critical scope to take on the challenge of confronting seemingly desirable new urban forms.

FROM POLITICAL ECOLOGY TO URBAN POLITICAL ECOLOGY

At its simplest, political ecology is a theoretical perspective that attempts to understand changing nature–society relationships. In one of its earliest and arguably best-known articulations, political ecology is used to reject the then conventional scholarly wisdom that the degradation of livelihoods and environments in rural places is fundamentally the result of natural causes (Blaikie and Brookfield, 1987). These authors' lucid counterargument is that environmental degradation is often the product of political economy. The main task of this research field was thus to unravel the socio-political and economic roots of environmental degradation:

[Political ecology] combines the concerns of ecology and a broadly defined political economy. Together this encompasses the constantly shifting dialectic between society and land-based resources, and also within classes and groups within society itself, (Ibid.: 17)

Implied in this definition is a concern about social justice as well as the (in)equitable distribution of natural resources. In short, Blaikie and Brookfield's contribution was a call to focus on marginalized people in rural areas. It is a call that resonates strongly in urban political ecology today (Loftus, 2012).

Around the same time, a body of work called urban environmental justice emerged in the USA with a comparable focus on the socially marginal (Walker, 2012). Such work related the uneven distribution of ecological 'bads' to social injustice rooted notably in class, race and gender. For example, a major study by the United Church of Christ (1987) on *Toxic Waste and Race in the United States* found that ethnic minorities (especially African and Latino-Americans) were disproportionately exposed to urban pollution. As Gower explained (cited in Smith, 2000: 185):

Hazardous wastes, together with the factories and power stations which produce them, are more likely to be formed in the neighbourhoods of the poor than those of the rich; the prevalence of diseases caused by air pollution will be greater for the poor than for the rich; the costs of living in an environment with inadequate recreational facilities will be proportionately greater for the poor than for the rich.

Although the urban environmental justice literature usefully connected socio-ecological inequities to social discrimination, it did not go far enough in unraveling the roots of such inequity or in interrogating how changing forms of urban-nature emerge from such inequalities. As such, urban political ecology is a framework of analysis that usefully picks up where the environmental justice literature left off. Indeed, and while sharing a deep interest in notions of justice and equity with that literature, urban political ecology is nonetheless also based on quite different conceptualizations of nature and the environment. Above all, the latter are not seen as a static factor in causing marginality, but need to be seen as integrated, along with associated socio-ecological inequalities, in the production and reproduction of capitalist urbanization (Swyngedouw and Kaika, 2000). Put simply, there is a dialectical relationship between changing forms of marginalization and shifting material urban-natures.

In exploring this relationship, urban political ecology certainly draws on core research themes in the main research field based around economic distribution

struggles and social justice while adding the insight that ‘the material and symbolic, the natural and the cultural, the pristine and the urban are not dual and separate realities but rather intertwined and inseparable aspects of the world we inhabit’ (Keil, 2003: 727–8). We might, for our purposes here, add to this list of dichotomies the technological and the non-technological insofar as particular conceptions of eco-city are largely a socio-technological product (Joss and Molella, 2013) arising from particular capitalist formations (a point we will return to later).

Familiar themes are also made over as they are deployed in urban political ecology. Thus issues of natural resources access and contestation loom large but are framed somewhat differently from, say, access to forests products in rural places (Agrawal, 2001); they often refer instead to access to such things as parks, green belts, conservation initiatives and ecological buildings (Pincetl et al., 2011; Byrne and Wolch, 2009; Adams and Hutton, 2007; Heynen, 2006). At the same time, attention is devoted to the politically mediated provision of urban amenities to marginalized communities in cities, with potable water and sanitation two prime examples here. This is not to say that urban political ecologists only address less developed cities (Schroeder, 2005; McCarthy, 2002; Robbins, 2002). Indeed, cities of varying sizes, wealth and location all grapple with the key question of providing a good living to their residents. In that sense, they mirror wider debates and concerns over how to best promote urban sustainability.

In this regard, Banister (1998: 65) has noted that the main objective in the advancement of ideas and practices of urban sustainability ‘is to improve the quality of life [for all] by providing affordable housing, employment opportunities ... It also aims to provide quality of life through open space and green space, and it could include cultural, leisure and recreational resources.’ The implicit goal here to provide for all urban residents (particularly the less well-off) thus echoes the explicit focus on the marginalized to be found in urban political ecology. This quote also illustrates that urban sustainability is ‘an inherently multi-dimensional concept’ – to the extent that, perhaps, the many ‘disparate environmental, social and economic factors involved are mutually incommensurable’ (Stirling, 1999: 119). Still, it is clear that urban sustainability has normative implications insofar as decisions must be made as to what can and should be sustained and what hence cannot or should not be sustained (Rogers, 2000) – all linked to place-specific deliberations.

In the end, urban political ecology is first and foremost interested in exploring and promoting the basic rights of (especially marginalized) people living in cities. As Keil (2003: 729) elaborates: ‘urban political ecology is ultimately a question of democracy, governance and politics of everyday life’. With urban political ecology framed in this manner, we next explore divergences and convergences between its key tenets (and related environmental justice research) and the eco-city idea. Later we ground these concerns through analysis of a Chinese case study.

ECO-CITY, URBAN POLITICAL ECOLOGY AND ENVIRONMENTAL JUSTICE

Broadly speaking, a push to develop the eco-city can be seen to be both a critique of and a response to the untenable status of cities. Cities as densely populated net emitters of carbon are never able to produce enough resources (e.g. food, energy) to sustain themselves. They are thus fundamentally environmentally unsustainable and are kept viable only by drawing essential materials from regional hinterlands or beyond. Unlike much urban environmental justice literature, which, in its attempt to redress inequities *within* the city, thereby sidesteps the wider issue of environmental sustainability of these human-constructed spaces in the first place, an urban political-ecology gaze on cities precisely analyzes these multi-scale flows and spaces of power that habitually create marginalized hinterlands (e.g. Swyngedouw, 2004). Indeed, some argue that the very idea of the 'sustainable city' is an oxymoron, favoring instead the concept of eco-city. Thus Hald (2009: 45) distinguishes between them by arguing that the approach to building sustainable cities 'is mostly process-oriented and pragmatic', while the eco-city approach is 'more visionary and therefore also significant in the creative thought process essential in the development of scenarios for future sustainable urban management'.

It is this 'visionary' element that leads some writers to suggest that the eco-city idea *potentially* fulfills environment justice concerns voiced by urban political ecologists. Indeed, the eco-city is but the latest in a long line of proposals regarding the ideal city. Further, in its original guise, that concept reveals radical roots. Thus the idea of an eco-city can be traced back to the mid-1970s when Richard Register and his colleagues in Berkeley, California founded 'Urban Ecology' to 'rebuild cities in balance with nature' according to ten principles (Roseland, 1997: 197–8):

- 1) Revise land-use priorities to create compact, diverse, green, safe, pleasant and vital mixed-use communities near transit nodes and other transportation facilities;
- 2) Revise transportation priorities to favor foot, bicycle, cart and transit over autos, and to emphasize 'access by proximity';
- 3) Restore damaged urban environments, especially creeks, shorelines, ridgelines and wetlands;
- 4) Create decent, affordable, safe, convenient and racially and economically mixed housing;
- 5) Nurture social justice and create improved opportunities for women, people of color and the disabled;
- 6) Support local agriculture, urban greening projects and community gardening;
- 7) Promote recycling, innovative appropriate technology and resource conservation while reducing pollution and hazardous wastes;
- 8) Work with businesses to support ecologically-sound economic activity while discouraging pollution, waste and the use and production of hazardous wastes;
- 9) Promote voluntary simplicity and discourage excessive consumption of material goods;
- 10) Increase awareness of the local environment and bioregion through activist and educational projects that increase public awareness of ecological sustainability issues.

These principles drew on ideas and theories circulating at that time (especially social ecology, bio-regionalism and green movement thinking), while paradoxically also being a harbinger of future more 'mainstream' urban environmental concepts (notably

ecological modernization, sustainable development and local/community economic development). Clearly, they require multi-scale initiative even as they comprise both non-contentious exhortations (e.g. restore damaged urban environments) and contentious ones (e.g. nurture social justice) that presume radical social, economic and political change. Moreover, the principles also illustrate that the eco-city idea is not just about the 'reordering of the physical fabric of the city' (Guy and Marvin, 2001: 133), but rather is a bold attempt to envision a city that is not necessarily reliant on a hinterland. Finally, and at least according to this interpretation of eco-city, it is a notion imbued with a concern for social justice and equity (e.g. 4, 5, 9 and 10) while implicitly going against extreme capitalism and indiscriminate use of technology.

ECO-CITY, TECHNOLOGY AND THE TRANSFORMATION OF URBAN NATURE

And yet, contemporary manifestations of the eco-city idea are deeply entwined with technology – be it green and 'appropriate' or not. Indeed, in contemporary articulations the underpinning theory is that of ecological modernization – an approach deeply committed to both capitalism and high-technology solutions. Broadly, this theory speaks of 'win-win situations, manageable futures and prosperous development *with* rather than *against* nature', and argues that 'sustainable futures can be attained under conditions of a continuously growing capitalist economy by making use of negotiated, problem-specific settlements among different and divergent policy actors' (Keil and Desfor, 2003: 30; emphasis added).

As such, this articulation of eco-city discourse diverges significantly from the spirit of its 1970s origins in Berkeley – and by extension from urban political ecology (a research field that itself owes much to scholars based at the University of California Berkeley since the 1970s). This is because the latter in particular sees capitalism as one of the root causes of degenerative urban forms, while avoiding seeing technology as uncritically beneficial (or for that matter always a problem – rather it is interested in how capital and technology intersect in the guise of 'natural' metabolisms and transformations that discursively, politically and economically reflect social power; see Heynen et al., 2006: 6). Urban political ecology is thus well placed to critique the modern spin on eco-city.

That modern spin is undoubtedly ambitious, as 'ecologically modernizing' the city essentially means making city living a possibility when future urban population increases dramatically, notably via widespread dissemination of 'good' technology. It is important to be very precise here. After all, the ecological modernization literature distinguishes between 'weak' and 'strong' categories. The weak one is described as economic, technological (narrowly defined), instrumental, technocratic, neo-corporatist and closed (almost like a neoliberal entrepreneurial city; see Adams, 2010), while the strong category is described as ecological, institutional, systemic, communicative, deliberative, democratic, diverse, open and international (Christoff, 1996).

Intriguingly, when framed in this manner, the notion of the eco-city that is rooted in strong ecological modernization principles is more or less aligned with certain elements found in a liberating urban political ecology (for example, the ideals of democracy,

diversity and communicativeness), notwithstanding the starkly divergent ways in which each sees the roles of capitalism and technology in generating amenable nature-urban forms.

That said, the contemporary idea of the eco-city that is making the rounds of the international architecture and planning world is generally associated with weak ecological modernization – as our Chinese eco-cities case study below illustrates. As such, acute questions about urban environmental justice in relation to their construction can be raised. Thus, has social justice been nurtured (including, for example, opportunities created for women and the disabled) when designing the eco-city? What kinds of economic practice are associated with the eco-city? Has a general awareness and activism over the protection of nature and the environment been cultivated?

In contrast, the importance in principle at least of a convergence of ideas taken from work on strong ecological modernization, the eco-city and urban political ecology resides precisely in how this combination might promote socially progressive, self-sustaining and equitable urban spaces (Gunawansa, 2010). But such spaces can also be seen as manifestations of ‘capitalist survival’ (Keil and Desfor, 2003: 32). And here is where this integrative vision falls apart, since urban political ecology is a vociferous critic of all forms of capitalism.

Thus, and mindful of these important distinctions, urban political ecologists need to ask a series of questions in their assessments of what at first glance might seem to be a promising phenomenon. Thus, to what extent is the emergence of eco-cities grounded in the logics of global capital flow and used as new spaces to accumulate capital? How far are eco-cities reproducing the very urban inequalities that they purportedly seek to overcome? How have eco-cities contributed to new ways of understanding urban-nature, especially where they implicate technology?

In the next section, we will consider these questions by focusing on the eco-cities phenomenon in China. The choice of China as our case study is apt for several reasons. First, and given the fast-deteriorating urban environment in many Chinese cities brought about by accelerated economic growth, the eco-city idea has caught on in a dramatic fashion in the country. Indeed, it is estimated that there are more than 100 such cities in various stages of completion in China today. Second, due to its erstwhile socialist and still relatively state-centric institutional and political context, the actual construction of an eco-city is likely to materialize quicker than in other countries around the world. In developing this case study, we use English-language research but also draw on a growing and rich body of work that has emerged in China on the topic of eco-cities in recent years.

ECO-CITIES IN CHINA: PROMISES AND PITFALLS

Some of the complexity surrounding the topic of the eco-city can be seen in the debate in China (as elsewhere) over just how many such cities have been or are currently being built. Referring to the (somewhat) related notion of the ‘sustainable city’, Guy and Marvin (2001) have argued of a need to speak of multiple models of what this phenomenon is – something that is certainly true with regard to the eco-city. Hence, in

part, why Chinese researchers do not agree on the exact number of eco-cities being built in China now: estimates range from slightly over 100 (Li, 2012) to close to 300 (Yu, 2012).

As testament to such definitional vagueness, Li (2012) lists six prototypes (some not even technically 'cities'): (1) eco-cities (ranging from satellite cities built from scratch to eco-districts in a section of an existing city); (2) *in situ* eco-cities (that is, piecemeal efforts at making existing cities ecological); (3) eco-business parks; (4) eco-tourist districts; (5) eco-real estate (i.e. large private housing developments with ecological characteristics); and (6) miniature eco-cities. The areas of these different prototypes range from 35.5 square km to 152.8 square km, spanning 27 provinces, autonomous regions and municipalities across China (Li, 2012: 2–3). It is no exaggeration to say that eco-cities have become the new urban planning orthodoxy in China.

Still, criticism has begun to appear about this phenomenon. For example, Yu (2012) detailed seven problems with the way eco-cities have been conceptualized, planned and built in China. Four of these problems relate squarely to notions of urban environmental justice and equity. Thus the first identified problem relates to how these eco-cities are framed by a weak ecological modernization ethos that is overtly economic, narrowly technological, instrumental, technocratic, neo-corporatist and closed. Indeed, they are 'illustrative of the heavy emphasis of technological restructuring to achieve the goal of economic development, [but in doing so] they neglect the fact that eco-cities require the simultaneous and harmonious development of economy, environment and society' (Yu, 2012: 25). A second problem is that Chinese eco-cities are not sensitive to their specific cultural and environmental contexts – and hence to what local people might want from such development. A third problem meanwhile identifies how eco-city building is uneven in that little attention is paid to the development of smaller cities and rural towns. A final problem identified concerns an almost complete absence of local-level civic participation in a planning process that is resolutely top-down (see also Cheng and Hu, 2009; Pow and Neo, 2013b). In short, justice is seen to be an issue in the development of Chinese eco-cities. At the same time, Yu (2012) argues that such development has thus far failed to open up spaces of creativity, either in terms of how people relate to nature or how they might be a focus for the emergence of alternative economies (but see also Zhu et al., 2011). We will return to this point below.

Then, and as Li's (2012) survey reveals, the national placement of eco-cities raises questions of justice and equity too. He found that most of them are located in key coastal cities and/or regions undergoing rapid economic development. Not surprisingly, then, four western provinces with no plans for eco-cities are among the poorest in China: Tibet, Gansu, Qinghai and Ningxia. True, one must not read too much into such spatial selectiveness, for insisting on building eco-cities in places that barely have the social, political and economic qualities to sustain them would be foolhardy. And yet, does placing eco-cities mainly in booming economic areas nonetheless imply a relative neglect of other less economically advanced areas for which the negative environmental impacts of development are often no less severe?

Clearly, nationally uneven construction of eco-cities raises questions about the politics, economics and planning of this new Chinese urban phenomenon. Indeed, how eco-city development relates to basic issues of environmental justice and equity

remains unclear. Do eco-cities displace existing local communities and, if so, how are those displaced then treated (e.g. compensation, satisfactory relocation)? Does the building and subsequent operation of these cities provide permanent local jobs? Is such employment allocated in an equitable manner? Are eco-cities an example of urban gentrification by another name? Who are the new residents (e.g. class, income), and where do they come from? Research has barely begun to address such questions in depth, but answers here are sorely needed.

One clue as to the underlying forces propelling the eco-city phenomenon forward in China is to consider that most eco-cities are planned and then built in partnership with foreign firms (and often foreign governments) (Pow and Neo, 2013a). This raises one vitally important question: can such partnerships address local urban environmental justice issues (let alone more ambitious ideals like promoting voluntary simplicity and discouraging materialism), or are they simply lucrative new spaces of global capital investment and accumulation? Next, we assess one such partnership (the Sino-Singapore Tianjin Eco-city) to address this question. In the process, we affirm the utility of an urban political-ecology lens that encompasses global urban capitalism as the multiple scales of governance, politics and knowledge construction involved in the development of eco-cities comes into view.

EXPORTING THE ECO-CITY

With its self-image as a ‘Garden City’ (Savage, 1992), Singapore has always been keen to export its urban management know-how to other places around the world. This ambition to develop and then sell environmental technologies culminated in the establishment of the Centre for Liveable Cities in 2009, with a main goal to ‘distil Singapore’s expertise in urban management’, particularly in the areas of ‘high-density urban planning, land use, housing, transport, clean air and water management’ – all areas in which Singapore is said to have ‘considerable expertise’ (Centre for Liveable Cities, 2013). In this regard, two socio-environmental technologies that are tied intimately with a particular discourse of sustainable development and aggressively exported by Singapore are water desalination and ecological cities. Indeed, it is precisely because of Singapore’s ‘wealth of experience in water conservation’ that China picked it as a partner to build an eco-city in Tianjin (*Straits Times*, 25 August 2009).

First mooted in 2007 by Singapore’s former Senior Minister Goh Chok Tong, the idea of developing an ecologically sustainable city was ostensibly a showcase for Singapore’s strengths in housing, environmental services and water technology. Developed as a joint venture between the Singapore-based company Keppel Group and a Chinese consortium led by Tianjin TEDA Investment Holding, the 34.2 square km Sino-Singapore Tianjin Eco-city (SSTE) was a collaborative agreement between the Governments of China and Singapore to jointly develop a socially harmonious, environmentally friendly and resource-conserving city in China.

In one annual report, the government-linked Keppel Group states that the project is one in which the ‘Singapore government will share its software and extensive experience in sustainable urban development’ in the hope that a prototype eco-city can

then be ‘replicated in other cities in China’ (Keppel Corporation, 2007: 69–71). Among the expertise listed by this firm are: environmental protection, resource conservation, recycling economy, ecological infrastructure development, use of renewable energy, reuse of waste water, sustainable development and promotion of social harmony. Not surprisingly, the Tianjin eco-city project is replete with a litany of advanced environmental technologies, including ‘the provision of good thermal insulation for buildings and use of solar energy to reduce energy consumption, rain water collection for irrigation and extensive landscaping features such as sky gardens’ (*Straits Times*, 21 July 2009). While the promotion of ‘social harmony’ is listed as one area of expertise, it is not obvious that this was translated in any practical sense into the design of the SSTE beyond, that is, a promise to provide adequate, affordable mixed housing in the eco-city.

What is more obvious is that the eco-city was designed to be ‘practical’, ‘replicable’ and ‘scaleable’ with the SSTE master plan jointly developed in 2008 by the China Academy of Urban Planning and Design, the Tianjin Institute of Urban Planning and Design and the Singapore planning team. A key guiding principle here was adoption of a holistic approach towards creating and designing a livable, efficient and compact city developed in an ecologically sound and environmentally sustainable manner. Indeed, the final master plan is said to promote ‘three harmonies’ (三和): man living in harmony with man now and for future generations; man living in harmony with economic activities; and man living in harmony with the environment. To keep track of the building of the eco-city, a set of 26 Key Performance Indicators (KPIs) was formulated, drawing on national standards in China and Singapore as well as internationally, and divided into four groups: (1) Good Natural Environment; (2) Healthy Balance in the Man-made Environment; (3) Good Lifestyle Habits; and (4) Developing a Dynamic and Efficient Economy.

There are a few commonalities underpinning the SSTE and scores of other projects across China. First, these projects often involve mobilizing an internationalized network of policy experts, professional planners, architects, engineers and others who engage in technical ‘knowledge transfers’. And, second, they are also strongly driven by entrepreneurial/commercial objectives and ideals of weak ecological modernization. The latter is increasingly seen as a catalyst to even greater growth, especially when focusing on creating new environmental technologies (for example, green buildings and clean energy). However, development of high-profile projects is not without problems, and hence brings into question whether the pursuit of urban sustainability via the eco-city is simply a legitimization strategy for pro-growth entrepreneurial cities or neoliberal urbanism by another name.

The Chinese authorities certainly note some areas where eco-city delivery can be improved. For example, the Tianjin Municipality Law Office (2010) has highlighted several positive learning outcomes as a result of the SSTE partnership, most notably the need to establish community organizations that can act as a conduit between the (communist) party, local government and residents. Still, one might question how autonomous such organizations can ever be – for some they are simply extensions of governmental control and surveillance. However, the authorities are more forthright in extolling what they see to be virtues in the project – thus they laud the transport

management expertise of Singapore as one area that Tianjin eco-city has been able to learn from and adapt, while also benefiting in the areas of water management and waste recycling.

Independent scholars acknowledge some of these project advantages, even as they point to persisting areas of weakness. Two in particular stand out for them: the need to systematically cultivate a sense of respect for the wishes and interests of the local community; and the need to heighten popular environmental consciousness through education and information campaigns (Wang, 2009). This is important because the Tianjin eco-city is a high-stakes venture that is likely to frame the form and nature of eco-city development as a whole in China in the years to come. Thus, as Xu (2008: 23) eloquently writes:

The Sino-Singapore Tianjin Eco-city is not merely building a city, it must also become a brand. This eco-city cannot change the world but it is a seedling that will grow into a big tree in Tianjin, and surrounding this tree, dense forests will form. Tianjin, in this way, will become a prototype one which will demonstrate to the world that ecological crisis can be averted. The eco-city will realize the goals of harmony between humans and humans, humans and environment, as well as humans and the economy. In so doing, the branding must be vigorously pursued such that Tianjin eco-city can be replicated, practiced and promoted to other places.

The celebratory tone is not unique to this commentator (see also Cheng and Hu, 2009 for an assessment of Dongtan eco-city in Shanghai). For example, a search for articles written in Chinese and published in the last five years (i.e. since 2009) on Chinese eco-cities produced 305 items, with the vast majority dealing with the technocratic dimensions of planning and 'scientific development' of the eco-city. Fewer than five articles are overt critiques of the way the eco-city has been developed. Meanwhile, its potential as a springboard towards a new form of liberatory socio-politics and a less consumerist and more ethical economy is not mentioned at all. This is in part due to the socio-political climate of Chinese society in general – marked by a palpable fear of censorship that is arguably more pronounced in research institutes and universities directly funded by the state.

From a Singapore perspective, meanwhile, the newly minted Tianjin eco-city suffers from a number of 'growing pains', including the lack of urban amenities and its relative inaccessibility to central Tianjin, which is a good 40 km away. Further, the eco-city has so far only attracted 6000 residents, well below the 10 000 target for 2012 (Ho, 2013). The CEO of Sino-Singapore Tianjin Eco-City Investment and Development countered that its progress should not be measured by quantitative measures alone, especially given that it is 'in a remote location, waste-land, saline land, alkaline land. We are trying to show that in a place like this, you can also grow a nice city' (quoted in Ho, 2013).

Perhaps it is still early days yet for Tianjin eco-city (and other eco-cities in China). This has not stopped eco-city promoters declaring this a great success – a triumphant technological feat and a materialization of new global capital flows. But from the perspectives of urban political ecology and urban environmental justice, the question remains: for whom and to what ends are eco-cities geared? Who are winners and losers in this hyper-technologically driven process? How are nature and the environment, as

well as the resources linked to them, affected? In the end, is the *tabula rasa* way in which a significant number of eco-cities is being built the best way in which to promote urban sustainability, let alone urban environmental justice?

CONCLUSION: WHITHER URBAN SOCIO-ENVIRONMENTAL JUSTICE?

Urban political ecology has a clear focus on the equitable distribution of resources among urban residents as well as an interest in how (global) capital transforms urban-natures through novel technologies. In the most idealistic (and original) formulation of the eco-city, environmental justice is clearly in the foreground, while the role of capital is not seen as being critical to this project. Yet in actual practice, as this chapter has argued, the development of the eco-city idea based on a weak form of ecological modernization thinking not only sidesteps the issue of justice and equity, but runs the risk of simply becoming (if it has not already become) another product of global urban entrepreneurialism – a capital-driven growth strategy producing new (non-sustainable and unjust) materialities of urban-nature.

As this chapter highlighted, a key battleground in the elaboration of the eco-city today is China. Yet research (written mainly in Chinese) about it so far gives no real indication of whether people have been forced to relocate or suffer other injustices during construction (but see Caprotti, 2014). Instead, the tone tends to be uncritical, thereby avoiding considering whether the eco-city can ever alleviate social injustice, given its weak ecological modernization underpinnings. What is needed is work that draws explicitly on urban political ecology (and post-structural elements therein) to understand how definitions and knowledge about the eco-city itself, as well as its technological bases and assumptions, are rendered concrete through the specific discourses and practices of various actors operating across multiple scales. As Yu (2012: 25), in probably one of the most trenchant critiques of the Chinese eco-city to date, points out:

Current development of eco-cities pays scant attention to social issues, especially the problem of solving the high costs of living. The understanding of one of the key tenets of eco-city – the development and progress of a harmonious society – is superficial. When eco-cities are built, there is always a lot of policy talk on how a progressive, harmonious society can be advanced. Indeed, there might be explicit indicators to measure this but the actual concrete work to make this a reality exists but in a slogan and discursive state.

Indeed, and in light of the critical analysis offered in this chapter, the eco-city idea – drained of any residual radical meaning it might have had dating from its 1970s Berkeley origins – seems to be in danger of simply becoming the latest buzzword in an urban planning world embedded in global flows of capital. And, not unlike counterpart concepts such as the ‘creative city’ (Florida, 2003) or the ‘smart city’, its undeniable ascent presages an equally unavoidable eventual descent, as new buzzwords catch the fancy of urban capitalists and their intellectual supporters in the future. Research in urban political ecology thus needs to assess this process while tracking its (undoubtedly

uneven) global spread in the years ahead. Scholars also need to gauge whether the eco-city idea is still worth battling over – that is, how far any movement towards an eco-city model undergirded by strong ecological modernization thinking (where technology is enabling, not debilitating) and framed according to the tenets of urban environmental justice is still both feasible and desirable. Can the eco-city idea be liberated from the apparent stranglehold in which weak ecological modernization thinking acting in cahoots with political elites and global capitalists has placed it?

The rise of the eco-city phenomenon thus poses a set of challenges that urban political ecologists must not ignore. In addressing that challenge, they must combine new and old questions. How far does the eco-city reflect new socio-natures derived from a global capitalist system? Are the same patterns of accumulation by dispossession at stake here or do they take on a new guise in the eco-city? What new forms of socio-environmental technology do eco-cities engender and how far are these technologies exclusionary? What new forms of urban inequality might be reproduced in the pursuit of the eco-city? Finally, what form might resistance to the eco-city take? Concerned about urban environmental inequity, the politics of knowledge production and the destructive impulse of global capital, urban political ecology is an ideal theoretical perspective with which to address these and other questions. Perhaps in doing so, scholars will be able to prevent eco-city development from becoming yet another neoliberal project that ultimately pays only rhetorical attention to socio-environmental well-being.

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PART V

METHOD AND SCALE

30. Useful outsiders: building environmental policy reform dossiers

*Piers Blaikie and Joshua Muldavin**

This chapter provides a method for contributing to environmental policy reform in an international development context for those who undertake research outside the formal policy process. The focus is on the environment, and its political, social and economic relations as well as the means by which this subject area, understood as political ecology, might become more directly engaged in promoting socio-environmental change. Much research in this scholarly field eschews policy input in favor of radical critique – yet in doing so, we argue, it fails to capitalize on a useful ‘outsider’ role that, when carefully articulated, may be well placed to promote environmental policy reform in a diversity of development settings. While the ‘uses’ of political ecology may be many, it is our contention that this outsider role – linked to the elaboration of what we call ‘policy reform dossiers’ – is one that should be more central if political ecologists wish to promote an agenda of social change. As we also make clear, the creation of these dossiers – understood both as a process and a product – is where the main effort ought to go, crystallizing in a practical manner theoretical, methodological and empirical insights that have been the warp-and-woof of political ecology since its inception.

Political ecologists often pride themselves on being outsiders – critical of mainstream thought. Yet the term ‘outsiders’ is used here even more widely to encompass individual scholars, activists, research institutes, international centers, official advisors, non-governmental organizations, charities, social movements, in-country federations and trade unions – all of which attempt to produce new knowledge. In most cases, outsiders bent on policy reform provide policy makers with new information and arguments to press their case even as they seek to work with them as far as possible throughout the research and policy-making processes. Here too, a ‘policy maker’ is not synonymous with an exclusive set of (usually male) elite bureaucrats and politicians in a (usually) distant capital city who shape policy according to the interests of favored groups (Neumann, 2008). Rather, it often involves many other parts of usually dispersed states, as well as public opinion, the press and civil society organizations (among others). Hence the identification of stakeholders and audiences for research is strategically important.

The role of outsiders is inevitably multifaceted. They create knowledge through environmental and social science research – a process that entails a significant amount of listening to and learning from others, including giving a voice to those who may not be heard by others in policy making. The latter may involve compiling people’s informal knowledge and experience about environmental issues alongside academic environmental science. These outsiders then communicate this knowledge to key actors at the heart of the policy-making process in ways that those actors are likely to

understand and be persuaded by. Money often plays a part here. In cases of bilateral aid, for instance, financial inducements and conditionalities may also be involved, crucially affecting how influence occurs in relation to policy change. They also become involved in *de facto* lobbying – building alliances with local institutions, social movements, in-country politicians and the popular press to help form an agenda, frame policy issues and disseminate knowledge. This is particularly important where policy-relevant research is carried out by foreigners likely to have relatively privileged access to research finance and assistance as well as senior government members.

The role of the outsider in environmental policy reform is an underappreciated aspect to political ecology – something that this chapter aims to correct through a detailed discussion of the main assumptions and ‘files’ of the policy reform dossier. In the process, we offer a methodology for making a difference in the policy arena.

NAVIGATING BEYOND CRITIQUE

Our approach needs to be carefully delineated from other policy-related research that is criticized both inside and outside of political ecology. Indeed, such research in an international development context usually involves all-embracing teleological views that assume – rather than state or defend – the validity of their claims. This assumption is condemned by critical scholarship on post-development and the post-developmental state. A first wave of criticism occurred more than 20 years ago but tended not to differentiate between different styles, ideologies and epistemologies of development (Blaikie, 2000). Take for example two famous quotes of that era: (1) ‘The last forty years can be called the age of development. This epoch is coming to an end. The time is ripe to write its obituary’ (Sachs, 1992: 1); and (2) ‘You must be very dumb or very rich if you fail to notice development stinks’ (Esteva, 1992: 7).

Since the 1990s there has been nuanced debate as well as revision to earlier critiques (in political ecology, for example, see Peet and Watts, 1996; Bryant and Bailey, 1997; Escobar, 1998; Bryant, 1999; Castree, 2002; Forsyth, 2003, 2008; Jasanoff, 2004; Robbins, 2003, 2004; Walker, 2005; Muldavin, 2007, 2008). This history of debate about development, policy and political ecology is not reviewed here. But two things are clear from it. First, the need for policy engagement has not been repudiated by these scholarly efforts – if anything, pressing social and environmental issues in recent years merely underscore a renewed urgency in this area (Walker, 2006). Second, that the ‘outsiders’ of interest here – whoever they are – must nonetheless address these debates about post-development and the post-developmental state, since any progressive goal of environmental policy reform will have to engage with the issues and challenges thereby raised.

THE POLICY REFORM DOSSIER

One promising way to do this is to create the ‘policy reform dossier’. Narrowly, a dossier is a collection of papers about a particular event, subject or person. Yet we use this term more broadly to denote a method for creating, presenting and following

through with knowledge from diverse actors in aid of policy reform. Such a dossier is not merely a repository of data sitting on a computer or on an office shelf, but a process of creation, production and promotion of innovative policy-oriented knowledge. Here, development of a policy-relevant political ecology must consider: (i) *what* information is collected (including problem framing pertaining to ethical concerns such as environmental justice); (ii) *who* collects it and the associated politics of data collection (for example, the subjects of research themselves or outsider researchers); (iii) *from whom* (what voices or sources are listened to and prioritized); and (iv) *to whom* this knowledge is addressed. Working on policy reform does not assume support for a state or its political projects. In fact, the dossier can be used to promote counter-research and the knowledge of those prevented easy access to policy processes across diverse state forms (e.g. ‘liberal democracy’ or ‘authoritarian’).

Knowledge Needed

The choice of policy-relevant research depends upon prior knowledge:

- Knowing the political terrain and the varied roles of outsiders within different contexts. Where the voices of less powerful actors are ignored or suppressed, the role of the dossier shifts on to different ground in which it may be used to challenge dominant narratives and state legitimacy, of course with political, ethical and practical implications in terms of evaluating ‘success’.
- Knowing whom to talk to. This requires a choice about subjects (who can co-produce information with outsiders) and audiences (e.g. key players in government and civil society, future policy makers).
- Knowing how to talk to audiences. This requires reflection on how and what to communicate (empirical results, theory, style of argument, development narratives, tropes, ethics, choice of language).
- Knowing the story and argument – and those of the actors engaged with.
- Engaging the interest of chosen actors and audiences from the beginning, while ensuring their involvement throughout research and dissemination. Thus research is integrated as far as possible into ongoing processes of influencing public opinion through the press (where some freedom of speech exists), as well as policy making and implementation itself (Mayers and Bass, 2004).

It also involves the analysis and presentation of political ecology issues in the form of a database. This must be ‘live’, dynamic and constantly adjusted during research and advocacy. To illustrate these points further, we next briefly explore the context in which we developed the idea of the policy reform dossier – based on our work at the interface of national governments at all levels (from capital city to the local level), NGOs, activist groups, researchers, universities and other resource centers in the field of environmental policy in Himalayan India, China and Nepal. Although specific to this context, we believe this approach can be adapted to other contexts in which outsiders might influence policy reform.

Empirical Origins

The policy reform dossier builds on our prior initiatives, of which three are summarized here. The first was partly based at the East-West Center in Hawaii in 2003, and explicitly addressed the politics of environmental policy in the Hindu Kush Himalaya (HKH) region (Blaikie and Muldavin, 2004a, 2004b, 2004c; Muldavin, 1997, 2000). This project focused on the participatory activity of local land users in the formation and implementation of environmental policy. It analyzed the policy process on either side of the eastern India border with China, where sharply contrasting policy regimes exist. The central question was: what is the most effective approach to land management in areas of sloping and mountainous terrain? At one end is a participatory, inclusionary approach such as community-based natural resource management (CBNRM). At the other end is a top-down, exclusionary approach such as protected areas based on 'fortress conservation' (Hobley, 1996; Agrawal and Gibson, 2001; Agrawal, 2005).

The second initiative was the pioneering introduction of the policy reform dossier into an institutional setting through a series of presentations and workshops held between 2005 and 2012 in Kathmandu, Nepal by the authors primarily for the International Centre for Integrated Mountain Development (ICIMOD) – an institution seeking to 'capture and communicate natural resource management research results to grassroots clients and policy makers' (ICIMOD, 2001: 2) even as it habitually engages with diverse actors including governments, multi- and bilateral donors, NGOs and universities. Refined in cooperation with ICIMOD, the approach was intended to be adaptable to the needs of other organizations and individual researchers – the focus of later workshops in Nepal and China. The goal was to assess and improve environmental policy in practical and politically feasible ways consistent with the promotion of environmental justice, sustainable resource management, biodiversity conservation and poverty alleviation. As with the first initiative, the stress was on policy reform that would provide a greater voice for marginalized communities and individuals, even as this project also sought to hone a replicable methodology for environmental policy reform in the HKH region (Blaikie and Muldavin, 2006).

The third initiative involved the articulation of the policy reform dossier to forest management reform in India and Nepal. Building on prior work, this project brought together Indian and Nepalese activists, champions of participatory forest management, senior forest management innovators and British researchers with long experience in these countries. The pooling of extensive field data and experiences (including with policy makers at all levels) between project members as well as staff from three Indian universities was critical here. A key output was the book *Forests, People and Power* (Springate-Baginski and Blaikie, 2007) that broadly followed the nine files of the policy reform dossier outlined below. This contribution sought to feed into major forest-policy reforms which were (and remain) high on the national agendas of these countries.

Main Assumptions

Drawing on such research experience, and mindful of post-development debates alluded to above, we have found that a variety of assumptions inevitably underpins the creation of a policy reform dossier. Briefly, these are:

1. Policy reform is not a simple matter of ‘truth talking to power’ (Wildavsky, 1979) for example professionals talking ‘truth’ to senior policy elites – but also about engaging with actors who are marginalized based on their gender, ethnicity, age (children and the elderly), poverty or education in order to ‘talk truth *of* the relatively powerless *to* the powerful’.
2. Policy argumentation must engage with diverse audiences in a differentiated manner that is sensitive to their priorities, culture and political orientation.
3. That argumentation also has to explain how ‘better’ outcomes can be *simultaneously* achieved for different actors and institutions under policy reform.
4. At the same time, such advocacy must be mindful of policy contentiousness due to complex subjective social positioning and unequal power relations among actors that policy reform is unlikely to eliminate.
5. Policy reform promoted by foreign ‘outsiders’ (common with multi- or bilateral aid-related projects) requires particular care to ensure that creation of the dossier reflects in-country viewpoints – thereby limiting the otherwise all-but-inevitable charges of arrogance and neo-colonialism that post-development literature highlights.

Concurrently, the policy reform dossier has diverse qualities or characteristics that ensure it remains fit for purpose:

- (a) Component files are *cumulative and integrated* – they build on existing knowledge generated in diverse settings (e.g. academe, policy institutes, government departments, NGOs, communities), but ‘add value’ notably by integrating that knowledge within and across files in a way that takes full cognizance of different voices, opposing narratives, and complex scientific findings that span epistemological traditions.
- (b) The dossier has a *political purpose* based on an *explicit ethics* (e.g. environmental justice) as it is all about policy *change* – it moves beyond merely describing the causes and consequences of specific human–environmental relations (as in much political-ecology work) to ask: what now needs to be done and how should we go about it as policy outsiders?
- (c) It must be characterized by *reflexive* thought since the process is all about multi-scale partnerships, co-production of knowledge, strategic alliances, innovative forms of knowledge and attitude change (notably among senior policy makers but elsewhere in society too).
- (d) The dossier is a *flexible and evolving* tool that allows the user(s) to shape it to pursue their own goals both individually and collectively, even as those goals may be adjusted over time in light of insights afforded through working on the dossier.

- (e) Finally, it needs to be based on well-thought-through practices of *confidentiality* and *stakeholder access* – i.e. who has access or not to part or all of the dossier, how anonymity is preserved where necessary, how transparent the material is and how it is transmitted to the outside world – all issues about the ethics of the *process* of dossier management that are just as important as policy reform outcomes.

UNPACKING THE DOSSIER

We now describe the component files of the policy reform dossier. There are nine such linked files in relation to our concern with the environmental sector – which is also a desire to frame our approach in terms of political ecology (meaning that other policy foci are likely to require different files). These files will expand and contract over time, incorporate multiple types of data, and reflect the time and budgetary circumstances of the participants.

File 1: Policy Goals and Related Issues

This file asks: what are the most important socio-economic, political, environmental, social, cultural and ethical goals of the policy? These may be implicit, in which case they should be interrogated. Next is to ask whether the policy measures rationally serve ethical goals the policy has set itself. The file then assesses the chances that these measures can feasibly be put into practice. For example, our research focused on projects and programs that expressed goals of environmental justice, sustainability, disaster reduction and livelihood enhancement for the vulnerable. However, outcomes in China and India were often unrecognizably different. The reasons are to be found in the sharply contrasting political feasibility of the goals, as well as the measures to reach them outlined in project documents (Blaikie and Muldavin, 2013). Therefore, in cases where policy goals may already have been set and are beyond negotiation, the means to reach these goals are linked to ongoing implementation, and the revision of policy guidelines based upon new information provided by the dossier. In other cases there may be room for maneuver to negotiate policy design and objectives based on prior knowledge collected in previous dossiers.

File 2: Technical and Scientific Debates

This file identifies key technical and scientific debates about the specific social and environmental issues chosen. It should include scientific research that embraces a logical positivist epistemology (e.g. based on evidence, scientific method/problem framing, sampling, statistical procedure) as well as associated debates and disagreements. In the Himalayan case, the book *Himalayan Perceptions* (Ives, 2004) is an invaluable summary of a long and controversial scientific debate about environmental degradation. Even here, though, skepticism is helpful. Why was the research funded and how was it framed? Was the research funded by and written for a specific client? Was there a case of asymmetrical co-production where the framing of the policy issue

or research topic, and even the conduct of the research and the editing of results, were unduly influenced by the client (often the funder)? The file can also link environmental science to environmental narratives to make a case in the name of all manner of different political agendas such as environmental justice, modernization or free-market forces (Keeley and Scoones, 2003; Saberwal and Rangarajan, 2003; Jasanoff, 1994, 2004). This file therefore links to File 6 (Actors' Narratives), where positions taken on scientific debates are identified and linked to specific actors.

File 3: Time-line of Events

The main questions here are: what are the important events, issues and laws that affect project policy goals, and when did they occur? How has the policy environment changed during the life of the project or time-based horizon for policy reform? Finally, is there any room for maneuver around the main obstacles to policy reform? If the dossier is compiled for a multi-country project or policy that involved more than one nation-state, a time-line for each country may be necessary. Events such as Acts, Bills, Laws, wars, civil unrest, major disasters, political events (e.g. national elections) and other relevant policy initiatives for each country need to be listed. This can be added to and customized as the project proceeds. Emerging detail of policies (for example, land tenure legislation and practices) and published policy documents can be cumulatively added to provide a comprehensive information resource. Linkages with key policies and practices in other sectors can be highlighted. The time-line may have to include material from long ago if still relevant today (e.g. the 1927 Indian Forest Act). Judgment has to be exercised about the relevance of items to the policy focus in question. The time-line may be customized to the policy or project through time, with added marginalia, photocopied extracts of papers, and Acts, even as it is cross-referenced to other files.

File 4: Actors in the Policy Process

Several questions stand out for this file. First, which actors are pivotal in shaping the policy environment? Here, a double focus on local agency in policy making and implementation is essential. This involves not only trade union activity, federations of local organizations, as well as deployment of 'weapons of the weak' (Scott, 1985) by those who may be deprived of environmental justice by reason of class, gender, ethnicity or lack of various material and non-material assets, but also those working in national administrations. Second, whom is it best to work with in policy reform? There is often a wide range of potential collaborators, including politicians, social movements, the media, intellectuals, activists, lobbyists, aid workers, national federations of local groups, as well as opinion leaders, policy makers, senior administrators and so on. There are 'movers and shakers' in all these groups who may be potential allies.

In addition, it is necessary to be aware of different expectations in policy engagement. There are diverse views held by those in government and civil society about how policy should be made. Thus the 'Truth talks to Power' model sees a world focused on the project cycle, evidence-based research, verifiable indicators, as well as monitoring and evaluation. This 'rational' model makes the reasonable but sometimes naïve

assumption that ‘truth’ (self-evident goals such as justice or poverty reduction based on new and persuasive scientific evidence) will be transmitted to ‘power’ (policy makers) that will then modify policy accordingly (Blaikie and Muldavin, 2004a). The dossier may here have to accept that key actors will uncritically adhere to this view. In this case, promoting policy reform may require a critical realist epistemology that reflects more closely conventional policy-making norms.

In contrast, a different and more discursive model embraces a much wider cast of actors who are acknowledged to influence policy, however indirectly and circumstantially. This multi-level cast of actors may include social movements, local groups, national federations of local organizations, the media, intellectuals, activists and lobbyists, entrepreneurs, Chambers of Commerce, bilateral and multilateral development aid, international financial institutions, international, national and local NGOs, local chiefs, local government and the public themselves, be they resource users, clients, users of a service or groups on which the policy focuses. In this model, scientific information is produced through avowedly political processes linked to who gets funding and how problems are framed, as well as who gets listened to and what selective appropriations of new knowledge are made (Long and van der Ploeg, 1989; Blaikie and Muldavin 2004a). Inclusiveness is paramount here. Thus there are actors in civil society who are far removed by distance and culture from the formal policy apparatus (e.g. select committees, departmental drafting committees, politicians, lobbying groups). People on the ground also ‘make’ or in broader and more informal terms ‘shape’ policy – that is, they interpret, strategize, comply or actively resist it – long after official documents become law. This can be a complex iterative process such that policy outcomes are rarely attributable to any one actor or process, thereby belying for instance a simple linearity between scientific knowledge and policy making. As such, analyses here must be careful to avoid dividing the policy process too abruptly into policy-making and implementation phases (Clay and Schaffer, 1984).

Attention in this file should finally be given to the local rural or urban political economy, and within it, how differences of class, relative wealth, ethnicity or gender shape who makes decisions and represents ‘the community’ to outsiders. Thus, for example, a diagram or mental map of the actors and their linkages (see File 5) in a project can be made, allowing those who might be drawn into collaborative work (including the organization compiling the dossier) to be identified.

File 5: Linkages between Policy Actors

This file is a direct follow-up to File 4 with its central questions: what are the effective or ‘real’ operational linkages between actors? Where does real power to shape policy outcomes (both at policy-making and implementation stages) lie? Are there any irregular, illegal or corrupt practices that substantially affect policy goals?

Researchers need to be savvy here. For an astute choice of potential collaborators, it is necessary to understand the degree of discretion exercised by officials to interpret laws, rules and regulation at different levels, and how they do so. What are the effective operational links between actors? The answer to where real power lies involves an understanding of who has the power to do nothing, pass responsibility down the line, or make independent judgments in a responsible manner. Work on the dossier therefore

relies on knowledge of how the policy process works for any given initiative. It is necessary not only to have a map of project actors, but information too on their interlinkages. Actors are linked in various ways. For example, there are chains of formal command from the capital encompassing such things as delegation, implementation, influence, access, corruption and flows of information – all within a context of an unequal distribution of power. Understanding ‘power’ here is of course a difficult process. Here it can be appreciated as a means to get others to do what you want, which, in policy terms, is an ability to shape policy, make decisions and implement them in intended ways. There is a danger of representing these formal linkages with lines, as in an organigram or diagram, thereby giving the impression that policy making is linear – which it most definitely is not. Usually, maps of linkages will be much simpler. Again, while the organigram as a map of formal decision making can be useful, a politicized informal organigram (essentially a network of power relations) that can be enlivened by knowledge of day-to-day bureaucratic procedure is an essential part of understanding how the policy process works. A map of a key administrative network for a chosen project (including informal and non-state actors) could also be useful in this regard.

Let us illustrate this point with one example. In our research in the eastern Himalayas of China, local government representatives, forest bureau extension agents, forest guards, local militia, party leaders from township to village levels, peasant producer associations, state-owned companies, international NGOs, ‘outside’ entrepreneurs, village women’s committees, and particularly important households and community members, were all intricately linked in the contested process of interpreting and implementing the sloping land conversion program (SLCP) that had been imposed by central government. The intersection of effective operational linkages, multiple forms of power, as well as myriad ‘illegal’ and ‘corrupt’ practices, ensured a highly uneven visual mosaic of outcomes to the policy. ‘Greening’ the hillsides and ending subsistence agriculture on steep slopes materialized primarily in terms of the introduction of new cash crops – from walnut groves interplanted with contract-farmed tobacco and medicinals, to mulberry or tea plantations, or single-species eucalyptus or pine forests. Such crop choices represented the outcome of struggles between the varied interests of the actors noted above. As such, their relative power in policy implementation can be read in the emergent new landscape (Blaikie and Muldavin, 2013). This situation in turn exemplifies just how complicated the linkages between key actors can be (Mosse, 2001).

File 6: Actors’ Narratives and their Claims

The central question in this file is: what are the policy narratives of key individuals identified in previous files? Narratives are a way of making sense of complex, often contradictory situations (for a discussion, see Hajer, 1995). Narratives are not ‘just talk’, but persuasive constructions with a beginning (e.g. assumptions, problem framing, issue choice), middle (notably argumentation, supporting evidence, justifications) and end (above all, what should be done [see Keeley and Scoones, 2003]). Policy narratives make claims often stated implicitly as assumptions in order to persuade and

legitimate (e.g. Roe, 1994; Apthorpe and Gaspar, 1996; Apthorpe, 1997). The Himalayan example graphically portrays a number of environmental claims, with the latter based on scientific proof, previous policy 'success', indigenous technical knowledge and development theory, to name but a few (Thompson et al., 1986; Blaikie and Sadeque, 2000). How the production of knowledge creates consent is a display of how institutional forces shaping knowledge production converge with political interests (Scott, 1998; Forsyth, 2003; Goldman, 2005). Those transnational actors who gather data, decide their utility and design the institutional means to help disseminate it via new norms play a powerful role here. In contrast, local processes of knowledge construction (ITK – IT knowledge) and linked claims that it is more suited to local environmental management than top-down and 'off-the-shelf' knowledge may be contentious and vulnerable to dismissal as 'unscientific' and 'backward', even as a 'respected' institution's (e.g. some large NGOs) stamp of approval (through scientific validation, GIS etc.) may end up strengthening the claim, thereby giving it global and regional legitimacy and circulation. In our current research, for instance, the continuing persecution of shifting cultivation by some actors on the one hand, and the countering *Shillong Declaration for Shifting Cultivation* (ICIMOD, 2004) on the other, represent two contradictory views about shifting cultivation, both based on coherent environmental narratives that deploy scientific claims to support their argument.

File 7: Policy Argumentation

Central here is what are the most effective ways in which the policy reform goal may be served in terms of how best to make the arguments for the case to particular actors. Specifically, answers to the following questions are needed: first, how does the project or policy engage with other policies, laws, regulations and guidelines? Second, are there counter-narratives that may contradict the goal of policy reform, and how may they best be addressed? Third, is the language in which the dossier is written appropriate to communicate policy argumentation to all audiences? In situations where there are a number of different first languages used by actors, when is an international language such as English, Spanish or French appropriate and when are national or minority languages better used, and for what level of audience (international, capital city, regional and local)? Lastly, what are the appropriate media for communicating to different audiences (workshops in cities, well-publicized meetings at rural sites with free admission, scientific papers, films, newspaper articles, broadcasts etc.)? In short, new policies have to be 'marketed and sold' (Mosse, 2003).

This file usually involves engagement between contradictory narratives (building on evidence accumulated in prior files). Policy argumentation is thus important here to almost all actors, especially those institutions consciously trying to impact the policy process (e.g. 'knowledge and information centers'). This is because such argumentation is crucial to actor acceptance and persuasion (i.e. getting people to change their views and behavior in the policy-making process), let alone the institutional legitimacy of policy-dedicated organizations. Issues about the grounds for proof are central, with scientific validation being a major one, but with other claims made based on ethical and political values (e.g. gender, equity, human rights).

Yet policy argumentation is only partially a rational activity (Kingdon, 1995). For example, the Indian Forest Department might show scientifically the deleterious impact of shifting cultivation on ‘green cover’ and a related decline in commercial timber production, while an international NGO might conversely show scientifically that shifting cultivation is less destructive of biodiversity than settled agriculture – with each stance possessing its own scientific validity (Fox et al., 2009). Both positions may be ‘true’, and hence policy struggle may be thereby entrenched. In contrast, different arguments that are presented to various audiences may show an evolution in thinking, as different policy actors are appealed to in different ways.

File 8: Strategy for Policy Reform

The primary questions in this file area are as follows. First, what are the major opportunities and constraints to policy reform? The answer will comprise a summary of many of the files, drawing up strategic decisions as well as lower-level tactics to reach policy goals. Second, and conversely, who may be adversaries to policy reform, and can any initiative afford to ignore or bypass them? Third, understanding these opportunities and constraints, what are the specific steps in the emergent policy strategic ‘campaign’?

This file is in many ways the considered outcome of earlier files. It is time-bound and may be added to frequently at critical decision-making times by the outsider. It will involve reviewing the data and information in the previous files to enable a strategy that will identify ‘tipping points’, key people to see as the campaign unfolds, problem areas and people, as well as difficult parts of a policy narrative that are vulnerable to being misunderstood (and therefore eventually disliked, discarded or downgraded). In our Himalayan case study, for example, a senior forester, a minister, a leader of a district council or NGO, a representative of an international funding agency or a social movement – each requires a different approach. As noted, many decisions will be time-bound and must be made urgently, necessitating that Files 1 through 7 are up to date and useful. The formation of a strategy for policy reform is the culmination of all other files and is only as good as the information and level of thought that have gone into each of the previous files.

File 9: Explaining Policy Outcomes: Evaluation and Lessons Learnt

This file concerns monitoring and evaluation of the dossier to learn from policy experience. It is the most difficult one to compile for two main reasons. The first is that the policy process is usually an ongoing story without a definitive ending. Outcomes can be identified and evaluated at a particular point in time, but the outcome ‘keeps on coming out’ and changing as it does so! The second is that there are many unacknowledged causes for formal policy change. For example, a policy may be up- or downgraded in terms of administrative and financial priority without any written evidence. Governments change, national policy shifts and ongoing projects and programs shift with them. At a lower level of administration, personnel are transferred, which may change how a policy is interpreted and implemented at different levels. Both these reasons contradict those who may wish to show that their own contribution

has made a positive impact. Simply, there is a great deal of ‘noise’ affecting clear links between cause and effect in policy decisions. An outstanding example occurs in our research into participatory environmental management in western China and eastern India. Here policy documents of a number of land management and forestry projects in Meghalaya (India) and Yunnan Province (China) indicated similar concerns about sustainability, as well as being pro-poor, gender-sensitive and process-orientated. However, outcomes were profoundly different in each country, with considerable variation notably at local levels, due to complex and ever-shifting personnel dynamics (Blaikie and Muldavin, 2013). Many factors affect causality such that often they can only be cautiously hypothesized.

The primary questions to ask here, then, are as follows. First, what were/are the policy outcomes addressed by the dossier? Can they be explained? Is it possible to identify the effects, if any, of the dossier on the policy process? Second, what specific aspects of various actors’ roles in policy work contributed positively or negatively to the stated policy goals? Third, what is there to learn that will be useful for further policy analysis and work? Fourth, has the policy reform dossier suggested wider lessons, providing something useful to say about particular policy areas more generally (e.g., in the Himalayan context, on such things as gender mainstreaming, common property resources, participatory natural resource management, poverty alleviation and income generation for the poor)?

The question remains to be answered as to how far it can be expected that policy review, analysis and planning can reliably incorporate lessons from past policy. How often has current policy learnt from its predecessors? The rationalist answer is: it often has (and past success is indeed a strong and logically accepted claim by audiences to whom this assertion is made). There are lessons aplenty here – on best practices, policy cul-de-sacs, inspired tactics, as well as successful policy structures and processes. While maintaining a clear recognition of the limits to policy reforms, we propose the dossier as a means to improve cooperation among varied actors to increase their power and potential impact through current and future interventions. Such an engaged political ecology enables, we hope, a much wider set of actors and institutions at multiple scales to participate actively in the policy process than hitherto – all with an eye to promoting the more environmentally just conditions that most political ecologists call for.

CONCLUSION

We have argued in this chapter that political ecology provides outsiders with important analytical tools to contribute to politically progressive reform of environmental policy. We suggest a more activist approach to policy reform than is common, rather than the inward-looking and unengaged critique typical in the field, and that may never be heard outside the academy. However, any outsider role on policy reform has to be informed by a wide-ranging analysis of topics, including technical debates on environmental issues, multi-scale political dynamics, as well as the policy-making and implementation process itself. To this end, we have suggested a linked series of files on these topics that we call a ‘dossier’. The latter is a dynamic research tool, constantly updated to provide

a clear and well-researched path for contributing to environmental policy reform in cooperation with a wide variety of actors in civil society and government.

This is a methodology for making a difference in the policy arena, with all the potentials and pitfalls that this involves. It provides a means by which political ecologists can give voice to actors too often not heard in formal policy processes. These frequently are the most vulnerable community members in locales that are the focus of our research as well as state policy in practice. Political ecologists using a policy reform dossier approach can help ensure the integration of these actors' informal knowledge and experience about environmental issues into the policy process in an effective and persuasive manner. To avoid pursuing such an opportunity on the grounds of maintaining a more 'objective' or less 'interfering' stance, we argue, is to ignore the reality and responsibility of our privileged positions as relatively well-funded and -connected researchers and outsiders. Engagement through the 'dossier' thus not only leads to potentially significant new theoretical and substantive insights. It also claims a space in which we can utilize the career-enhancing outcomes of our positionality and work in the world to give at least something back to peoples and places that inform and inspire our intellectual projects.

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31. Neoliberalism, scientism and Earth System Governance

*Ariel Salleh**

Today the rhetorics of neoliberal freedom from big government and an open-source, boundary-less world are used to flag ‘progress’. Talk about ‘governance’ rather than ‘government’ similarly reflects a preoccupation with horizontal communications between actor networks. Postmodern sociologists too are ‘wired’ – from Castells (2000) to Hardt and Negri (2004), who even replace the proletariat with post-material information workers. Latour (2005) imagines a positivist world of objects and assemblages arranged across a one-dimensional plane where everything is equal to everything else. The distinction between science and ideological scientism is poorly understood. Environmentalism is increasingly technocratic but, at the same time, rests on a form of ungrounded idealism in the philosophical sense. The paradox is likely inherited from the systems modeling of the Club of Rome (Meadows et al., 1972), but by the turn of the millennium, a cyber-generation in countries of the affluent North and among educated classes in the South would take for granted the use of computer simulation to explain ecological processes. Many mainstream policy makers assume that the interaction of ‘social systems’ and ‘natural systems’ can be readily monitored and managed in this way. This chapter suggests that the reliance on information theory is too simplistic to account for complex biophysical feedback cycles over time – let alone human behaviors. Moreover, the chapter opens up a new area of political ecology by amplifying an elective affinity between contemporary capitalist politics and digitized reasoning.

Conversely, a materialist reading of this technocratic discourse shows just how parochial it is in a world where only 10 percent of people own a car. The global structure of class, ethnic and gender inequality is exposed by Bond (2008) and Brand and Wissen (2012). The latter authors use statistics from the German Bundestag to describe the ‘imperial mode of living’ in an industrialized country like Germany – where 5 kg of resource are removed from someone else’s community for every 1 kg of home consumption. Beyond this, reliance on computerization to manage every conceivable aspect of daily life actually multiplies environmental damage to an extreme degree (Salleh, 2014). This material dependence of the North on the South is known as extractivism (Svampa, 2012) and it is how the so-called developed world keeps its lead. Extractivism, with attendant ecological and humanly embodied debts, is also the basis of neoliberal ‘sustainable development’ models like the ‘green new deal’ and UNEP’s ‘green economy’ favored by transnational business (Goodman and Salleh, 2013). This profit-oriented industrial provisioning in the name of progress is materially incompatible with global ecological health and democratic futures.

Critical political ecologists, scholars in a radical research field blending insights from geography, anthropology, sociology and ethics (Robbins, 2012), will want to interrogate

this new form of technocratic management. And so the present chapter models that by examining the Earth System Governance (ESG) paradigm being networked internationally by academics from Europe. Advocates of ESG claim to present the social sciences with a major challenge: ‘there is hardly any coherent, systematic, structured system of global environmental governance ... [but] a complex web of multiple and interacting actors, networks, and institutions ... the number and type of actors in global environmental governance has multiplied in the last decades’ (Biermann and Pattberg, 2012a: 265). This governance agenda involves a postmodern proliferation of authority forms – public and private actors and new vertical and horizontal links between transnational administrative bodies – dispersing accountability while questioning the role of the state. ESG would fill a perceived research and management gap – but its implications for citizenship, social justice and cultural autonomy warrant scrutiny. The argument that follows contests the epistemological adequacy of ideas like ESG for governing the interplay of social and natural cycles. It highlights the difficulty of conceptualizing the humanity–nature interface for practitioners relying on algebraic systems theory and other idealist methodologies. As an alternative, it invites political ecologists to ground their work in embodied materialist approaches to the humanity–nature metabolism (Salleh, 2010c).

TOWARD EARTH SYSTEM GOVERNANCE

ESG has a clear trajectory starting with 1970s US foreign policy recommendations for a global management plan located outside the United Nations (Kennan, 1970). International concern over societal impacts on the ecosystem was affirmed with the 1972 UN Conference on the Human Environment in Stockholm and establishment of the UN Environment Programme (UNEP). A decade later, the Brundtland-chaired World Commission on Environment and Development produced *Our Common Future* (1987). The 1980s and 1990s was a time of consolidating liberal market ideology worldwide. A new conservative think-tank, the European Management Forum, became the World Economic Forum in 1987 with annual meetings of global leaders in Davos, Switzerland. A World Business Council for Sustainable Development largely designed the 1992 Rio Earth Summit with its Agenda 21, Biodiversity and Climate Change Conventions – all measures emphasizing voluntary corporate responsibility (Schmidheiny, 1992). The creation of a Global Environment Facility within the World Bank added to this momentum for international environmental governance under capitalism.

Yet the abiding effect of such geopolitical and geo-economic expansionism was identified a century ago in 1913 when Luxemburg (1968) observed how capital accumulation in industrial economies can only be maintained through the material subsumption of resources, labor and markets at the geographic periphery. The result is that ‘other’ peoples’ livelihood resources, traditions and conviviality are sacrificed. Nevertheless, there is fierce grassroots resistance to this global system of accumulation. Plans to institutionalize market values at the heart of world political decision-making provoked major street protests outside the 1999 World Trade Organization (WTO) meeting in Seattle (Tebtebba Foundation, 1999). At this time, the ambitious Multilateral Agreement on Investment that would have consolidated the reach of free trade was

rolled back by popular dissent. Political movements continue to oppose the globalization of neoliberal exploitation, through the World Social Forum, Blockupy and *Via Campesina*. Resource wars and land grabs, job losses and precariousness are provoking public unrest on every continent.

CONCEPTUAL ‘FIT’

The ESG research program emerged out of the call for a World Environment and Development Organization made by Biermann (1998) – an international lawyer based first at the Potsdam Institute, then later at the Free University Amsterdam. From here, an extended academic network would grow, initially as the Global Governance Project (GLOGOV), transmuted into ESG from 2009. The international reach of ESG – sponsoring centers, publications and conferences around the globe – extends through universities from Amsterdam to Tokyo to Boulder and beyond. There are interest groups in many Western European universities, with a coordinating office in Lund, Sweden. The full funding base of ESG is not transparent, but Biermann and Pattberg (2012b: xii) acknowledge the GLOGOV as having received support from the Volkswagen Foundation, the king of Spain, European Cost Action, and the European Union via the Potsdam Institute and Free University Amsterdam. ESG spans the terrain of economy and ecology, purporting to offer opportunities for innovative problem solving and consensus building. However, the formalization of such discursive activities is also hegemonic, holding capitalist power relations in place (Carroll, 2007). This context makes it difficult for ESG to deal with questions posed by the victims of free market economics.

How does ESG create a conceptual ‘fit’ between social and natural systems – the better to then govern them? The political scientist who edits an ESG series for MIT Press sees earth governance as relatively straightforward: ‘The essential step is to reach agreement on an appropriate structure of rights, rules, and decision-making procedures. Once that is done, it becomes timely to consider the nature of the organizations needed to administer these institutional arrangements’ (Young, 2008: 21). Thoughtful economists such as Bromley (2012: 1–2) disagree:

Young’s insights, intuitively obvious on their face, entail the following presumptions: (1) the ideal institutional design (a management regime) must fit the problem; (2) behavioral mechanisms must pay attention to incentives; and (3) the necessary institutions (rules) must be embedded in (fit) the proper organizational structure.

This question of conceptual fit is a profound epistemological challenge for academic researchers. Yet it is also a matter of ethics – since if policy fits material relations poorly, there will be all kinds of social and ecological fallout. Indeed, rational management of the Anthropocene under capitalism may be an oxymoron. Studies of global corporations show that they operate with ‘multiple identities’ (Sklair, 2001; Tienhaara et al., 2012). Thus corporate leaders play the jobs-versus-environment card, adopt ‘green production’ simply because it is profitable to do so, deploy new

technologies only under WTO pressure or to meet mandatory Multilateral Environmental Agreements (MEAs), or they simply seek to pacify a critical media. Is this functional duplicity on the part of capitalist actors unavoidable? Can a well-intentioned scheme for earth governance cohere, given the multiple identities of private actors, or for that matter, conflicting interests between different fractions of capital?

MULTI-SCALAR ARCHITECTURE

The ESG program is optimistic, with current research funded from 2009 to 2018. Its central Science and Implementation Plan is organized under the so-called ‘5-As’ that function at different scales (Biermann and Pattberg, 2012a: 274). To paraphrase, these are:

Adaptation – political capacity for flexible responses to new knowledge or to earth system disturbances critical to governance.

Agency – drivers and actors like businesses and NGOs.

Architecture – integrating overarching governance institutions – local, regional, national and international based around shared principles for stakeholder decisions at all levels.

Accountability – new designs for legitimacy reflecting an acknowledgment that financial requirements for participation in global governance may create unequal advantage.

Allocation and Access – principles of justice, support and compensation, as well as analysis of socio-ecological adaptability and resilience at the global level.

This framework points to the need to rationalize the 800 or so MEAs in existence – perhaps, as Biermann (2005) suggests, via treaty ‘clustering’ – under rubrics such as geographic location, environmental problem, human cause, type of policy instrument, or need for capacity building – each cluster requiring specific administrative interventions. Biermann’s priority, however, is an upgrading of UNEP’s role.

What the multi-scalar architecture of ESG passes over is the living materiality and subjectivity of class-based, ethnic or gendered voices, let alone the complex metabolism of inter-species relations. The governance text deals only with institutional objectives. ESG models tend to abstract, conflate or reify grounded ecological, social and embodied processes. The postmodern stance is that, whereas the social sciences have relied on substantive historical observation, ESG will be future-oriented, using long data runs, statistical modeling and scenario research – involving new criteria of evidence, validity and reliability. The element of techno-scientific utopianism is confirmed by a symptomatic silence on the fact that both the internationalization of interlocked political regimes and the scientific monitoring of data will be digitized and coordinated from outer space by GIS. Yet high-tech governance is not cheap environmentally – it involves heavy-metal extraction, massive energy use, toxic-plastics manufacture, non-biodegradable waste and carbon-generating free trade. These cradle-to-grave costs are rarely counted by development proponents. Neither is the materiality of embodied debts acknowledged – family dislocations, polluted water, or electromagnetically induced cancers (Salleh, 2014).

As Marxist philosophers Horkheimer and Adorno (1973) have explained, the capitalist drive to control speaks the foundational European Enlightenment narrative of mastery over nature through instrumental reason. This is exemplified when Biermann (2012: 4) writes: ‘No longer is the human species a spectator that merely needs to adapt to the natural environment. Humanity itself has become a powerful agent of earth system evolution.’ The Anthropocene of ESG is embedded in this ideology of modernization, with its notion that the step from human cause to natural effect is linear and predictable. Unfortunately, the obsolete model of classical physics, foundational to science and engineering, has been adopted by economics and even organizational sociology. The result is not science, but ideological scientism and, as feminist scholars explain, the application of mechanics to partially understood living processes risks more than a little methodological forcing (Fox Keller, 1985; Shiva, 1989). Nonetheless, in a neoliberal economic system geared to material accumulation, the role of technocrat professionals is to objectify, ‘design and control’ living human and external nature as a resource base for entrepreneurs. Noting the parallel in how mainstream modeling of economics and ecology each relies on digitized parameters, several prominent scientists recently attempted to dislodge this hubris with a consciousness-raising question: ‘to what extent can mechanisms that enhance stability against inevitable minor fluctuations, in inflation, interest rates or share prices ... perversely predispose towards full scale collapse?’ (May et al., 2008: 893). Bromley displays a similar caution about environmental management:

institutions (rules) and governance structures, intended to address a particular ecological problem, *necessarily set[s] in motion a new ecological trajectory whose salient properties are unknown until it is too late* to craft new appropriate and incentive-compatible institutional remedies ... We may think of this problem as a variation of the Heisenberg Uncertainty Principle. (Bromley, 2012: 2; italics added)

ECOLOGICAL MODERNIZATION

If the uncertainty principle does indeed belong here, then earth governance on the scale imagined by ESG will call for some very skillful public relations. One might draw a parallel with Wynne’s (1997) work on the politics of nuclear power and biotechnology. In his experience, expert management institutions tend to bolster their authority with communications that reduce social and ecological complexity. In addition, policy shaped by economic interests quantifies risk in ad hoc ways to make it tradable against perceived benefit. The result is that citizens lose trust in governments, agencies and corporations. Even the risk society thesis of Beck et al. (1994) disguises the fact that environmental impacts are not the same across classes, ethnicities and genders. ESG operates with a similar ‘flat earth’ model, ignoring the force of power relations in both the social construction of science and in the social distribution of its material effects.

The risk society thesis is related to the discourse of ecological modernization (Mol et al., 2009) – a European version of the optimistic postwar American evolutionist sociology of Talcott Parsons. Policy modernists and postmodernists envisage that sophisticated digital technologies will enable more efficient resource use, so decoupling

economic growth from ecosystem damage. This ‘dematerialization’ is about fine-tuning forces of production while leaving unjust and dysfunctional social relations of production intact. The US ‘natural capital’ school (Hawken et al., 1999) shares this engineering approach, offered as an attractive alternative to the unpalatable ‘limits to growth’ position. However, a survey by York and Rosa (2003) discovered multiple methodological and empirical inconsistencies in research studies claiming to demonstrate dematerialization. Meanwhile, Foster (2012) highlights the implicit imperialism and unequal exchange that ecological modernizing practices rest on. It is not hard to see why ecological modernization has become the dominant intellectual currency of business and liberal policy circles. By extension, the UN practice of ‘mainstreaming’ in development programs homogenizes communities according to the transatlantic consumer norm.

In addressing the earth’s bio-geochemical systems, ESG proponents acknowledge scientific complexity, but the economic embeddedness of their paradigm in capitalist property law demands scientific simplification. The same dilemma afflicts many areas of environmental management. In the scientific governance of genetic engineering, for example, the unitary, measurable ‘gene’ becomes a category for facilitating property rights, despite overwhelming evidence of the fluid interaction of non-patentable open-ended epigenetic processes in the unfolding of life (Salleh, 2006). Still, Biermann (2012) remains convinced of the potential for earth governance. In his view, neither lifestyle modification, current technologies, state-directed command and control nor market mechanisms are sufficient for the necessary social transition to sustainability. ESG is judged indispensable in providing human society with a safe transition to co-evolution on a planetary scale. The social and ethical dimensions of that transition are not spelled out, but reference is made to WCED (1987). Yet that Brundtland notion of ‘sustainable development’ was internally contradictory from the outset, since one part of it implied stability, while the other implied growth (Trainer, 1987). ESG plans to rectify this tension by ‘balancing’ what the 2002 Johannesburg World Summit named the three pillars of sustainable development: Environment, Economy and Society.

PLANETARY BOUNDARIES

ESG is intended to dovetail with the influential work of ecologists Rockström et al. (2009) on ‘planetary boundaries’. The expectation is that inductively derived scientific data on climate change, biodiversity loss, nitrogen and phosphorous cycles, stratospheric ozone depletion, ocean acidification, freshwater and land use, atmospheric aerosols and chemical pollutants will result in benchmarks or ‘threshold parameters’ for political decision-makers. The German Advisory Council on Global Change (2005) adopts a similar approach to ecosystem risk – and the physical terminology is telling: ‘tolerable windows’, ‘guard rails’, ‘critical values’ and ‘tipping points’. The ESG focus on planetary boundaries is to provide a ‘target corridor’ for sustainable development designed to shape future international negotiations. Moreover, if boundary measures remain empirically imprecise, this should not be seen as a major conceptual shortcoming, according to Biermann (2012: 5), since consensus among scientists and policy networks is ultimately what matters.

Planetary boundaries are understood here as ‘value neutral’ in themselves, thereby not determining any limits to growth as in earlier systems approaches of Meadows et al. (1972). But rendering boundaries operational in policy is clearly political, since risk assessment depends on normative assumptions. Thus, in an unequal world, ‘Richer societies might prefer a risk-averse approach, conserving the world as it is, and preventing any harm. Poorer societies on their part, might be more risk-taking, prioritizing economic development to alleviate poverty’ (Biermann, 2012: 6). Social justice activists may counter that, ethically speaking, those who pollute most in the affluent North should do more to change – to alleviate poverty in the geographic periphery of capitalism where farmers commit suicide and children starve as livelihood resources are appropriated for cash-based development. This humanist awareness is not catered for in ESG, where international agreements like the 1971 Convention on International Trade in Endangered Species, or private initiatives like the Forest Stewardship Council, are held up as prototypical mechanisms for earth governance.

Having stressed the importance of planetary boundaries in defining ‘the target corridor’, Biermann (2012: 7) seems to turn around, arguing that ‘political institutions should follow social activities, not necessarily planetary boundaries ... [In science] the complexities of multi-causality and multiple consequences require indeed an integrated, interdisciplinary assessment’. Examples given are the Intergovernmental Panel on Climate Change and the Intergovernmental Platform on Biodiversity and Ecosystem Services. Interdisciplinary thinking is certainly needed, but it is only useful when socio-political causes and effects within a ‘social system’ are made explicit. At this point, the political ecologist might ask: well, what exactly is a ‘social system’? The ESG literature is seriously lacking in such sociological depth. Biermann believes that state sovereignty has to give way for earth governance to be effective globally, just as it already has for economic governance via the World Trade Organization. As he sees it: ‘The success of the world trade regime, for example, is related to the simplicity of its commitments, including its quantitative targets for the reduction of custom obligations’ (Biermann, 2012: 6). However, this is not a universally accepted line among ESG partners, particularly those from the global South.

METHODOLOGICAL ‘FORCING’

What other issues and challenges are at stake in ESG? In 2012, a special ESG issue of *Ecological Economics* explored the fit between governance and biosphere dynamics – assessing international regime theory, network approaches, institutional and policy analysis, polycentric economics and resilience thinking. According to the editors’ introduction, the challenge is to determine ‘how governance is adaptive to the complex behavior of linked social-ecological systems at the same time as providing space for bottom-up ecosystem stewardship processes that link communities, practitioners, and scientists’ (Galaz et al., 2012: 3). An article by Padmanabhan, a planner, and Jungcort, a sustainability researcher, addresses the objective in this way:

we aim at reducing complexity in understanding human–biodiversity relations, making cases comparable across sites, and propose that, in order to address complexity, we need a method

of abstraction that leads to the development of a more structured analysis, based on selection of explanatory factors according to conceptual models as well as empirical significance. (Padmanabhan and Jungcurt, 2012: 70; italics added)

The authors write that institutions are ‘the rules of the game’: they are ‘at the interface between the natural environment and the actors putting it into use for different ends’ (ibid.). This stylized ‘use perspective’ (Vatn, 2005) scientizes and neutralizes market activity as quantifiable ‘choice sets’ for firms or households. One actor’s interest in use of a resource may thus cancel the option of another. Ecosystem services are said to occur at different ecological scales, with other levels of analysis identified for transactions like decision-making and appropriation. In the unique language of the authors, there is a need for awareness of ‘the operational, collective and constitutional choices taken at each of the jurisdictional levels of human choice’ (Padmanabhan and Jungcurt, 2012: 73).

While this research would govern biodiversity by mapping sequential chains of interest-directed transactions, the transaction idea is less about an exchange of commodities than about liberties and property rights. Take the ‘gene’: ‘prior to its revelation through research activities, this value is highly uncertain. As soon as it has been decoded and its value identified, it becomes an information resource that has the characteristics of a pure public good’ (ibid.: 72). Thus the traditional farmer’s use perspective contrasts with the commercial breeder’s interests, but reconciliation is envisaged through skillful governance. Given this functionalist framing, the article does not discuss power differentials under capitalism and the prevalence of corporate biopiracy. In fact, the research illustrates the post-materialist vacuum that occurs when algebraic models are used to answer social questions. Ironically, as indicated in the quote, the ‘empirical deficit’ is to be resolved by further abstraction. It is therefore curious that the authors endorse and paraphrase Agrawal (2001) to the effect that ‘Theories of collective action phenomena in biodiversity governance have little explanatory power beyond the specific empirical setting in which they were conducted, as relevant causal models are missing’ (Padmanabhan and Jungcurt, 2012: 74). In relation to ESG objectives, it is also odd that Ostrom (1998) is referenced – a thinker renowned for arguing that local neighborhoods manage the commons far more effectively than organizations or markets.

The game-theoretic scientism marking this kind of analysis is entirely dependent on the manipulation of ad hoc idealized units, so raising the problem of ‘conceptual fit’ again. On this epistemological dilemma, the authors present an opinion derived from Hagerdorn (2008). As they put it: ‘Biophysical attributes do influence transaction properties by virtue of their material resource characteristics, but, as explained above, they are not the same as the cognitive conception of the properties of transaction’ (Padmanabhan and Jungcurt, 2012: 75). ‘Properties of transactions’ as seen in the ecosystem include ‘jointness and absence of separability, coherence and complexity, limited standardisability and calculability, dimensions of time and scale, predictability and irreversibility, spatial characteristics and mobility, adaptability and observability, etc’ (Hagerdorn, 2008: 12). These formulations show confusion as to which phenomena are ontological existents ‘observed in the ecosystem’, and which are socially constructed human abstractions shaped by the language of physics and projected by the investigator

on to living material. The cognitive flaw typifies the post-Enlightenment shift from sensuous human interaction with natural processes to atomized measurement for purposes of calculated control. The global environmental crisis experienced today testifies to the error of this instrumentalism as a false historical consciousness. And, indeed, the journal editors seem to affirm this conclusion, citing Schlesinger (2009) to the effect that ‘management based on thresholds, although attractive in its simplicity, allows pernicious, slow and diffuse degradation to persist nearly indefinitely’ (Galaz et al., 2012: 1). The governance of metabolic flows by disentangling them contrasts sharply with the embodied materialist approaches of indigenous farmers or caregiving mothers who protect ‘natural and human’ complexity by labor forms that enhance cycles of reciprocity (Salleh et al., 2013).

‘STEERING’ LAISSEZ-FAIRE

On the question: can earth systems be governed? Nilsson and Persson (2012) – supported by the Stockholm Resilience Centre, Future Foundation and Mistral – offer a more nuanced position. They propose ‘policy packages’ to encourage economic transformation, and to reduce system stress, risks and vulnerabilities. They also avoid simplification, acknowledging that natural processes are synergistic, such that human interventions may well result in material displacements from one ecosystem process to another, or from one country to another. They identify a variety of potential governance modes: regulatory standard setting and monitoring; market-based economic incentives; normative or consensual practices; but maintain that market pricing of ‘ecosystem services’ can skew economic signals and lead to problem shifting. They also concede that research tends to be framed by the assumptions of socially dominant groups. Finally, Nilsson and Persson believe that regulation is necessary, but accept Ostrom’s view that policy fails if too centralized. That said, satellite monitoring is recommended ‘to complement’ local knowledge. After a steady to and fro on the vicissitudes of earth governance, these authors arrive at a rejection of ESG logic altogether:

biophysical interactions are of such complexity that they cannot possibly be orchestrated in a synoptic way ... The interactions that occur within and across natural, social and economic systems and shape *the unfolding pattern of global environmental change can neither be predicted and controlled top-down*, nor left to market dynamics under some generic regulation. (Nilsson and Persson, 2012: 18; italics added)

While the ESG model is oriented to an analysis of self-steering structurally autonomous systems, the world of its actors is competitive and entrepreneurial (Partzsch and Ziegler, 2011). In this schizoid methodology, ‘systems’ must be predictable to be manageable, but the behavior of the very individuals who cause these systems to come into being is free and unpredictable. Luke (1995: 30), extrapolating from Foucault’s thesis on bio-power (Foucault, 1980), has commented: ‘Most sustainable development discourses are extremely conflicted and as discourses of green governmentality, they are often little more than a bureaucratic conceit, indulging the empire-building of professional would-be ecocrats’. These epistemological flaws are not likely to unsettle the winners of neoliberal globalization – bankers, CEOs, hedge-fund operators or

technocrat professionals. But others, including ESG researchers from the global and domestic peripheries, may be very uneasy about forms of scientific mystification – or scientism – being used to promote the values of free trade and unequal North/South exchange.

NATURE'S VALUE

The 'overarching' ESG management regime for mitigating the ecological crisis implies that nature can be measured and valued relatively easily. The approach follows neoclassical economics, where value is founded on individual self-interest (Foster, 1997). Thus the value of something is 'revealed' in the rational choice of what an individual or group of individuals is willing to pay for it. On this model, environmental resources are goods, stock or 'natural capital' that can be measured along a single scale, thereafter translatable into money. Just as markets are thought to be driven by individual actors behaving as units, so the earth is believed to be made up of functioning units or things commensurable with each other by dint of the capitalist exchange principle. A thing not yet commodified has no value; it is an 'externality' to the economic system. Problems are believed to occur when an aspect of nature has no market price. But once commodified, as in water pricing or pollution taxes, 'a thing' will be managed spontaneously by 'the hidden hand' of the market. Creation and enforcement of property rights becomes the solution to resource management. Yet critics have long contested this viewpoint, recognizing the utilitarian calculus as an expression of capitalist class interest. At a deeper level, the discourse of exchange value is sociologically gendered 'masculine' (Waring, 2009; Mellor, 2009). Meanwhile, non-Western communities express their pride in the conservation of habitat through diverse life-affirming value forms under customary law (Mujeres Manifesto, 2009; Regenvanu, 2010).

Value is far more complex than implied by the ethic of methodological individualism, where even altruism is an algorithm of utility and self-interest. In environmental economics and sometimes in ecological economics as used by business, government and policy academics, the exercise of valuing nature is very compromised. Stirling (1997) observes that, in addition to believing nature is unitary, fitting an ordinal scale, the approach often: equates the natural material world with the humanly known world; essentializes all humans as self-maximizers; treats the symbolic and cultural realm as irrelevant to value; prioritizes minor human interests over major non-human ones; reifies and then manipulates ad hoc economic weightings; assumes that humans can substitute or offset natural capital; defines sustainability in an un-ecological way; and attempts to wield authority by constructing 'consensus'. Then there is the rather bogus choice between 'weak sustainability' – preserving capital – and 'strong sustainability' – preserving 'natural capital' in the environment out there, although still under capitalism. The conventional tools of environmental valuation are also functionalist closed-system activities: cost-benefit analysis and contingent valuation are marred by reductionism; multi-criteria mapping and multi-attribute utility analysis neutralize judgment; rational dialogue and deliberative democracy understate the force of power relations in the social construction of consensus.

The contemporary context of these power relations is financial and ecological chaos wherein ESG can too readily bend to a transnational ruling class seeking to stabilize conditions for accumulation through global integration. Political ecologists may reject the very idea of ESG as *Zweckrationalität* (instrumental rationality) on a planetary scale; but insiders see it as open, self-organizing, non-hierarchical; inclusive of inputs from business, indigenes, NGOs, or other ‘non-state actors’. There is convergence with the neoliberal small-state ideal and a ‘science–policy interface’ built on PPPs (public–private partnerships). ESG foci include UN reform and ‘treaty congestion’. It joins with current international ‘green’ designs such as the World Bank–UNEP ‘bio-economy’, which rests on commodification of ecosystem services, neocolonial technology transfers and even risk-based climate derivatives. ESG research can serve to legitimate or ideologically naturalize top–down political control through academic credentialing.

GROUNDING VALIDITY

In order to defend its environmental reputation, the corporate sector relies on a notion of ‘sound science’ in product marketing and project approvals – and, as Van der Pijl (1998) has pointed out, technocratic professionals command good salaries and play a key role in manufacturing that validation. However, Gupta et al. (2012) argue that, whereas business interests ‘technicize’ arguments, what is wanted is open discussion and sharing with those who live with the impacts of extractivism, industrial development and free trade. Certainly, a shift is occurring towards more inclusive sustainability deliberations where contextual knowledge and subjective inputs are valued (Funtowicz and Ravetz, 1993). The post-normal scientist or policy maker recognizes that problem definition, choice of what gets measured and decisions on commensurability have a normative and political aspect. He or she will reach beyond consensus within a specialist ‘epistemic community’ to learn from the experiential skills of ‘othered’ groupings – peasants, for example, even grandmothers. But can such deliberations ever be effective for earth governance if contained by neoliberal institutions?

The climate change debate shows that democratic policy is easier to claim than to achieve. Initially, the Intergovernmental Panel on Climate Change (IPCC) lacked grassroots participation and cross-cultural awareness, thereby neglecting South perspectives. Like most multilateral governance agencies, the IPCC accepts ‘the imperial mode of living’ as the human norm. Hence the emphasis on climate change ‘adaptation’ for developing countries – as distinct from a materially effective remedy like recommending rapid de-growth for the affluent North. When the IPCC does activate public validity criteria, it invites governmental input, with the outcome that its synthesis reports hover somewhere between science and diplomacy (Jasanoff, 2010; Salleh, 2010b). The ESG program is similarly hamstrung by subservience to capital. What is taken for granted is precisely what needs to be challenged. The ecosocialist analysis helps expose the root of the matter by demonstrating how capitalist industrial production and urbanization led to a major ‘metabolic rift’ between human economies and their environmental base (Foster et al., 2010). By this thesis, capitalist commodification of nature and the treadmill of production–consumption are inherently incompatible with sustainability (Schnaiberg, 1980; O’Connor, 1994). Further, the commodity society generates a

one-dimensional monoculture of the mind (Marcuse, 1972; Shiva, 1989). Carbon trading is but the latest in a long line of efforts that simply reinforce the prevailing crisis while affording new opportunities for ‘accumulation by dispossession’.

Finally, the hegemony of digitized reasoning comes to colonize the environmental movement North and South. As Luke (1995: 30) comments, the subsumption of culture and ecology under economics is now found even among grassroots NGOs, when they posit that ‘existing flows of energy, information and resources are not wrong as such, only that the business and administrative elites of nation-states are mismanaging their volumes, rates, and levels’. It does not have to be this way, of course. There is an alternative to the short-sighted notion of earth governance that is the focus of this chapter. Articulate voices speak out from the geographic, and indeed domestic, peripheries of capitalism, and they are joined by critical social scientists like Max-Neef et al. (1991), Bennholdt-Thomsen and Mies (1999) and Salleh (2010a). The surprising fact is how ecologically rational the labor of peasants, indigenes and household caregivers is, as they provision eco-sufficiently without the exploitation and entropy that results from large-scale profit-directed production. Here is an embodied materialist epistemology, an empirical science, and a living model of ecological economics that shames the imperial vision of ESG.

CONCLUSION

To recapitulate: the academic weaknesses highlighted in this critique of the ESG mission have two facets. One set of problems stems from the historical context of a research program that is unreflexively embedded in the political norms of neoliberal globalization. A second set of problems stems from reliance on post-Enlightenment knowledge disciplines whose epistemological capacity for dealing with ‘nature’ is deeply compromised by the master narrative of instrumental reason (Horkheimer and Adorno, 1973; Merchant, 1980). Additionally, these two problem sets are mutually reinforcing. Plainly, ESG researchers are unfamiliar with or choose to overlook a vast social scientific library and contemporary platforms like the *Journal of Political Ecology*, *Environmental Ethics*, *Globalizations*, *Capitalism Nature Socialism*, *Journal of World Systems Research* or *Antipode*, to name a few.

A political ecology informed by the critical Marxist tradition and grounded varieties of poststructuralist thought has longstanding commitments to local-level research, to habitat protection and social justice. Political ecologists are well placed to educate thinking publics, academic scientists, policy makers and activists on the implications of initiatives like ESG. The ESG project has fired the imagination of scholars even as it has underscored the dangers of academic work that neglects its own context. A too easy interdisciplinarity based on the algebraic scientism of systems theory will not elucidate the global power relations that underpin social and ecological crises today. The same idealist abstraction occurs in talk about natural capital and dematerialization, and it reflects a deep cultural dissociation from the sensuous life-world. For the imputation of economic exchange value to earthly metabolisms only translates thermodynamic flows into fictional stochastic units, leaving material ecologies behind. Computer-dependent techno-utopian governance modes can only perpetuate the destructive bio-geochemical

circuits of extraction, manufacture, transport, market, consumption and waste – displacing environmental and health costs as debts on to less powerful humans, unborn generations and nature at large.

NOTE

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32. From ‘participation’ to ‘negotiation’: suppressing dissent in environmental conflict resolution in Brazil

*Andréa Zhouri**

In Brazil, the literature about environmental iniquities and conflicts has grown over the past ten years. Initial work addressed a perceived uncritical approach in the social sciences towards ‘environmental issues’. That work stemmed simultaneously from observing an escalation in national environmental iniquities. The call was thus for studies that could bring these latter processes to the fore, while critiquing an ecological modernization paradigm already hegemonic in policy and political circles (Blowers, 1987; Carneiro, 2005; Acselrad et al., 2004; Zhouri et al., 2005), but gaining ground among social analysts worldwide (Spaargaren, 1997; Sachs, 1993). For instance, the Brundtland Report of 1987, as well as diverse World Bank reports, was seen by the latter to be state-of-the-art scientific knowledge about the environment – a perception that thereby disguised seeing these documents as political constructs.

The ecological modernization paradigm became operational in Brazil with the institutionalization of environmental issues during the 1970s and 1980s. This process was largely grounded in global ideas about sustainability and sustainable development that were disseminated after the Rio Summit of 1992. Still widely acknowledged today, a key theme concerned the need for participatory management to reconcile economic, environmental and social interests (Sachs, 1992; Escobar, 1995). This was in effect a form of environmental-related adjustment (or ‘modernization’) of classical development. Technical prevention of so-called environmental impacts as well as adoption of mitigation and compensation measures for environmental degradation both set the tone for the new policy. In reality, rendering operational strategies centered on sustainable development involved implementing a new multi-scale regulatory framework. In Brazil, the environmental impact assessment mechanism, enforcement of specific environmental legislation and emphasis on environmental education were components largely underwritten by international financial institutions. Meanwhile, corporations invested in new technologies aiming at ecological efficiency, whereas action focused on the social–environmental responsibilities of firms included calls for dialogue and the construction of ‘partnerships’ with civil society groups (Zhouri and Laschefski, 2010). A process of consensus building was therefore central to efforts to tame the environmental critique in order to make the proposed sustainable development possible.

This chapter analyzes the effect of such abstract global ideas on politically grounded processes in Brazil. It focuses on global environmental policies and strategies related to consensus building that are presented as solutions to environmental conflicts. It interrogates how such strategies, driven by institutions such as the World Bank, have been adopted by Brazilian agencies, in turn producing effects of displacement: from

resistance to participation to negotiation, from justice to rights to interests, from the global to the national to the local, so that nearly everything in the process can be negotiated (rights, laws, local territory, environmental regulation and so on). If participation has been a key concept within a global sustainability paradigm, and one that seemingly responds well to calls for democracy in countries like Brazil, negotiation is the medium through which participation (therefore democracy/the political) must occur. Yet, in a process typical of coloniality of knowledge and power (Mignolo, 2003; Quijano, 2002) dissent and alterity are sidelined. Thus participation, understood as qualified participation, ends up producing a situation in which subaltern groups are silenced and environmental inequalities are perpetuated.

A GLOBAL GOVERNANCE PACKAGE AND EFFECTS ON THE GROUND

The new global governance package needs to be situated in historical context. The antagonism between environment and development that marked debate in the 1970s and 1980s called into question the model of development implemented in many parts of the world. The image of the Amazon rainforest on fire was important here in that it brought together environmental organizations and local groups in the fight against governments and international institutions keen to implement mega-development projects in Brazil.

Meanwhile, development strategies had failed as social inequality was increasing. New frontiers of 'national inclusion' along 'axes of development' (especially in the north and west) only resulted in severe environmental degradation and associated threats to indigenous groups and rural communities that fought these processes. The latter enjoyed some victories: the World Bank, the Inter-American Development Bank and other transnational aid agencies stopped funding large dams, road-building and other major projects in the Amazon at the time (Zhou, 2004). These agencies also required environmental and social impact assessments as well as participatory planning for new projects.

Anti-development campaigners also emphasized the way of life of indigenous groups, riverside communities and rubber tappers – 'forest peoples' of the Amazon – who became exemplars of sustainability in practice. The alliance among rubber tappers, indigenous groups, riverside dwellers and environmentalists created a new mode of environmentalism known as 'socio-environmentalism'. The latter differed sharply from 'classical' environmentalism (e.g. conservationism), which saw nature as being *without* people. In contrast, forest peoples asserted that nature must be valued *with* people.

Against this backdrop, it can be seen that the idea of taking into consideration local peoples' views and needs would possess a strong appeal in a country recently freed from dictatorship.¹ The participatory principle of the new global environmental paradigm seemed to chime with demands for democracy. Nonetheless, there was another momentous international trend in the 1980s and 1990s: economic neoliberalization. The upshot was that the sustainability paradigm was eventually 'captured' by international institutions (including the World Trade Organization, created in 1995), which then gave it a meaning quite different from that put forward by forest peoples

and their allies. This change could be seen in the way that participation was embedded as just one more item in a larger process of environmental management. The latter was really about technical practices within market-oriented initiatives. Rather than focusing on contesting development, modernity and overconsumption, many NGOs now worked on certification schemes and other green market initiatives to build a 'common agenda' with companies, governments and financial bodies (Dudley et al., 1996: 1; Zhouri, 2004). Concurrently, the global governance package involved implementing a multi-scalar regulatory framework reaching from the global through the national to the local. Environmental issues were complex but still defined in technical and managerial terms: they were 'externalities' of development to be dealt with efficiently using new technologies and rational planning. Such governance produced both a hierarchical environmental agenda that privileged issues linked to global-scale articulations (e.g. biodiversity, climate change) and a depoliticization of socio-environmental debate. The environment was henceforth to be seen as a reality external to social relations and, therefore, as an object to be managed by scientists. These globally coordinated material and discursive practices would in turn underpin consensus-building efforts at the heart of scale construction in national and local contexts.

Participation was a key ingredient for both global governance and renewed Brazilian democracy. However, this proved to be a 'perverse convergence' (Dagnino, 2004) as the global neoliberal agenda capriciously met the emancipatory project of progressive political forces within Brazil. Both spoke the language of participation and democracy, rights of citizens and partnership with civil society, but their aims and goals pointed in opposite directions. Within this global governance package, participation was all about asserting control over space, territory, people and society through defining the local scale. Thus the 'civil society' invited to participate in such governance was that of 'organized' groups only – that is, those actors legible to governments and funders. These were 'qualified' agents, that is, those with the social capital (Bourdieu, 1993) required in the environmental field (Zhouri et al., 2005: 16). Qualifications included technical expertise, project-writing skills, Western institutional organization, computer skills and knowledge of English. Most Brazilians, especially those living in rural areas or on the periphery of cities, who are subaltern groups (Spivak, 1988), were thereby excluded. Hence institutionalization of the environmental field has meant the reproduction of practices, subjects ('experts') and relations that represent a type of environmental oligarchy (Carneiro, 2005). This oligarchy then promotes a kind of 'good fellows' policy in which favors are exchanged among individuals who move between posts in government, business and civil society. Meanwhile, non-sanctioned environmental discourses and practices are all but excluded from discussion, as traditional modes of elite expropriation and political participation persist.

Provision of governance mechanisms designed to allow a limited space for the views of subaltern groups to be heard provides little succor to these groups. Thus, while social and environmental impact assessment reports are a management mainstay, they are ultimately undermined by the fact that they are produced by companies determined to win an environmental license to operate. Hurdles to non-expert comprehension are many. For example, they are usually written in technical language while being vague and/or incorrect on critical matters. They are also long-winded – frequently running to many volumes in a move certain to put off all but the most legally minded reader with

time to spare. Public hearings are involved too, but these are held late in the process such that they become a de facto rubber-stamping exercise before license approval. These are not instances of ‘institutional failure’. Rather, they are integral to the ‘smooth’ operation of the global governance package on the ground. Meanwhile, more ‘traditional’ structural forces long involved in shaping local-scale dynamics based on historical patterns of expropriation persist and indeed become entangled with such governance.

LOCAL EXPROPRIATION AND CONFLICT: A POLITICAL-ECOLOGY APPROACH

The advent of the ecological modernization paradigm – which in Brazil relates mainly to sectors involved in exporting primary commodities – did not displace long-standing mechanisms by which elites take resources from the poor (Almeida et al., 2010). Such dispossession remains widespread across Latin America and invariably affects the most vulnerable, prompting increasing inequality and proliferating environmental conflict (e.g. Oliver-Smith, 2006; Sigaud, 1989; Schwade, 1990; Santos and Nacke, 1988; Rothman, 2008; Pimentel Filho, 1988; Zhouri and Oliveira, 2005, 2010).

The state is a key player here. Brazil’s Plano de Aceleração do Crescimento (PAC or ‘Growth Acceleration Program’) is illustrative. This program was launched in 2003 during the first administration of the Partido dos Trabalhadores (PT or ‘Workers’ Party’) under President Luiz Inácio Lula da Silva, and comprised policies aimed at accelerating Brazilian economic growth, with a total investment of R\$503.9 billion (US\$237 billion). A priority was infrastructure (e.g. sanitation, housing, transportation and energy). However, nearly 55 percent of the budget went to financing energy infrastructure (mainly large dams), which is the leading cause of forced displacement and ecosystem loss nationally today. Indeed, projects condemned by activists in the 1980s were revived, as with the Belo Monte dam on the Xingu River and dozens of other projects in the Tocantins Basin (Zhouri and Oliveira, 2012). Meanwhile, the World Cup, held in Brazil in 2014, involved displacing hundreds of thousands of people in host cities, as well as a staggering expenditure on stadiums, prompting mass protests. Traditional state-backed activities still blossom too. For example, a new mining frontier is being developed in the southeast, involving systematic exploitation of iron ore. A total of nine pipelines for transporting this commodity from the state of Minas Gerais to the coast is planned or under construction. Such activity connects to the energy investment boom noted above: in Minas Gerais alone, government plans foresee constructing 380 dams. Such activity has a catastrophic impact on territories already claimed by indigenous peoples, peasants or other traditional communities. Ensuing conflict involves a multifaceted cast of actors, including mining and metallurgy companies, energy firms, construction contractors, large and small farmers, peasant communities, NGOs, indigenous and *quilombola* (descendants of slaves) societies, fisher folk organizations, as well as social and environmental movements.

Political-ecology research involving academic and non-academic groups has addressed these sorts of environmental inequalities. For instance, the production of a cartography of environmental conflicts both at the national and state levels within

Brazil has proliferated.² This is the case of efforts focused on the state of Minas Gerais, a state level central to political-ecology conflicts in Brazil's federal system. The 'Map of Environmental Conflicts of the Brazilian State of Minas Gerais' is a website documenting over 500 cases of conflict (www.conflitosambientaismg.lcc.ufmg.br).³ This map is important on several counts. First, it reveals the spatiality of environmental inequalities, enabling scholars and activists to spot emerging patterns, and to effect responses accordingly. Second, it also confirms that the interaction between experts, entrepreneurs and those affected by projects is far from being a process of negotiation through open communication and consensus-building. To the contrary, the political-ecology approach underpinning the map points to the unequal power relations embedded in the process of appropriation as well as in the social distribution of environmental risks (Bryant and Bailey, 1997; Guha and Martinez-Alier, 1997). It also brings to light tensions and disputes between social groups that express not only opposing interests, but conflicting environmental projects, worldviews and cultures. Hence the notion of conflict at the heart of this map interrogates the hegemonic definition of 'environment' itself that is institutionalized in licensing procedures, certification schemes and other initiatives. Similarly, it invalidates the idea that there can be undifferentiated representations of space and resources, as governing elites would have it.

Such research going on at Brazilian universities and institutions entails epistemological critique of mainstream understandings of such terms as environmental 'impacts' or 'problems'. As noted, the language of impact (hegemonic within environmental policy-making) presupposes 'the environment' as an objective reality separate from society (Redclift and Benton, 1994; Milton, 1996). Once defined as an object, the environment is then analyzed only in terms of scientific and technical assessment – with other knowledge systems thereby dismissed. The erasure of the latter from the public script goes hand in hand with increasing socio-ecological inequalities and the perpetuation of a coloniality of knowledge and power (Mignolo, 2003, 2008; Quijano, 2002).

The cases analyzed in the Minas Gerais map depict a pattern of conflicts marked by a differential distribution of power in which social groups in dispute each have their own visions, values and discourses shaped by social positioning. Drawing on the notion of a 'field' as developed by Bourdieu (1993), environmental impact assessment here can be seen to help structure relations among these actors, defining for them both the place and the possibilities of action. An unequal distribution of economic, political and symbolic capital locates the agents within the field, providing distinct if highly unequal powers for them to enunciate and assert their environmental and political claims. Thus, and outside the charmed circle of 'enlightened' experts, subalterns speak but their voices are not 'qualified' enough to be heard in the officially designated processes.

The struggle of the Camargos people, who live in an industrial area of Belo Horizonte (the capital of Minas Gerais), is illustrative. For years they have lived with uncertainties concerning their contamination by deadly dioxins emitted by an incinerator installed in their *bairro* (neighborhood). After six years, they succeeded in expelling the company that owned the incinerator from the area, but continue to live in fear for their health as cancer, respiratory and skin diseases increase among them. Yet because

their claims are based on lay knowledge or popular science, the authorities have tended to ignore demands for further action (Oliveira, 2014).

As hundreds of other cases registered on the Minas Gerais map demonstrate, it is within this field of structural inequalities that attempts to initiate negotiation and conflict mediation take place. Such initiatives shape in turn the practice of environmental governance, including the juridical field, as discussed below.

LEGIBILITY, DISSENT AND DEREGULATION

Changes to the law are an integral part of the process of Brazil's integration into a global economy shaped by neoliberalism. Lawmakers have been busy simplifying the nation's complex regulatory framework to make it more 'business-friendly'. To name but a few, changes have been made to key legal codes governing the forests, mining and water, even as attempts are made to alter the 1988 Constitution specifically pertaining to the demarcation of indigenous lands and the environmental impact assessment (EIA) process. Meanwhile, indigenous groups and environmentalists are identified as 'adverse forces' and 'barriers to development' (Zhour, 2010; Zhour and Laschefski, 2010).

That the EIA process is itself now attacked for being anti-business is an indicator of the depth of the neoliberal turn under way since, as noted, EIAs have been a centerpiece of the global environmental governance package that is well disposed toward large projects (e.g. biofuel, mining). That EIA process has eschewed fundamental social and environmental assessment in favor of location- and actor-specific mitigation and compensation measures that allow projects to proceed legally. In addition, analysis of the social reality affected by a specific project is based on the project needs themselves, as, for instance, in focusing on the immediate area planned to be flooded by the reservoir of a hydroelectric dam. Hence the people identified as affected are only those who live in that area. These studies thus do not consider 'the localities' in a well-rounded manner (Appadurai, 2004) – that is, the material and cultural realities of 'place' (Escobar, 2001) that shape local community organizations and 'ecosystems'. Defining the universe of *atingidos* (affected individuals and communities) rather depends on abstract planning and budget schedules established by official agencies and private companies. If development is thereby to be understood as a governmental project coordinated by the state, aiming to produce governable subjects (Li, 1999), then notions of legibility and population become central. The latter is the object, means and end of development, but to manage it, it must first be made legible. State interventions to order space in terms of possible, legitimate and desirable uses certainly imply a capacity to control subjects and territories (Scott, 1998). A rationalization and standardization of the social fabric is thereby attempted. For instance, in the case of struggles over dams, a 'patrimonialist' logic is asserted that transforms subjects with their own intricate socio-environmental relations into mere numerical units (i.e. X number of people, Y area of habitation) as a precursor to the sorts of calculated trade-offs that make EIAs 'tick'. Such reductionism does violence to local ways of seeing and being, as it seeks to create commensurable values where none exists.

In this way, symbolic violence is aligned to material violence as the loosening of regulatory norms and procedures (along with preexisting inefficiencies in law enforcement) frequently open up space for insidious actions to emerge. Forced displacement and displacements *in situ* (Feldman et al., 2003) often go hand in hand with human rights violations (including the right to such things as information, potable water and freedom of movement), as is happening in new mining areas in Minas Gerais. In turn, conflict has spread, spilling over into the legal realm. Thus, for example, the number of cases brought before the Ministério Público (Public Attorney's Office), the official body responsible for protecting the rights of citizens and of the environment, has rocketed. Overwhelmed by this situation, this agency has turned to conflict mediation, calling in particular on the World Bank for support. What might be expected from this partnership?

NEGOTIATION: FROM RIGHTS TO INTERESTS

In practice, the World Bank has been disseminating technologies of conflict resolution around Latin America since the 1990s (Acselrad and Bezerra, 2010). While conflict tended initially to be denied, a newer focus on strategies of negotiation recognizes the existence of tensions, albeit understood as an outcome of the lack of proper 'institutional' input. The latter would depoliticize disputes by creating 'win-win' negotiations. In effect, it proffered a psychological treatment of dissent in which conflict was to be prevented via a technical approach based on norms and handbooks capable of transforming 'hotspots' into 'communities of apprenticeship' (Acselrad and Bezerra, 2010: 35).

In Brazil, it was felt that this approach would help the Ministério Público to deal with the rising number of complaints lodged with it – a situation compounded by the highly fragmented nature of the EIA system and ad hoc amendments. Created under the terms of the 1988 Constitution, the agency is part prosecutor, part public defender, making it in principle at least a super-powerful ombudsman (Laschefski, 2014). Now, it was designed to be relatively autonomous from other official bodies, to permit the agency to investigate even the most powerful of public and private entities that stand accused of violating constitutional rights, notably those relating to socially weak citizens, as well as to consumers, environmental rights, public property and so on. Yet the nature of its mandate has meant that it is regularly accused of making deliberations about EIAs too lengthy. Part of the problem is not of this agency's doing. Thus it has encountered difficulties in relation to the 'judicialization' of cases, especially in situations where projects are deemed important to 'national development'. For example, judges often annul injunctions against this or that project proceeding put forward by the Ministério Público. The latter has hence needed to resort to extrajudicial means to operate. Notable here has been the Termo de Ajustamento de Conduta (TAC or 'Term of Adjustment of Conduct'), an instrument of conflict mediation designed to address situations in which diffuse, collective and/or individual interests collide.⁴

It was in this context that the World Bank signed a Technical Cooperation Term (TCT) with the Ministério Público in Minas Gerais in 2009. This involves both personnel training and institutional improvement based in part on insights provided by

Harvard University experts. The Bank sees this as a pilot project that might later be exported to other Brazilian states as well as to other countries. But what are the implications of an initiative that sees conflict resolution as a type of control?

Bobbio et al. (1998: 228) provide insight here:

The suppression of conflicts is, however, relatively rare ... that is, elimination of the causes, tensions and contrasts that originated the conflicts ... organized societies try to dilute the conflict, to channel it into predictable forms, to submit it to precise and explicit rules, to curb it and, sometimes, to orient to the pre-existing direction the potential of change. (My translation)

Hence one must ask: what or who is the object of 'adjustment' and for which purposes? These questions help underscore one point: the consequences of all these legal and regulatory maneuvers for the diversity of local peoples and environments in areas targeted for 'national development' are severe.

The Minas–Rio mining project in Minas Gerais is illustrative. Although it involves widespread prospecting plus multiple mines that will produce an estimated 56.5 million tons per year of iron ore (and involving an enormous open-air cave 12 km in length) plus processing plants in three municipalities, its EIA acknowledged the existence of only two rural communities that would be affected. Following protests as well as appeals to the Ministério Público, further studies were undertaken – after which the number of affected villages increased sharply to 22. However, problems relating to water supplies and land negotiations (among others) remained, prompting residents to appeal once more to this agency. In a process begun in 2008, the Ministério Público came up with a conflict resolution initiative in 2012. It created the REASA, a socio-environmental network composed of *atingidos*, residents of the municipalities affected by the project, environmentalists, members of the public administration and corporate representatives. REASA was designed as a channel of communication between different actors and the state prosecutor; meetings were held monthly in different villages for over a year. Records of these meetings reveal that, at first, the *atingidos* had great faith in the power of the Ministério Público, its capacity to hear them out, and its ability to solve problems. However, after many meetings, their accusations had not been dealt with satisfactorily, even as mining operations moved forward. Issues such as a systematic underestimation of the adverse impacts of mining, intimidation of residents on the ground, and intense pressure to settle land negotiations quickly were but a few of the ongoing issues aired at REASA meetings. Yet the end result was disappointment and frustration for community representatives; here was a clear case of a mediation network premised on a sense of negotiation based on an overall prospect of local acceptance of mining.

Now, the World Bank is keen on resolving disputes by independent arbitration (Strautman and Furtado, 2014). The Ministério Público may well be one such entity. Nevertheless, according to the Harvard researchers behind this model of negotiation, the main objective of negotiation is to overcome resistance and conflict in order to guarantee acceptance of projects (Fisher et al., 1985). Saying 'no' is apparently out of the question. Conflict is understood as a dispute between (individual) parties each with their own specific interests. This understanding is quite different, therefore, from an interpretation of conflict in political terms based on the existence and persistence of

dissent (Rancière, 1996; Mouffe, 1999), as social groups express not only opposing interests, but different projects for their lives and their environments.

Against this 'game' of (individualized) mitigation and compensation that structures the environmental field, many groups demand instead the possibility of collective self-determination in relation to the territories they traditionally occupy, as well as the revoking of all state policies and practices that violate this right (and hence which are also not in keeping with the UN's International Labour Organization Convention No. 169). Such demands seek to re-politicize debate with an eye to recognizing other perspectives based on cultural diversity and class relations. There is too a firm rejection of the categories of thought (e.g. 'environment') that underpin Brazilian policy-making and the global governance package on which it is based.

It is not surprising that such a campaign rejects the soothing words and 'conflict technologies' propounded by the World Bank and its Brazilian counterparts. These globally sourced tools of ecological modernization, which rest on 'liberal' principles of individualization of subjects and equal treatment before the law, come unstuck when applied in societies informed by sharp inequalities and differential citizenship rights (e.g. indigenous and *quilombola* groups). The result, as shown notably by the 'Map of Environmental Conflicts of Minas Gerais' is the perpetuation of inequalities.

Yet, even in the absence of inequalities, the global governance package currently on offer in Brazil would not favor the interests of local people whose territories are targeted for development. Thus dissent is eliminated by restricting the voice of the *atingidos* to the 'place' in which they are expected to speak: the place of acceptance, adjustment, consensus or, in a word, proper to market and financial institutions, negotiation. The egalitarian prospect of stopping mega-projects in the name of sustaining existing local traditional projects is well beyond the horizon of EIA-style decision-making. Indeed, such a choice is anathema to it. Instead, large (often globally linked) investments are made seemingly inexorable, and even stronger than before when they are cloaked in abstract categories such as progress, civilization or development, which in turn are presented in the name of similarly broad collectivities like the nation or the public interest. By such means, the logic of capitalist accumulation remains concealed.

The global governance package simultaneously confines the *atingido* to the space labeled 'local interest' and 'minor groups'. Here, the *atingido* is fragmented and individualized by a patrimonialist perspective, notably made possible by an instrument called the *cadastro de atingidos* (the registry of affected individuals). Justified in relation to the compensation and mitigation approach noted above, the *cadastro* in fact produces insidious violence to the full recognition of social differences that exist in Brazil. It is basically a list of private owners (individual subjects) and their property. Categorized thus, this subject is counted and possibly 'compensated'. And, in becoming legible (Li, 1999), the newly identified subject becomes 'governable' (Foucault, 1986).

But it is what is thereby left out that is often vital to local communities fighting development. Thus the *cadastro* does not provide an ample assessment of the mode of living of rural communities, their kinship networks and economic interdependence or their specific relationships to the environment. Indeed, the fact that they are often ethnic or traditional communities finds no genuine resonance here either. These profoundly important silences lead to the following question: what are the possibilities

for a genuine assessment of social and environmental impacts using existing instruments such as EIA based on such 'baseline' information as contained in the *cadastro*?

Yet it is not the global governance system as articulated in Brazil that must adjust, but rather local residents. Thus the TAC noted above involves adjusting the behavior of *atingidos* to the logic of market society; prepping them to accede to a process of negotiations with companies on a case-by-case basis through the environmental licensing system. Hence there is no questioning of the latter and the (globally designed) procedures on which it is based. Instead, the TAC, rather than guaranteeing the rights of the *atingidos*, ends up simply legalizing an ad hoc set of changes that may somewhat moderate the adverse effects of development while never stopping it.

Such processes call into serious question the meaning and efficacy of the premises of prevention, correction and reparation that formally underpin the Ministério Público when the clear trend is towards further 'liberalization' of current norms. In this manner, a crisis of institutions that were created precisely in order to guarantee the observance of constitutional rights is linked to a crisis of environmental regulation, now subsumed under a coloniality of knowledge and power.

FINAL REMARKS

Using a political-ecology approach, research being conducted in Brazil seeks to document the adverse social and environmental effects that occur when a global governance package of environmental regulation is embedded in a context of pre-existing inequality. The chapter noted, for example, how the 'Map of Environmental Conflicts of the Brazilian State of Minas Gerais' depicts over 500 cases of struggle involving subjects fighting together to defend their local environment, and often a differentiated mode of living. This research also reveals the persistence of structural inequalities, as mega-projects central to Brazil's integration into a neoliberal world economy (especially via primary commodity exports) take priority, while imposing irreversible changes on territory and people. Yet the voice of the affected people is all but screened out: indeed, administrative categories such as environmental 'impact' and '*atingidos*' seek to standardize and homogenize subjects and territories, thereby perpetuating inequalities.

The state plays an ambiguous role in all of this. It defends a model of development involving the expropriation of local residents' territories in order to enhance Brazil's place in the world, working hand in glove with global companies and (Northern-backed) international institutions (such as the World Bank). Yet the state also pursues national policies of poverty reduction and social rights, even as some of its agencies, in the margins (Das and Poole, 2008), would moderate adverse impacts of development through negotiation-based strategies of conflict resolution. Even here, though, much of the effort is about making the desired local context 'safe' for foreign investors while trying to enforce compliance with rules created within transnational spheres. For some, even this role is too much – hence current attempts in Brazil to weaken existing environmental regulation (developed since the 1980s in light of ecological modernization thinking) are under way.

As this chapter emphasized, environmental conflicts arise within the struggle of social subjects to realize their ways of perceiving and interacting with the environment. This is invariably a political matter. Drawing on Brazilian examples, however, I argued that the political, understood as difference and dissent, is being replaced by a global governance package predicated on strategies of negotiation and conflict resolution that seldom allow the overarching frame of development to be challenged. Here, democracy and ‘win–win’ situations are invoked as part of the building of ‘consensus’ that implicates people in their own dispossession. Thus it becomes a slippery slope – from resistance to participation to negotiation, from justice to rights to interests, from the global to the national to the local – ending up with the entrenchment of social and environmental inequalities that seem to be the hallmark of Brazilian development.

NOTES

- * The author coordinates the Group of Environmental Studies (GESTA). www.fafich.ufmg.br/gesta. She thanks the National Research Council (CNPq) and the State of Minas Gerais Research Foundation (FAPEMIG) for supporting research on which this chapter is based, and is also grateful to Klemens Laschefski and Raquel Oliveira for comments on previous versions of this chapter.
1. Brazil was governed by a dictatorship between 1964 and 1985.
 2. Notably, see the pioneering initiatives represented by the ‘Mapa dos Conflitos Ambientais do Estado do Rio de Janeiro’ (Map of Environmental Conflicts of the State of Rio de Janeiro), launched in 2004 by scholars from the Universidade Federal do Rio de Janeiro (UFRJ) and the Federação de Órgãos para Assistência Social e Educacional (FASE – the Federation of Agencies for Social and Educational Assistance); and the ‘Mapa de Conflitos envolvendo Injustiças Ambientais e Saúde no Brasil’ (Map of Conflicts Involving Environmental Injustice and Health in Brazil), developed by Fundação Oswaldo Cruz (FIOCRUZ) and FASE (see <http://www.conflitoambiental.icict.fiocruz.br/>).
 3. The map results from research carried out since 2008 by a multidisciplinary team in three universities of the State of Minas Gerais (southeast Brazil). Data sources are the registers of the archives of the Conselho de Política Ambiental de Minas Gerais (Council of Environmental Policy of the State of Minas Gerais or COPAM); and the Ministério Público de Minas Gerais (Public Attorney’s Office); plus interviews with technical personnel from both bodies. In this phase, more than 200 offices of the Ministério Público in different municipalities were visited. Fieldwork followed the interviews in each office area where researchers visited villages mentioned in the processes and spoke to people on the ground. The second path of investigation focused on the non-institutionalized cases of conflicts. In those cases, workshops and interviews were held with different types of development-affected peoples, social and environmental movements and organizations, trade unions, NGOs, churches and other civil society actors.
 4. Briefly, the Termo de Ajustamento de Conduta (TAC) is based in Brazilian law through article 211 of Law No. 8.069/90 (Estatuto da Criança e do Adolescente, the Code of Children and Adolescents) and article 113 of Law No. 8.078/90 (Código de Defesa do Consumidor, the Code of Consumers’ Rights). It is extended to the protection of the environment, including requiring environmental restoration, for instance, by means of an extra-judicial accord between parties.

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33. The political ecology of *colonias* on the USA–Mexico border: ethnography for hidden and hard-to-reach communities

Guillermina Gina Núñez

It is not surprising that many political ecologists favor ethnography. This reflects the development of a multidisciplinary field notably encompassing anthropology, geography, sociology, politics and environmental studies. These disciplines pride themselves on producing ‘rich thick descriptions’ of a kind only possible through ethnography. The trend in Western academe towards more qualitative-minded post-structural work reinforces this predilection (Greenberg and Park, 1994; Biersack and Greenberg, 2006; Robbins, 2012). It also reflects the politically radical nature of the field: political ecologists share a commitment to promoting socio-ecological change that redresses power relations mediating human–environmental relations in order thereby to favor the less powerful (Biersack, 2006; Watts and Peet, 2004; Wolf, 1972). In seeking to put ‘the last first’ (Chambers, 1983), scholars must choose methods consonant with this stance on practical and ethical grounds (Rocheleau et al., 1996). Ethnography can be useful here. Finally, there is perceived professional competency: the need to undertake research that is as accurate about the problem being investigated as possible, based on reflexive thinking by the researcher concerning her/his own objectives, responsibilities and social positioning, while being ‘useful’ to less powerful individuals and communities involved in the project (Little, 2007). Done well, ethnographic work can generate the delicate balance between local insider (emic) and outsider (etic) perspectives and ‘near-native competence’ (Hess, cited in Escobar, 2008: 197) that can make a difference.

This chapter explores selected issues in the use of ethnography in political ecology. Those issues derive from my own long-term commitment to addressing the political ecology of *colonias* on the USA–Mexico border – informal rural settlements along that border populated by poor migrants who work in nearby cities and agricultural communities (Núñez-Mchiri, 2009). While reflecting factors noted above, my research also underscores two others. Thus it addresses the political-ecological conditions of people who are *the* most socially, economically and geographically marginalized – in the USA, *colonias* habitually fit this description. Political ecologists do not always reach the ‘most marginal’ in marginal groups. Such research is tricky but ethnography is well suited to the task of working in the often hidden and hard-to-reach world of *colonias*. Further, my research reflects deep involvement in the issue of migration and border political ecologies. This relates to my background as a child of migrant farm workers who grew up crossing the USA–Mexico border, navigating various environments in the need to make sense of and negotiate power relationships in new places, as well as the deep need to feel rooted (Núñez, 2006b).

The *colonias* phenomenon has yet to receive the attention it deserves partly because it does not conform to preexisting categories of ‘rural’ and ‘urban’ communities in the US. Anthropologists long mainly focused on indigenous peoples and rural peasant communities (especially in the global South), including those working in political ecology (e.g. Sheridan, 1996; Biersack and Greenberg, 2006; Escobar, 2008). In contrast, some urban anthropologists and sociologists focused on urban migrants: how they fare there as well as how life in the city is shaped by them (e.g. Foster and Kemper, 1979; Low, 2000; Zenner, 2002; Núñez and Klamlinger, 2010). Yet *colonias* are in-between places insufficiently addressed in the literature. Thus research on the USA–Mexico border primarily focuses on large cities and their relationships with sister cities across the border (e.g. San Diego–Tijuana, El Paso–Ciudad Juárez), with less attention given to rural communities let alone *colonias* – even as the latter are critical in housing laborers working in agriculture or in nearby cities. As this chapter shows, doing ethnography in such communities raises novel methodological issues.

Colonias can be defined as neighborhoods or communities located near to large urban centers while being based in rural regions along the USA–Mexico border that provide an alternative form of affordable housing and home ownership (Núñez, 2008). They are located in the four US states of Texas, New Mexico, Arizona and California, within 150 miles of that border. To qualify for government funding, *colonias* are notably defined by absence – that is, a lack of potable water and adequate sewage systems, as well as decent, safe and sanitary housing; and must have existed before 28 November 1989 (Simmons, 1997). Especially ubiquitous in Texas, it is here that most attention focuses (e.g. Ward, 1999; Coronado, 2003; Dolhinow, 2010; Esparza and Donelson, 2010; Richardson, 1999). In contrast, my research focuses on the less-studied El Paso del Norte border region, which includes Las Cruces (New Mexico) and El Paso (Texas). Here, interviewed residents reveal ties to communities north and south of the border, even as the border is a focus for bringing families together and strategizing future labor and migration journeys.

My work seeks to understand how the history, politics, economy and environment in which *colonias* are located impact residents’ daily lives and prospects for social justice. A political-ecological framework is useful precisely for examining human–environmental relationships that combine local economics and ecologies with global dynamics. Concurrently, factors such as socio-economic status of residents (e.g. class, ethnicity/race, gender, languages spoken at home) and immigration status affect how these neighborhoods are viewed in society through public policy, urban planning, engineering and social scientific investigation. The rise of *colonias* is linked to at least four decades of economic growth and inward migration to the USA–Mexico border region. This process relates to rapid expansion in manufacturing (*maquiladoras*), services and agricultural sectors that draw migrants from across Mexico in the hope of higher wages. Supply and demand are shaped by national and international markets as well as by local labor needs. Industry-specific factors influence the growth of *colonias*. For instance, while agricultural industries recruit labor, they do not necessarily provide housing and other amenities for workers. Hence finding affordable housing near to the workplace is the worker’s responsibility. The seasonality of agricultural work means laborers lack a consistent income to establish credit histories that, in turn, facilitate renting or buying homes (or other goods) on credit (Coronado, 2003). Other factors

linked to politics shape *colonias*, including urban planning (or lack thereof) and complex relationships with elected officials, non-profit employees and state representatives.

Yet, though my fieldwork involved understanding such political-economic factors governing access to needed resources while shaping social and environmental conditions (Bates, 2005), the focus was on the communities themselves (specifically five *colonias* in northern Doña Ana County, New Mexico), where ethnographic investigation conducted at the household and community level over the 2002–05 period enabled analysis of residents' life and labor histories, networks and cultural identities as they responded to life's challenges. The latter included: social and physical distance from urban centers; lack of infrastructure (e.g. potable water, sewer systems, paved roads, public lighting); seasonal and poorly paid farm work; and jobs, which are generally often few and far between. Limited income restricted where a family could live and what they could spend on housing, transportation, food and other basics.

As this chapter shows, doing ethnographic work in this setting requires time, skill and patience (Madden, 2010; Murchison, 2010). These are things that ought to be integral to most political-ecology research. Still, in *colonias*, the challenges appear especially plentiful; hence there is a need for a multifaceted approach based on socio-cultural sensitivity, patience, humility and flexibility. Below, I consider diverse methodological issues in sketching some key elements of conducting research on this topic.

LOCATING *COLONIAS* WITHIN A POLITICAL-ECOLOGY FRAMEWORK

I first encountered *colonias* as a scholar while conducting a study for the US Census Bureau in 2000 as part of a contract aimed at improving that agency's ability to enumerate these communities. I led one of five teams working along the 2000-mile border, with my focus on southern New Mexico. This was one of the many landscapes I grew up with as a migrant farm worker's child. Thus I was well aware that, beyond the agricultural fields visible from the highway, there were many 'invisible' laborers living close by. Single men usually live in barracks turned into labor camps, rooming together, sleeping in bunk beds, and eating in a common dining hall/kitchen. Then there are families living in *colonias* who are tied to farm-related subsidiary jobs, including packing sheds, food production, trucking, and informal economies that stem from the need to complement seasonal employment.

Ethnography at such a neighborhood level can greatly enhance our knowledge about diverse human and environmental topics (Sullivan, 1996). Still, one issue here can be simply working out where a *colonia* starts and ends. Unlike established communities, their informal qualities can make defining the 'study site' somewhat difficult. This situation reflects both the needs of workers (i.e. proximity to work) and local availability of land.

True, the basic dynamics of *colonias* are clear. Farm workers seek to live close to the fields or dairies where they labor, while service-sector employees seek to be close to their urban workplaces. Yet there are typically few options in rural areas in terms of

apartments and houses to buy or rent. Ranchers and farm owners fill this gap by selling parcels of infertile land to would-be residents. *Colonias* were thus born through a series of unregulated land transactions. Originally, these settlements lacked infrastructure: no water supply, waste water/sewage treatment, paved roads or public lighting. Hence *colonias* are somewhat identifiable by the poverty of their provision.

And yet, through my research I found that putting a firm boundary around a settlement could still be tricky. On the one hand, *colonias* are usually subject to fuzzy legal status. Often located on old farmland, many of them developed in a piecemeal fashion as land was sold to individuals without much government oversight (i.e. planning), while being informally subdivided thereafter. The land deals were in the form of contract-for-deed agreements, which resemble ‘rent-to-own’ deals that penalize buyers for missed payments through the loss of land. Land transactions usually included promises of future services (e.g. water provision, wastewater treatment) that were never honored. Government entities thereafter refused to get involved, citing the prohibitive costs of delivering services to isolated neighborhoods. Despite this lack of amenities, as well as the threat of repossession, residents became attached to their settlements as relative proximity to work, the more affordable cost of living, and even the development of family and new friendships often proved decisive reasons to stay. Thus, identifying the case study site necessarily involves addressing informal conditions surrounding community development.

On the other hand, *colonias* are habitually hidden places, further complicating the research task. As communities that are neither ‘rural’ nor ‘urban’, they are located beyond urban centers while being scattered across rural border counties. They are not always crisply defined by physical boundaries or signage that would distinguish them from surrounding areas. Partly this relative invisibility connects to wider geopolitics. Hence they are located near major transportation corridors heavily monitored by immigration forces as part of a longstanding ‘immigration war’ shaping life on this international border. After 11 September 2001, conditions became even more fraught, as militarization intensified there (Núñez and Heyman, 2007; Sundberg, 2011). It can thus be prudent to maintain a low profile.

ENTERING THE RESEARCH SITE

Given such issues, great care is needed in seeking to enter *colonias* to undertake ethnography. As with all communities of interest to political ecologists, the built, natural and socially constructed dimensions of *colonias* inevitably affect how researchers decide to enter and conduct research there. That these settlements are characterized both by informal and uncertain status as well as the general poverty of their inhabitants poses particular challenges. Let me highlight three issues.

The first issue relates to the role of professional middle-class scholars involved in in-depth research with poor, often vulnerable, residents in *colonias*. Here are the common choices and dilemmas that accompany ‘studying down’ – that is, the study of disadvantaged individuals or communities with less (social and/or economic) power than oneself. Now, studying down is standard practice in political ecology – a field after all focused on promoting socio-economic justice and understanding for the

disadvantaged (Biersack and Greenberg, 2006; Robbins, 2012). Yet, as scholars stress, studying down – or indeed ‘up’ (elites) or ‘sideways’ (researcher’s peers) – raises ‘interrelated issues of access, attitudes, ethics and methodology’ (Bowman, 2009: 5; see also Nader, 1972). And while studying down may be technically ‘easiest’ to do insofar as disadvantaged people may be less able or inclined to block researcher access to them, the quality of the resulting data may be low – precisely because interviewees may resist such intrusion due to language barriers and miscommunication, and perceived class differences that contribute to the lack of trust and genuine engagement with the project. This is even without considering the dubious ethical dimensions of such an unreflective strategy that goes against what political ecology is about (Bryant and Jarosz, 2004). In short, unequal power relations cannot be avoided here. In my case, though, I was able to draw on my personal experiences and background to address this issue. I grew up speaking Spanish, so that language was no barrier. My background as the daughter of Mexican migrants also enabled me to relate at a personal level to many (but not all) of the experiences and attitudes encountered in *colonias*. Such relative familiarity laid the basis for the building of trust discussed below. Nonetheless, being a US-born scholar of Mexican descent did not guarantee me entrance into the *colonias* world.

The second issue involves studying communities in the process of development. Specifically, scholars must beware of rendering problematic *colonias* within a development discourse. Indeed, since the 1980s post-structural writers have debated how empires, states and other institutions have infiltrated ‘out-of-the-way’ places to promote development as ‘progress’ (e.g. Escobar, 1995; Weisner, 1996; Smith, 2010). As the USA and other countries increasingly experience migration that seemingly validates the attractiveness of urban life, many scholars are perplexed in striving to understand why *colonia* residents may *want* to live where they do. Indeed, given that many residents live in mobile homes, some scholars might find that living among their key informants is not possible.

The third issue concerns gaining entry to and building rapport in the study site. Identifying leaders who represent their *colonias* in the public sphere (where power is negotiated and resources are distributed) is a first step to accessing social networks in a community. These individuals are tied to networks at the community level (horizontal networks) as well as to powerful outside people and organizations (vertical networks) (Ward, 1999). Winning them over is usually vital to researching *colonias* (and other communities where political ecologists work), with success here involving a combination of respectful introductions, clear goals (including project start and finish dates) and appropriately modest project outcomes. I found that local people were put off by those aspiring to make sweeping changes to *colonias*; they had been ‘burned’ before by outsiders who promised much but delivered little. As one resident recalled:

A man came once, promising us help with our sewerage system. He went out and asked for us to put in our own labor in building trenches to put in the pipes. He even asked for money on our behalf, and nothing was ever accomplished. He did this in another community too. Now, there are two *colonias* with incomplete sewerage systems and holes in the land waiting for pipes that never came.

Although residents invested their own ‘sweat equity’ in this project, their trust was nonetheless violated by the agency in question. Ideally, the would-be researcher should

be introduced by already-trusted outsiders – such as service providers (e.g. local NGOs), scholars or political and economic leaders – who have already developed bonds with residents. For my part, I gained entry by drawing on my earlier US Census study role, as well as via introductions provided by a community health promoter who knew the local leaders. I had also visited *colonias* with my university advisor, who thereby lent credibility to me as a graduate researcher.

Novice researchers entering *colonias* and similar communities are also likely to face state and federal officials who restrict access to public knowledge while expressing skepticism and disdain for scholars who study people whom they perceive to be ‘law-breaking immigrants’. For example, Sundberg (2011) describes the barriers she encountered in gaining entry as an ethnographer of conflict between enforcement operations and environmental protection efforts on federally designated land in Arizona. Meanwhile, in my case, several non-profit leaders challenged my role as a ‘transplant’ – that is, a non-local person seeking connection to local communities. I navigated these barriers to entry by offering to be of service as a note-taker, meeting facilitator, researcher, translator, and as a person willing to chronicle community events. Over time, my participation in community meetings helped build trust and allies among residents and the people in agencies and organizations working with them.

The benefits of this approach seem clear. Leaders in *colonias* often serve as gatekeepers, facilitating or blocking access to people living in and/or information about their communities. Building a relationship with leaders facilitates access to other residents, even though this process is rarely straightforward. Sometimes, the scholar may later discover that the leader is not well respected by his/her neighbors, thereby jeopardizing future trust-building and access to research participants. Then there is the need to pay close attention to isolated residents – people marginal to local power networks but who can candidly describe life on the margins. In one situation, I was able to engage with an unauthorized (undocumented) immigrant woman who lived a fairly isolated existence. She avoided building friendships for fear of one day antagonizing neighbors such that it might ultimately lead to her deportation. Such self-imposed alienation served only to underscore the relative privilege of those residents holding official US documents. In general, older adults, teenagers, single mothers and unauthorized immigrants have invaluable life perspectives that illuminate everyday challenges, vulnerabilities and hopes for the future that circulate in *colonias* and that need to be heard (Riviera, 2014).

ESTABLISHING TRUST

The sorts of issues noted above mark the start of a longer process of fieldwork predicated on the building of relationships of trust with residents. The literature identifies strategies here in dealing with what can be highly sensitive situations, especially concerning hard-to-reach populations (Schensul et al., 1999).

Indeed, the challenges were quite visible to me as I commenced fieldwork. The rural isolation of *colonias* in particular shapes local notions of privacy as well as a wariness towards outsiders. At first, I was taken aback by the amount of fear and anxiety that residents I met expressed about outsiders. To deal with this situation, I followed several

rules of conduct central to ethnographic research (Agar, 1996; Spradley, 1979). One was to focus unwaveringly on my research goals while respecting participants' agency as well as inviolable rights to privacy and confidentiality. This included never sharing information divulged by interviewees with other participants; building trust by not disclosing people's private lives is critical to research in *colonias* (as elsewhere). Another rule was to be as transparent as possible about my research. This included clarity on why it was being done, who would have access to the findings, and what benefits there would be for the community. Concurrently, being as open as possible about my own identity, interests and background also helped built trust with participants as people could then relate to me on a more personal basis. Thus, for instance, I was asked by one resident if one of my other informants had shared her past history of domestic violence. I responded with 'all information shared with me needs to stay with me or no one will trust me and let me into their homes'. The woman who asked me this question smirked – but ceased her line of inquiry. Such encounters are critical to making or breaking trust in the field. And, while appropriate researcher conduct never eliminates the power relationship between interviewer and interviewee, it can 'soften' them somewhat while easing interaction.

This task can be especially difficult in communities such as *colonias* where daunting political, economic, cultural and ecological problems are faced by residents, often daily. Hence the reaction of people approached can sometimes range from perplexity (why are you here?) and reluctance (why should I divulge private information to you?) to downright hostility (who do you work for really?). For example, on one occasion, a male resident raged to me about what he considered to be excessive invasions of privacy by official agencies in *colonias*: '*es el colmo, aqui el gobierno no dejan a uno vivir en paz*' ('That's enough! Here the government does not let one live in peace'). I shook with trepidation while trying to make plain to him that I was a student, and hence neither a government employee nor an undercover officer. As can occur in these situations, a possible crisis morphed instead into a research opportunity. Thus, once he began to feel more certain about my identity, I proceeded to ask him about his previous experiences with 'government raids'. He indicated that it was common to see the Border Patrol stopping and questioning people, while Drug Enforcement Agency (DEA) officers launched local drug raids. Yet, he insisted, law enforcement officers were rarely if ever on hand to assist residents in times of local emergency. I became aware of complexities in border living that only added to my understanding of the incredible sense of isolation, alienation and marginalization that is often the norm in *colonias*.

I found a good strategy for establishing trust was to listen carefully to residents' warnings about which households in their neighborhoods to avoid. One elderly resident, for example, warned me to skip interviewing one household because the owners had been raided by law enforcement officers. When I inquired why this happened, I realized that the person was too nervous about the situation to provide details. Still, he urged me: 'While doing your studies, I suggest you avoid that house in the corner. If you do, then I think you will be ok in this community.' I knew that this was a well-known resident whose judgment I ought to trust. Later, I learned that the home in question had been under investigation by law enforcement personnel as a 'stash house' in a drugs and human-smuggling ring. While choosing to conduct

ethnographic work in *colonias* means that it is not always possible to avoid walking into conflict situations, it is nonetheless prudent to heed residents' knowledge, advice and warnings. It also can help to build trust and rapport, as residents see that you show them respect by accepting their knowledge about the locality. Indeed, this same resident later vouched for me among his neighbors, thereby widening my circle of informants. I later listened to him again – this time about driving on the highway prior to a devastating hailstorm that led to a deadly car pile-up – perhaps thereby saving me from personal injury.

Further, as trust and rapport build, opportunities for participant observation – observing, listening to, and working with people – also grow. This is part-and-parcel of ethnography, with valuable insights often the result. One example will suffice here. A major attribute of *colonias* usually not cited in policy definitions of these communities is their role as a solution to the specific housing needs of the residents they attract. Land there is relatively affordable, ranging anywhere from US\$3000 to US\$25 000 for a 0.75 acre plot of land, compared to much more expensive property in cities that already have built housing units and capital investments in infrastructure that put the purchase price beyond the means of many migrants. In contrast, in *colonias*, residents often buy vacant lots on which they can park a used mobile home while the family generates the finances to build a house. Thus the housing stock in *colonias* such as where I conducted fieldwork tends to range from mobile homes, through manufactured (i.e. prefabricated) houses, to site-built homes. Basic observation could take in this variegated built landscape (Ward et al., 2000). But it was only through more detailed discussions based on my long-term connections to the community based on mutual trust that enabled me to delve deeper than this – to find out, for instance, how each plot of land and home reflected a family's unique set of circumstances (e.g. financial status, length of residency, aspirations), as well as what the land and home meant to them. This sort of information is certainly not available to those who conduct 'drive-by' research.

SITUATING *COLONIAS* IN WIDER CONTEXT

To conduct the sort of well-rounded ethnography often found in political ecology, I needed to relate the community-level understanding I was developing to an appreciation of multi-scale dynamics shaping the development of *colonias*. The task was to deploy multiple methods including semi-structured interviews (e.g. government officials, NGO employees), documentary and newspaper analysis, remotely sensed data and archival research to develop a wider picture. The following draws on selected topics and associated methodological issues to illuminate some of the research dynamics involved (notably *vis-à-vis* my New Mexico case study).

Consideration of the historical, economic and physical transformations of the region's natural resources provided me with an indication of the factors shaping the *colonias* phenomenon. Notable here is the long battle for water that has encompassed USA–Mexico struggles over the Colorado River and the Rio Grande (compounded lately by water contamination), as well as myriad local battles between communities, landowners and state agencies across the borderlands. In turn, this is related to the

history of western expansionism, including development of rail and road arteries connecting local markets and people to the outside world. Indeed, an agrarian development model premised on irrigation has been a key source of regional strife (Ward, 2003; Walsh, 2004). In this context, New Mexico became a preferred region for dairy and agricultural industries that have been greatly impacted by economic and ecological factors such as global market competition, free trade agreements, climate changes and technological transformations.

But how did all of this relate to the question of borderland migration in general and *colonias* in particular? Here, I needed to examine diverse documents that encapsulated official policies (including state and federal legislation) and statistical data (notably on economic output over time). Invaluable sources included data on *colonias* produced by the US Department of Housing and Urban Development, the US Department of Agriculture and the US Environmental Protection Agency. In relation to southern New Mexico, it was clear that labor opportunities have long been largely agriculturally based, mainly comprising seasonal farm work and year-round employment in dairies. Such production has historically pulled generations of laborers across the border. To gain an overview, I consulted historical resources such as Horgan (1984), which describes seasonal fluctuations in flooding and agricultural production based on traditional and contemporary irrigation practices, rain and climatic records as well as shifting market conditions (see also Rivera, 1998; Rodriguez, 2006). Economic reports (e.g. 2012 *Annual Statistical Bulletins* from New Mexico's Department of Agriculture and the US Department of Agriculture) also provided me with insights on what is produced and sold in the region in order to help me identify key dynamics attracting laborers to specific localities. Although these were often invaluable for gaining a sense of the 'big picture', it was nonetheless clear that such data provide at best only a partial snapshot of complex processes. Partly, this is about unevenness in such statistical data in terms of both coverage and the partial, if not biased, viewpoints they reflect (Weisner, 1996). Partly, too, it is a function of the topic under investigation – one in which basic data on migrant labor can be unreliable due to such factors as labor concealment (due to the illegal nature of some of it) and/or labor volatility (some workers move regularly).

Building a profile of *colonias* also needed my understanding of the ecological challenges that residents regularly face and that reflect wider political, social and ecological dynamics (Núñez-Mchiri, 2009). Take the example of flooding. The *colonias'* early histories involved regular displacement and loss of human life, crops and animals due to flooding of the Rio Grande (Horgan, 1984). Construction of dams provided some relief through hydraulic regulation (while permitting agrarian expansion that drew in migrants). Yet such protection often did not extend to the 'waste lands' that landowners sold to migrants for their homes. Here, knowledge is needed about the precise environmental and topographical characteristics of communities, as this determines where water runs during the rains. Drawing on both the local knowledge of long-term residents and historical as well as contemporary aerial maps, I acquired a sense of how far specific *colonias* were vulnerable to flooding. Hence, and although the study communities are ensconced in the desert, there are nonetheless streams in steep-sided gullies (*arroyos*) that criss-cross the area, leaving residents highly vulnerable to flash flooding. This is a classic instance of how the poor and/or marginalized

are especially vulnerable to ‘natural’ disasters – a familiar narrative in political ecology (Wisner et al., 2004).

Much less ‘classic’ is another ecological problem plaguing many *colonias*: their use by outsiders as a place to dump waste. Such disrespect reflected the wider precarious status of these communities (socially and environmentally), which are often viewed by non-residents as all but invisible and hence not subject to ‘good neighborly’ conduct (Núñez and Klamlinger, 2010). Whether used as informal solid waste facilities or dump grounds by non-residents and industries, the result was identical: a failure to acknowledge these spaces as someone’s home. Indeed, non-residents were sometimes openly contemptuous of *colonias*. For example, one outsider told me that a nearby *colonia* was where her family usually threw their trash, because it was closer than the official solid waste facility. She confided that she did not understand why someone would want to live there; she certainly could never imagine doing so. Residents deeply resented such attitudes. As one informant noted:

Yo no se por qué piensan que pueden venir aquí a tirar su basura y sus botellas de cerveza. ¿Qué no saben que aquí es donde vivimos y que hay que respetar?

I don’t know why they think they can come into our community to throw their trash and their beer bottles. Don’t they know that this is where we live, and that they have to [show] respect? (Author’s translation)

Through interviews conducted inside and beyond the communities, I found that issues of environmental and social justice – such as illegal waste dumping – are central in mobilizing residents, non-profit organizations and even some government agencies. At the same time, detailed observation and interviewing I undertook in the community underscored that internal processes there are equally if not more important in building networks within *colonias* and in collaboration with other communities.

CONSTRUCTING IDENTITY

A final area to highlight about conducting ethnographic research relates to the question of ascertaining how people identify themselves in relation to the local community (and beyond). Such inquiry helps to clarify people’s feelings, perceptions and plans when faced with diverse political, economic and ecological issues (whose breadth was only hinted at above), but is best undertaken once trust and detailed local knowledge are acquired.

Some of the complexity at stake is clear from looking at census data on *colonias*. True, their development is sometimes documented in census and local household surveys (Vélez-Ibáñez et al., 2002, 2000). For example, a small sample of *colonias* in Texas and New Mexico was taken in the 2000 and 2010 censuses. Yet such enumeration is limited in scope. Further, where it is done there is a perceived population undercount that is significant for various reasons. First, census data become the official head count for such things as grant proposals and policy deliberations. Second, ‘being counted’ is often perceived by residents to be a process that legitimizes their presence in both the local community and the country. Third, the census occurs

only every ten years, leaving communities stranded in between time with a lack of accurate data used for essential services (e.g. education, fire, emergency), as well as business and non-profit planning purposes. One example comes from the New Mexican *colonia* of Chaparral. In a 2003 meeting with census officials, residents indicated that their community had been undercounted by as many as 10 000 people. To verify this claim, official data were thereupon correlated with a locally reliable indicator: the number of water hook-ups. This measure indicated that the population was really about 16 000.

But what is at stake here is not only ascertaining an accurate head count (important though that is); it is also about recognizing the existence of previously hidden populations engaged in local power struggles over resources, in particular water, electricity and waste disposal services, and understanding how people identify themselves in relation to the *colonias* and the political-ecology dynamics discussed above. Here there is no substitute for detailed ethnographic work in the community.

My research highlighted how the construction of people's identities and the (literal and figurative) construction of their *colonias* were closely intertwined. Recall, for instance, how in *colonias* residents often first invest in land and thereafter build or purchase their homes according to their means (Simmons, 1997). As families grow, residents typically build additional rooms. This strategy is a function of both the relative absence of regulation (e.g. building permits, home ownership association codes) and the specific circumstances of the residents themselves. How people do or do not adopt this strategy is one issue dividing the community. I found that those who embraced the own-and-build pathway tended to be more invested in community activities, whereas 'temporary' residents who rented locally (often the spare rooms, apartments or mobile homes of other residents) were usually less involved in them. Hence the balance between owner-occupiers and renters was thus seen to have an effect on how strong was the civic sense of community inclusion, cohesiveness and pride (Núñez, 2006a).

The co-construction of personal identity and *colonias* was also connected to processes of Mexico–USA migration – the latter often being quite complex and with equally complicated consequences (e.g. Carney, 2014). While some residents remain involved in migration – moving back and forth across national borders, urban cores and rural peripheries – others are more permanently settled. Thus residents whom I interviewed between 2002 and 2005 in Doña Ana County narrated their experiences of previously working as migrant farm workers in the El Paso del Norte region before returning to their *colonia* to reunite with family, look for work and find affordable accommodation.

I found that family, affordable housing and employment were not the only drivers at work here; political events defined the process too. Thus it became clear from discussions with residents as well as other informants that *colonias* settlement accelerated after passage of the 1986 US Immigration Reform and Control Act (IRCA), which allowed 2.2 million immigrants to gain amnesty and become authorized US residents. Many in the *colonias* were encouraged by local community organizers to buy land and then start the immigration paperwork in the hope of becoming legal residents. As one former community organizer told me:

We encouraged people to go and buy some land, anything that would prove they lived in the United States to support their requests for legal residency in this country. *Colonias* did not come after the Immigration Reform and Control Act of 1986; they started developing in the midst of it. (Núñez, 2006a: 231–2)

Formerly undocumented workers who had spent years in hiding came out in search of legitimate spaces they could define and lay claim to in the border landscape. My research enabled me to trace this process at the level of the individual household. Informants often began as migrants, chose to stay in a place where both work and affordable housing existed, undertook the required immigration procedures, and subsequently sought to bring family members to the USA through legal channels. Such patterns happened elsewhere along the USA–Mexico border and were directly linked to IRCA (Vélez-Ibáñez et al., 2000).

Other political events were also seen to have played a role in the co-construction process. Noteworthy here was passage of the Gonzalez National Affordable Housing Act (NAHA) in 1990, which federally defined a *colonia* as an ‘identifiable community in Arizona, California, New Mexico, or Texas within 150 miles of the U.S.–Mexico border, lacking decent water and sewage systems and decent housing and in existence as a *colonia* before November 28, 1989’. Meanwhile, state-level initiatives also began to address *colonias* in a more sustained manner (for example as in Texas; see Office of the Secretary of State, 2010). Between 2004 and 2010, Doña Ana County in New Mexico documented infrastructural improvements in 19 *colonias*, thereby providing evidence of changes over time that indicated that these communities are in a constant state of transformation (Doña Ana County, 2010).

The federal definition (especially the 1989 cut-off date) prompted many communities to seek formal status. Yet residents related to me the pros and cons of this move. On the one hand, such designation meant that federal and state funding became available to them including the Housing and Urban Development (HUD) Community Development Grant (CDBGs), the US Department of Agriculture (USDA) Rural Development Grants, the Environmental Protection (EPA) Drinking Water State Revolving Fund and the Texas Water Board Economically Distressed Areas Program. On the other hand, the label ‘*colonia*’ exacerbated social stigmatization; a racially based perception developed that these were nothing more than low-income communities of color in need of government funding – affirmative action for border communities. As one *colonia* leader indicated:

If I would have known that being designated a *colonia* would mean we would be acquiring the stigmas of undocumented aliens, as people who live off the government, as people who go on strikes to avoid working, and as people without culture and education, I would have been the first to say: we don’t want to be designated as a *colonia*. (Núñez, 2006a: 42)

In effect, this new aspect merely reinforced the view of *colonias* as second-class neighborhoods.

Here again, the value of ethnographic work was accentuated. Thus, by gaining a detailed sense of how residents developed their communities in Doña Ana County, I could better appreciate the value that they place on home and community – providing an alternative perspective to socially prevalent narratives about *colonias* as simply

places of poverty and social misery (Hill, 2003). Ethnography enables micro-analysis of human–environmental relationships modified by such things as economic competition, ecological events (e.g. flash flooding) or premeditated political decisions to segregate people (e.g. immigrants). It leads to new understanding of poverty in two ways: people with scarce resources are ‘rendered human’ again as competent and moral social actors; and description of their lived experiences in relation to larger political-economic constraints helps to make sense of seemingly irrational choices people who live on the margins sometimes make (Goode, 2009).

CONCLUSION

This chapter has explored selected issues in the use of ethnography in political ecology, drawing on my own research in New Mexico. If this research field is about focusing on the most marginal in society, then the situation of communities such as *colonias* along the USA–Mexico border ought to take analytical pride of place. And ethnography, with its multifaceted techniques, methodological flexibility and emphasis on researcher sensitivity and reflexivity, is ideally placed to lead here. Yet I also highlighted some challenges facing researchers, especially in hidden or hard-to-reach communities such as *colonias*. These ranged from specifying the research site, through the building of trust with vulnerable residents, to integrating data on causal forces gained from multiple methods for the co-construction of people’s identities and *colonias*.

The challenges are real; the need for such research is urgent. Communities such as *colonias* are always vulnerable to external shocks, such as economic recessions, flooding and drought events, or anti-terrorism initiatives after 11 September 2001. Political ecologists need to work with local communities to understand and address these processes, their differentiated impacts, and how people resist and/or seek help from others in addressing such shocks in a world where they are often stigmatized for being ‘poor’ and ‘brown’. In the process, the choice of ethnography forms part of a wider political and ethical engagement that is and ought to be at the core of what it means to be a political ecologist.

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34. Political ecology of scale

*Roderick P. Neumann**

Scale has long been a concept of central concern in political–ecological analyses. Among the earliest efforts to frame political ecology, Blaikie and Brookfield (1987: 17) wrote that the complexity of human–environment interactions demands an approach that encompasses ‘the contribution of different geographical scales and hierarchies of socioeconomic organizations (e.g., person, household, village, region, state, world)’. Zimmerer and Bassett (2003b: 3) more recently stressed ‘the centrality of geographical scale to political ecological analysis’. More broadly in human geography (a key disciplinary base for many political ecologists), Neil Smith suggested that scale will be ‘of mounting theoretical and practical relevance’ (2000: 727). Smith was instrumental in establishing what has become an extensive literature theorizing the ‘politics of scale’ (e.g. Smith, 1992, 1993; Cox, 1998; Swyngedouw, 1997, 2004; Marston, 2000). The roots of this version of scale theorization – scale as socially constructed, historically contingent and politically contested – are found in a Marxist-influenced political-economic geography with a significant debt owed to the French sociologist Henri Lefebvre (1991). Within political ecology, recent theorizations have also borrowed from ecological science, stressing notions of emergence and path dependence (Sayre, 2005; Manson, 2008) or from actor network theory, stressing notions of networked connectivity and mobility (Robbins, 2004; Rocheleau and Roth, 2007; Birkenholtz, 2012). In sum, the arrival of a new century witnessed rising attention to scale in political ecology that has drawn on a variegated literature and resulted in a substantial and still growing body of scholarship.

This chapter is centrally concerned with this scholarship as it explores the political ecology of scale. First, it examines debates on scale in human geography, where theorizing has been especially productive, before assessing how such debates have spurred critical reflection and theorization in political ecology. Such work has been vital to promoting a more rigorous understanding of scale and how this key concept might usefully inform political ecology thinking. In turn, the chapter considers how political ecology scholarship has contributed broader insights on scale in light of conceptual deployments and refinements at the interface of power, socio-ecological dynamics and networks.

SCALE THEORY IN HUMAN GEOGRAPHY

Near the turn of the last century, scale became a focus of renewed interest in human geographic theory. By the first decade of the twenty-first century, a series of reviews on the topic framed what came to be called the ‘scale debate’ (e.g. Marston, 2000; Smith, 2000; Brenner, 2001; Howitt, 2003; Sheppard and McMaster, 2004). This debate serves

here to establish a theoretical starting point from which to explore the use and relevance of the concept in political ecology. The debate reached its apogee with Marston et al. (2005: 422) calling to ‘expurgate scale from the geographic vocabulary’. In making their case the authors extensively critiqued the way geographers have conceptualized scale. First, they found that there is ‘confusion surrounding the meaning of scale as *size*...and scale as *level* – a vertically imagined’ nested spatial hierarchy (ibid.: 420; italics in original). Second, disentangling scalar hierarchies from the micro/macro binary and associated binaries, particularly global/local, is difficult, which results in the global being assigned causal force while localities are stripped of agency. Third, they suggested that an assumed hierarchy of scale has produced a body of empirical research focused on a small number of presupposed levels: the body, neighborhood, nation, region and so on. They concluded that adding horizontally oriented network approaches cannot overcome the ‘foundational weaknesses’ of hierarchical scale (ibid.: 417). As an alternative to scale, they suggested ‘flat ontologies’ constructed around the concept of ‘site’ as ‘an *emergent* property of its interacting human and non-human inhabitants’ (ibid.: 422, 425; italics in original).

The call to expurgate scale from geographic theory elicited a number of negative responses, many of which were nonetheless sympathetic to parts of the critique (Collinge, 2006; Hoefle, 2006; Jonas, 2006; Leitner and Miller, 2007; Moore, 2008; Sayre, 2009; cf. Escobar, 2007). The least sympathetic suggested that Marston et al. (2005) misrepresented scale theorists’ positions, confused epistemology with ontology and offered an inadequate alternative founded on its own false dualism (i.e. site versus scale) (Jonas, 2006; Hoefle, 2006; Leitner and Miller, 2007; Sayre, 2009). Regarding misrepresentations of scholarship, Leitner and Miller (2007: 116) point out that Marston et al.’s critique ‘conflates “hierarchical” with “vertical” scale [and] ignores virtually all accounts of agency in the scale literature’. Hierarchy, they and Jonas (2006) argue, is a form of verticality, which allows for flows in either direction. These essays collectively make two points particularly relevant to the conceptualization of scale in political ecology. First, scale research is principally epistemological, not ontological. That is, the focus for research on scale should be the ‘scalar practices of social actors’, not scale itself as an analytical category (Moore, 2008: 212). As will become clear in subsequent sections, the question of scale in political ecology is as much an epistemological as an ontological one. Second, attention to power asymmetries is critical for understanding networked relations within and between scales. Below, I show how questions of scalar practices and power relations are critical to a political ecology of scale.

By this century’s second decade, the scale debate had played out and Marston, Jones and Woodward moved to disengage from the ‘debate that never seems to end’ (Barnes, 2008: 655). In a paper that further developed the concept of flat ontology, they placed themselves among a group of scholars who ‘are developing ontological alternatives to scalar approaches’ in contradistinction from scholars who continue to treat scale as an ontological category (Woodward et al., 2012: 218). The authors placed the political ecology literature, with the notable exception of Escobar (2007), in the latter camp. There may be more overlap – for example, a shared interest in the emergent properties of human–nonhuman interactions – than Woodward et al.’s sorting of the literature seems to suggest, but further discussion here would be digressive. The main point is

that the scale debate both influenced and was influenced by a deeper and more explicit engagement with scale theory in political ecology.

THEORIZING SCALE IN POLITICAL ECOLOGY

In this section I examine recent efforts in political ecology (and human–environment research more generally) that explicitly engage with efforts to advance the theorization of scale (Swyngedouw and Heynen, 2003; Brown and Purcell, 2005; McCarthy, 2005; Sayre, 2005, 2009; Manson, 2008; Rangan and Kull, 2008; Engel-Di Mauro, 2008; Birkenholtz, 2012). I begin by briefly introducing Brown and Purcell’s (2005) critical evaluation of political ecologists’ conceptualization of scale, because it provides an opening to discuss theoretical trajectories in political ecology. Noting that citations of ‘the politics of scale literature are rarely found’ (2005: 611) in political ecology, they argue that scale is therefore ‘undertheorized’, leading political ecologists to assume that the ‘local scale’ has certain inherent qualities (e.g. more socially just, environmentally sustainable). Although it is demonstrable that the politics of scale literature was, until recently, rarely cited, it does not follow that that ‘most’ political ecologists *a priori* grant the local scale inherent qualities. Indeed, political ecologists have extensively critiqued the idea of ‘the local’ (see review in Neumann, 2005: 85–92). Nor does it follow that political ecology lacks ‘a careful theoretical analysis of scale’ (Brown and Purcell, 2005: 620). A quick historical survey of scale in political ecology will allow elaboration and clarification of this last point.

Blaikie (1985) and Blaikie and Brookfield (1987) were explicitly engaged in thinking about the role of scale in defining and explaining environmental problems. As the passage cited previously shows, they distinguished between ‘geographic scales’ (spatial extent) and ‘hierarchies of socioeconomic organizations’ (levels), thereby anticipating and avoiding the conceptual confusion identified by Marston et al. (2005). Turner (1999) tackled another problem identified by Marston et al.: conceptualizing scalar hierarchies tends to strip localities of agency. According to Turner, there is a ‘tendency in analyses of global and regional land-use change ... to exclude ... social changes that are viewed as being only “locally specific”’ (1999: 192). Turner argued against an ‘inherent spatial-scaling law of society’ and ‘the dichotomization and reification of “local” and “regional” perspectives’ and for a theorization of environmental change that recognizes causality flowing in multiple directions among scales that are constructed and contingent (1999: 192). Zimmerer and Bassett (2003b) suggested a concept of scale in political ecology that could integrate the social construction of scale with the biophysical production of scale. Thus there may not have been an engagement specifically with the politics of scale literature – the same could be said of many other subfields in human geography at the time – but some political ecologists were aware of and working through some of the same theoretical concerns. There is little question, nevertheless, that Brown and Purcell’s (2005) central point that political ecology had not fully engaged a theorization of scale was accurate. In the decade following their critique, however, political ecologists became more deeply engaged, not only with the politics of scale, but also with other approaches to conceptualizing scale.

Three works make explicit efforts to advance scale theory by drawing from the analytics and concepts of ecology and identifying a conceptualization of scale that is interdisciplinary and comprehensible across fields (Sayre, 2005, 2009; Manson, 2008). Sayre argued that ecology can ‘help resolve the scale question in human geography’, supporting this claim through an examination of the distinctions between grain and extent and between scale and level made in ecological theory (2005: 278). Scale, he argued, is inherent in all observation and the choice of the scale of observation is both methodologically and epistemologically significant. This he calls the ‘epistemological moment’ of scale (ibid.: 280–81). Some patterns and processes are observable only at certain scales, and thus might be said to produce their own ‘natural’ scale. ‘Scale is thus *internally related* to ecological processes and interaction’ (ibid.: 282, italics in the original). This is what he calls the ‘ontological moment’ of scale (ibid.: 280). Ecologists think of scale in terms of grain and extent, the former referring to the smallest observable datum point (i.e. temporal and spatial resolution) and the latter referring to study size and duration.

In summary, ecologists use scale in both its epistemological moment – as the grain and extent of observation suited to apprehending particular processes – and its ontological moment – as a characteristic of objective relations among processes or among observable levels of organization produced by processes. (Ibid.: 283)

Sayre then used these ideas from ecology to critique the concept of scale in human geography. He suggests that much of the ‘debate’ on scale can be traced to the conflation of its meaning as size, level and relation (Sayre, 2009). Specifically, he argued that human geographers often conflate and confuse level and scale (as size) and consequently confuse epistemological moments with ontological moments – households (Marston, 2000) and cities (Smith, 1984) are levels of social organization, not scales per se and hence choices to study households or cities are epistemological moments. Further, the concept of jumping scales – ‘whereby political claims and power established at one geographical scale can be expanded to another’ (Smith, 2000: 726; see also Smith, 1993) – is in actuality level jumping. ‘*What is “jumped”, then, is not scales but levels, with the result that a process is rescaled.*’ For the strategy to succeed, there must be some scaling effect – a change in the outcome of the process brought about by shifting scale’ (Sayre, 2005: 285, italics in the original). In both ecology and human geography, then, scale is produced. Building on this shared conceptualization and using the distinctions developed in ecology opens a path toward theorizing and studying simultaneously natural and social phenomena.

Manson (2008) made many of the same points as Sayre, distinguishing between resolution (grain) and extent and between scale and level (which Manson calls the scale of observation) and stressing the production of scale through interacting processes. He understands the production of scale in ecology through the concept of emergent hierarchies, emergent referring to processes of ‘self organization or self-organized criticality’ (Manson, 2008: 781). Thus, similar to Sayre, Manson noted the potential for a shared conceptualization of scale in ecology and human geography, specifically for research on human–environment interactions. ‘Emergent hierarchies and their attendant scale levels manifest the instabilities, emergence, supervenience, shifting equilibria,

unpredictability, and path dependence on which many features of [social] network and constructionist scales are predicated' (ibid.: 784).

Manson departs significantly from Sayre, however, in his analysis of the points of divergence in conceptualizing scale in social versus biophysical systems. Sayre traced conceptual problems of scale to disciplinary distinctions (ecology versus social science), whereas Manson traced them to deeper philosophical differences (realism versus constructivism) within ecology. Thus for Manson there are ecological/biological theories of scale existing along an 'epistemological scale continuum' ranging from realism to constructivism (ibid.: 777). At one end of the continuum is an ontological position that recognizes a shared reality and the related epistemological claim that it is objectively observable. At the other is an ontological position that also recognizes a reality, but differs epistemologically in the conviction that there is no universal objective stance; observations are always mediated, situated and contingent. Through this argumentation he quickly obviates any notion of a single theory of scale, suggesting that 'movement along the continuum from realism to constructionism seems more necessary as one goes from physical and biological systems through ecological and human–environment systems to the social and policy domains' (ibid.: 786). While the epistemological continuum is useful for thinking about scale in human–environment research, it maintains a stark nature–society dualism of physical and biological systems on one end and social systems on the other. Moreover, many of the epistemological differences between social and biophysical sciences are left unresolved and little guidance is offered for choosing among the positions on the continuum when dealing with specific kinds of problems.

Sayre's (2005) explication of scale has spurred further theoretical developments. Rangan and Kull (2008) extend Sayre's argument, suggesting three moments of action – operation, observation and interpretation – in the production of scale. They argued that, rather than being a pre-given 'container' through which politics occurs, 'scale is produced by three moments of action: operation (Sayre's ontological moment), observation (Sayre's epistemological moment) and interpretation (the moment of translation)' (ibid.: 8). For Rangan and Kull the moment of translation is critical in 'the production of scale because it provides the means by which spatiotemporal difference and change is articulated, challenged, or defended' (ibid.). In other words, the social construction of scale includes all three moments, which come together in explanations of socio-ecological change. It is at the moment of translation, however, where the role of meanings and metaphors interpreting that change (e.g. as degradation or enhancement) makes ecology political (for an empirical application of this framework, see Kull and Rangan, ch. 35 this volume). Similarly, Stallins (2012: 428) adopts Sayre's terminology and adds a third moment of scalar practice, 'biological scaling', where biological corporeality 'enacts' the coexistence of ontology and epistemology. The idea of biological scaling derives from recent developments in biology on organism–environment interaction, specifically an understanding of organisms as 'locally intersecting realizations of their scalar moments within a heterogeneous environment' (ibid.: 435). The idea of biological scaling, therefore, emphasizes how biological life exhibits a propensity for scalar affinities that are in no sense fixed or predetermined.

McCarthy (2005), in contrast to Manson, stressed the importance of understanding the production of social scales as inseparable from the production of nature. Taking a

different tack from Sayre and Manson, he argued that the politics of scale as conceived by human geographers is limited by its lack of attention to the environmental conditions and the politics surrounding them. He suggested the source of this limitation is found in the ontological distinction of the social and the natural. Even scale theorizations that stress attention to reproduction and consumption (e.g. Marston, 2000) ignore the fact that 'the provision, reproduction, and reconfiguration of particular environmental relations is necessary to every moment of capitalist production, social reproduction, and consumption' (McCarthy, 2005: 736).

Like Sayre and Manson, McCarthy seeks to advance scale theory by stressing biophysical processes, though not by borrowing from ecological concepts of scale. Rather, he used the case of environmental movements to critique the theoretical framings of scale in human geography, arguing that, along with the national states, labor unions, political parties and capitals that are stressed in scale theory, biophysical processes and environmental movements and associated NGOs also participate in scale construction. His case is built around an analysis of two *amicus* briefs that two environmental NGOs submitted to a NAFTA tribunal on California's environmental regulations. Specifically, he used the case to challenge Brenner's (2001) suggestion that politics confined to a phenomenon within a single, given scale are not really about scale, while political struggles over relationships among multiple scales are truly about scale. His empirical analysis shows that NGOs construct, draw on and redefine scales in complex and even contradictory ways, simultaneously defending existing scales, using established scales as platforms, reconfiguring relations within scales, constructing new scales, redefining relationships among scales and jumping scales. His study suggests that scale theory cannot treat 'the production of social scales as separate from the production of nature' and that 'politics *within* or *about* established scales are often very much about politics *among* scales' (McCarthy, 2005: 750, italics in the original).

Swyngedouw has played a unique role as a bridging figure between scale theorists and political ecologists. Like McCarthy, he emphasized in his scalar work the co-production of nature and society, in his phrasing the 'unity of socionature as a process' (2003: 96). One of his most developed expositions on scale in political ecology can be found in his essay introducing a special issue of *Antipode*, co-authored with Heynen (Swyngedouw and Heynen, 2003). The focus of this essay is on theorizing the urban form of social organization as an expression of the complex intermingling of the social and the natural, what the authors call the 'socioecological footprint of the city' (ibid.: 899). They argue for an urban political ecology that 'welds together [social and ecological] processes operating at a variety of nested and articulated geographical scales' (ibid.: 904). Their concept of scale builds on political-economic theorizations of scale, but also on the literatures of the social production of nature and of networks and assemblages, which they view as compatible and overlapping. Politically and theoretically, their focus is not on any particular scale, but on the dynamics of scale production, or the way that 'socioecological processes give rise to scalar forms of organization – such as states, local governments, interstate arrangements and the like – and to a nested set of related and interacting socioecological spatial scales' (ibid.: 912–13). This is an ambitious theoretical challenge, but one that is central to a political ecology of scale.

Finally, political ecologists have sought to advance scale theory by linking to other spatial concepts such as system and network. Engel-Di Mauro (2008) points out that political ecology had an early engagement with world-systems theories that was abandoned before it bore fruit. Political ecology's growing interest in scale theory presents a new opening for fruitful reengagement because of parallel developments in world-systems approaches, particularly a mutual interest in 'connecting micro-scale dynamics to larger-scale social and ecological processes' (ibid.: 117). Political ecology's inclusion of biophysical processes and nonhuman actors in analysis and explanation can inform world-systems perspectives, while the latter offers explanations of long-term dynamics within and between systems operating at different scales from the local to the global. In a similar effort, Birkenholtz seeks to link the extensive (nomothetic) analyses of global change science with the intensive (idiographic) analyses of political ecology in an approach he labels 'network political ecology' (2012: 296; also see Galt, 2010: 352 on 'scaling up political ecology'). Building on other network approaches to scale in political ecology (Rocheleau and Roth, 2007; Sayre, 2005), network political ecology is better positioned to evaluate causal linkages in socio-ecological processes stretched over space, to relate risks and vulnerabilities among human and nonhuman actors to the quality (e.g. strength, direction) of connectedness, and to move from the specific to the general in evaluating linkages between vulnerability, socio-ecological change and adaptation.

In sum, over the past decade or so, there has been a significant turn toward explicit theorizations of scale in political ecology as well as toward explications of political ecology's contributions to scale theory. Accompanying this theoretical turn has been a revived interest in scale and in the deployment of more rigorous conceptualizations of scale in political ecology studies. Indeed, this literature has grown quite large and continues to expand. I turn now to examine some of the notable trends in the use of scale in political-ecological studies.

THE POLITICAL ECOLOGY OF SCALE

Turning from this explicitly theoretical work, here I explore the way that scale has been conceptually engaged in recent empirical studies in political ecology. Since 2000 there has been a blossoming of an explicit and sustained empirical engagement among political ecologists with scale theory. Zimmerer was a prominent and early participant in this new work, beginning with his study of rescaling irrigation in the Andes (Zimmerer, 2000). He has continued his interest in linking political ecology and the politics of scale in two edited volumes that sought 'a more creative consideration of geographic scale' in political ecology (Zimmerer and Bassett, 2003b: 1) and highlighted the political nature of scientific models used for the 'scaling of environmental resource systems' (Zimmerer, 2006a: 16). Many other political ecologists have been involved in this project of creating a 'dialogue between political ecological studies and recent work in geography that has sought to theorize scale as a social process' (Boyle, 2002: 173; see also Natter and Zierhofer, 2002; Sneddon, 2003; Heynen, 2003; Molle, 2007; Swyngedouw, 2007; Zulu, 2009). Collectively this empirical work has expanded

the focus of the politics of scale to include environmental management practices and in the process helped to advance the theorization of scale.

I identify three themes in this research agenda – which I call a political ecology of scale – that suggest a richer theorization of scale: (1) the interactions of power, agency and scale; (2) socioecological processes and scaling; and (3) scaled networks. These are rarely considered in isolation in this literature but I do so here for heuristic reasons, beginning with a focus on power. Because of the dominant interest in access to and control over environmental resources, space and land, one could argue, ‘Power relations...are at the heart of the political ecology framework’ (Tan-Mullins, 2007: 348). Much of the new political ecology of scale work pursuing questions of power relations gives particular attention to the national state. Specifically, there is a strong interest in the scalar politics of the state in struggles over the control of resources and the environment more broadly (Boyle, 2002; Sneddon, 2002, 2003; Molle, 2007; Swyngedouw, 2007; Sievanen et al., 2013). Here the analysis is directed toward the state’s ability to ‘junk, rejig, recalibrate, modify, and transform the existing scale division’ in order to strengthen or consolidate its authority (Boyle, 2002: 191; see also Gruby and Campbell, 2013). An interest in the agency of non-state actors – both in scale construction and in the possibilities for and constraints on resistance produced by the state’s scalar politics – drives some of this work (e.g. Sneddon et al., 2002; Boyle, 2002; Taravella and de Sarte, 2012). In addition, there is a suggestion of the importance of investigating power relations in scale construction through the interactions of the politics of scale with the politics of science (Swyngedouw, 2003; Turner, 2006). This includes attention to the way unequal access to scientific knowledge and technology is embedded in and productive of power relations among states in struggles over the scaling of environmental management (Campbell and Godfrey, 2010).

A second feature of the political ecology of scale research is the centrality and inseparability of biophysical processes in the social construction of scale. Apropos of McCarthy’s (2005) comments, political ecologists’ insistence on the co-production of nature and society offers a particular theoretical take on the politics of scale. For Zimmerer (2000: 153), ‘Geographical political ecology focuses on socio-natural scaling which occurs in the fusing of biogeographical processes with broadly social ones’. In some work this means giving attention to the role of ecological or biophysical scaling in shaping political–economic dynamics (Zimmerer, 2000; Zimmerer and Bassett, 2003b; Turner, 2006), while in other work (that borrows from Bruno Latour and actor network theory), the emphasis is on hybridity, fusion and the mutual reconstitution of nature and society (Natter and Zierhofer, 2002; Sneddon et al., 2002; Swyngedouw and Heynen, 2003). For instance, the growing sophistication of genetic science can raise fundamental questions about what constitutes a species, raising concomitant questions about the scaling of ownership and control (Campbell and Godfrey, 2010). Meanwhile, the ‘radically diverse spatiotemporal scales that characterize climate change processes globally, versus locally and regionally’ provides an excellent illustration of how the dynamically and complexly scaled coupling of biophysical and social processes drives and is driven by rounds of accumulation within capitalism (Johnson, 2010: 829).

In conducting such research, political ecologists have coined a variety of terms to try to capture the ‘dialectical character of social and ecological change’ in scale production, including socio-ecological, socio-environmental and socio-natural (Sneddon et al.,

2002: 672; see also Heynen, 2003; Zimmerer, 2000; Swyngedouw, 2003, 2007). These terms are meant to incorporate the social and the ecological, the material and the symbolic and the spatial and the temporal dynamics that collectively constitute the analytical focus of the political ecology of scale research. Underlying these semantic efforts is the theoretical proposition, as Swyngedouw (2007: 10) succinctly puts it, that the “production of nature” is an integral part of a process of “producing scale”. In other words, neither scale nor nature is conceived of as ontologically given or predetermined. The importance of this ontological positioning to the political ecology of scale is particularly well illustrated in studies focused on water resources (e.g. Sneddon and Fox, 2011; Ioris, 2012; Cohen and Bakker, 2014). These studies highlight how the scaling of material gains and losses can be ‘naturalized’ when water regulation and use are organized around biophysical processes – such as topographically bounded watersheds or river basins – thereby coproducing nature, scale and politics.

Finally, political ecology of scale research highlights the relational and networked quality of the spatial configurations of socio-environmental dynamics. This work highlights the way networks of actors (human and nonhuman) transcend single spatial scales to produce new relational socio-environmental spatialities (Natter and Zierhofer, 2002; Zimmerer and Bassett, 2003b; Sneddon, 2003, 2006; Swyngedouw, 2007). At the same time, ‘these relational scalar networks articulate with produced *territorial* or geographical configurations that also exhibit scalar dimensions’ (Swyngedouw, 2007: 11; italics in original). For example, Sneddon’s study of an inter-basin water project in Thailand demonstrates how the state’s network construction simultaneously destabilizes notions of fixed spatial scales while weaving ‘together human and nonhuman actors in different times and spaces, in the process producing an array of scales subject to varying interpretations’ (2003: 2246). Such an approach also has been insightful for understanding the politics of scale in environmental social movements and rural livelihood strategies. For example, Zimmerer’s (2006b) research on seed exchange networks in the Andes Mountains demonstrates how rural livelihoods and biodiversity are sustained through networked socio-environmental relations operating across scales.

CONCLUSION

Political ecologists have integrated the politics of scale into the field’s traditional interest in multiscale spatiotemporal methodology to produce a political ecology of scale. This approach incorporates the key precepts of the politics of scale – scale as socially constructed, relational, contingent and contested – into an existing framework that highlights power relations and a dialectical approach toward nature–society relations. It also confronts directly three of the key problems in the politics of scale literature that Marston et al. (2005) identified, namely the confusion of scale and level, the local/global binary and the presupposition of fixed levels. A political ecology of scale brings a specific set of analytics to these problems, starting from a foundation of Marxist political economy while incorporating more recent theorizations of power, networks of human and nonhuman actors and the incorporation of biophysical processes – what Sneddon (2003: 2245) called a ‘symmetrical approach to the social and ecological production of scale’.

The political ecology of scale is now a large literature, growing larger every year, and making significant theoretical strides along the way. Nonetheless, one can still discern in the literature a tendency to take for granted scale's meaning, to use it to mean very different things (e.g. 'large-scale' meaning capital-intensive, spatially extensive or national) and to unreflectively engage Blaikie's (1985) 'chain of explanation' to situate the 'local' in 'wider processes' (e.g. Walker, 2003; Walker and Fortmann, 2003; Robbins and Sharp, 2003; Dove and Hidayana, 2008). These problems are partly traceable to the widespread colloquial use of scale – scale as simple descriptor, rather than as a concept – in much academic writing (Sayre, 2009). Even with the greater attention to scale theory in political ecology, however, one still finds that terminology and concepts can be conflated, so that scale, level, site, network and assemblage are not always clearly distinguished (e.g. Swyngedouw and Heynen, 2003; Zimmerer, 2006b). Echoing Castree's review of studies of neoliberalism and nature, political ecology of scale work 'can be meaningfully compared only if there is real clarity and consistency' in the deployment of key concepts (Castree, 2008: 135). A political ecology of scale that is rigorous and concise in its conceptualizations and use of terminology, as well as clear in its epistemological and methodological choices, will significantly advance both political–ecological research and scale theorization.

NOTE

* This chapter is an adapted version of Neumann (2009) and is used with permission.

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35. The political ecology of weeds: a scalar approach to landscape transformations

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‘Think globally, act locally’ says the green maxim. Yet, when applied to plants labelled ‘weeds’ or ‘invasive’, this idea suggests a scalar mismatch. At the global level, invasive species are often listed alongside the biodiversity crisis and climate change as top environmental concerns with enormous economic ramifications. At the local level, any farmer or gardener will share the common human experience of intimate, sensory interactions with weeds – considering, touching, pulling, perhaps spraying. The global scale is dominated by lists, categories and costs; the local by praxis, need and emotion. The global is scientific and bureaucratic; the local is lived and pragmatic. There is a wealth of difference between and within these levels of scale – differences of power, perception and of geographical distribution; in short, a ‘political ecology’ of weeds that we review in this chapter. What interests us, as political ecologists of weeds, is *when* and *how* the quotidian movements of plants and processes of ecological and attendant social change – that is, their occurrence and spread across landscapes – become phenomena characterized as weeds or weed invasions and thereby objects of contention and control.

Our political ecology perspective goes beyond discursive critiques of the language of weeds and invasion, beyond the dichotomization of weed issues into conflicts of interest between, for instance, the livelihoods of farmers and the biodiversity goals of conservationists. We refocus the lens at an intermediate scale, making regional landscapes the unit of analysis, instead of crop fields, plant species, ideologies or interest groups. Without going into details of the rich geographical literature on concepts of landscape, we use the term as a reference to distinct associations of physical and cultural forms (in a Sauerian sense) and as relational perceptions of these associations through classification, control, meaning and symbolism (Cosgrove, 1998). This analytic scope allows us to investigate how weeds, invasives and other mobile plants are interpreted, managed, accepted, controlled or reacted to in the broader geographical context of living and transforming regions.

In order to understand how plants become ‘weeds’ and ‘invasives’ in landscapes, we rely on a scalar analytic framework based on a Lefebvrian understanding of the production of space (Rangan and Kull, 2009). We suggest that there are three scalar moments that interact to produce lived, conceived and contested landscapes. First, the operational scale relates to empirical phenomena in nature and society. Second, the observational scale relates to formalized human conceptions of these phenomena, and the power they exert, at different levels of scale. Third, the interpretive scale opens up the world of stories, moralities and sensibilities by which humans communicate and express their feelings or concerns regarding the phenomena around them.

In the following sections, after expanding on our scalar approach, we use these three moments of production of scale to show how plants become weeds and how they are subjected to categorization and targeting in different spatiotemporal and socio-ecological landscapes. While there are innumerable examples available, we have limited ourselves to using case studies of three plants to illustrate how this process occurs. These plants are *Lantana camara* (lantana), the genus *Acacia* (common names ranging from acacia or wattle to huisache or mimosa) and *Ambrosia artemisiifolia* (ragweed).

POLITICAL ECOLOGY OF SCALE

In an earlier paper (Rangan and Kull, 2009), we argued that scale is the means through which ecological and related social and economic changes are made political. We adapted Henri Lefebvre's (1974) ideas about the 'production of space' to understand how scale, a critical component of spatiotemporal analysis, is not a pre-given dimension, but produced through activity. Lefebvre describes the production of space as embracing three kinds of actions. First, spatial practice refers to the physical activities and patterns of interaction that people engage in as a matter of routine. They take this space for granted because it is what they 'perceive' and what they have to negotiate through the activities and movements of everyday life. Second, representations of space are produced by dominant social actors – scientists, planners, urbanists, artists – who categorize, organize and conceptualize spatial practice according to what they think it should be in order to exercise control. Third, representational space is consciously performed by people through images and symbols, embracing 'the loci of passion, of action and of lived situations' and it 'may be directional, situational or relational, because it is essentially qualitative, fluid and dynamic' (Lefebvre, 1974: 41–2). These moments come together through activities and movements to produce space as practices of everyday life, as measures or categories of spatial difference, and the means for engaging in political action.

Following Lefebvre's reasoning, we proposed that scale is produced by three moments of action: operation (an ontological moment), observation (an epistemological moment) and interpretation (a translational moment). First, operational scale is produced from combinations of time, space and power that shape social activity and biophysical processes into particular configurations. It is ontological and empirical, based on inductive knowledge and description of features, processes or phenomena. Second, observational scale is produced through measurement and control by governments, policy-makers and researchers. Because study or surveillance depends on establishing 'objective' categories, and resolutions of spatiotemporal limits, it is often the subject of contention in scientific and policy debates.

Finally, interpretive scale is produced through translation of phenomena into narratives, 'models', metaphors or tropes in ways that imbue significance and symbolic meaning. It produces a normative hierarchy of values that serves as the context and means by which extrapolation, generalization and simplification occur (Foucault, 1980). For instance, models and symbols signify various ecological phenomena and entities as good, bad, useful, native, alien, benign or invasive. Interpretive scale plays a

critical role in making social and ecological change political by invoking feelings of belonging, taste, beauty, usefulness, fear or hope.

This mode of understanding the production of scale enables us to move beyond mainstream representations of weeds and critiques of such representations, and instead focus on how particular plants, with their characteristics and behaviours, come to be regarded as weeds or invasive species in different spatiotemporal contexts. While much of the discussion regarding weeds swings in bipolar fashion between global threats and locally disastrous consequences, our scalar approach allows a broader political-ecological perspective that views how particular plants and their spatiotemporal interactions with human activity are implicated in the transformation of landscapes.

OPERATIONAL SCALE

From an operational scale perspective, plant movements can be seen to occur through dispersal, disturbance, transfer and diffusion (Kull and Rangan, 2008). Each kind of movement encompasses distinctive combinations of scales and agents. Dispersal by wind, water and non-human agents such as insects, birds and animals generally covers shorter distances, but can cumulatively affect large areas over long periods. Disturbances such as fires, floods, erosion or vegetation clearance, whether ‘natural’ or anthropogenic, can create conditions for plants propagating across large or small areas, depending on the frequency with which they occur. We reserve the term ‘transfers’ for long-distance movements – across land and oceans – of plant genetic material by humans in their various capacities as traders, naturalists or agricultural scientists. Transferred plants may be limited to gardens, hothouses or agricultural research stations, or they may have larger impacts at the landscape scale over several decades through subsequent dispersal, disturbance or diffusion. By diffusion, we refer to the purposive spread of plants from person to person (Sauer, 1969), between individual farmers and gardeners, and through agents such as government agricultural extension workers, forestry companies, development agencies and commercial nurseries.

These processes take on different levels of importance at varying analytic scales. A geological perspective reveals that plants have responded to changes in their climate and environment through movement and adaptation since their emergence on land in the Palaeozoic Era. The land on which they grow has been transformed by continental drift, orogeny, volcanism, erosion; climatic conditions have fluctuated between warm and cool, wet and dry; vegetation cover and soils have been disturbed by storms and quakes; and plant parts or seeds have been dispersed by insects, animals, birds, water and wind, over both short and long distances (Brown and Sax, 2004). Despite the appearance today of plants being part of long-term stable ecosystems, their spatiotemporal distribution has been in constant flux.

Humans have also been effective dispersal agents for a long time (McNeill, 2003; Wilson et al., 2009). Examples include the spread of *Livistona* palms and of baobabs through the Pleistocene and Holocene (Kondo et al., 2012; Rangan et al., 2015). Ancient oceanic exchanges extending back six millennia enabled long-distance plant transfers and diffusions (Rangan et al., 2012). The emergence of settled agriculture and animal husbandry not only led people to select and move plants to different places for

cultivation, but also to establish relationships between cultivated and uncultivated plants *in situ*. These activities created the spatial contexts for various plants to be identified as wanted or unwanted (Harlan and de Wet, 1965).

The transfer and diffusion of plants gained substantial momentum over the past millennium with the expansion of human populations and increased overland and oceanic exchanges and trade. Settler conquest and colonialism in the Americas and Australasia combined purposive transfer and diffusion with accidental, unplanned movements of plants and organisms and large-scale disturbances that contributed to large-scale landscape transformations in their new environments within short time periods (Crosby, 1986). The rise of industrialization and demand for large-scale production of raw material in Europe led to further intensification of plant transfers for cultivation in territories under European colonial rule in Africa and Asia (Brockway, 1979), and the exponential growth of global trade in the past 150 years has been paralleled by the growth in the movement of plant genetic material.

Let's look at our exemplar plants from the perspective of operational scale. The broad genus *Acacia* (which contains more than a thousand species, including the thorn trees of Africa, wattles of Australia and huisache of the Americas) has long been dispersed by birds, ants, grazing animals and other natural forces; prehistoric people who consumed seeds certainly contributed to these movements. In the last 500 years, several dozen species of *Acacia* have been transferred across oceans by botanists, traders, settlers and administrators, with a significant increase during the nineteenth and twentieth centuries by foresters, garden enthusiasts and agroforestry development projects. Local and regional diffusion occurred as people sought the trees for diverse uses, including leather tanning, perfume distillation, livestock shade or fodder, fuel production, land rehabilitation and ornamental cultivation. Most acacia species produce an abundance of dispersible seeds that can remain viable in the soil for decades, and respond favourably to disturbance such as fire or tilling. Given their capability for vigorous expansion, these transferred acacia species can dominate landscapes (Kull and Rangan, 2008; Richardson et al., 2011).

Lantana camara is an erect flowering shrub with spreading, prickled branches. Originally from the Americas, it has been transferred to and diffused around most tropical and sub-tropical regions of the world. This largely occurred during the nineteenth century, at the height of European colonial expansion, when its ability to flower with a rich variety of colour throughout the year led to its widespread popularity as an ornamental plant. *Lantana* thrives in gardens as well as in open, disturbed habitats where its roots spread and sucker vigorously. It produces abundant small fruit that are eaten and dispersed by birds. These characteristics have resulted in *lantana* establishing itself rapidly across urban and rural landscapes, in vacant lots, fallows, field edges and uncultivated open lands. It can be toxic to cattle and physically difficult to contain or remove from farmland (Thaman, 1974; Kannan et al., 2013, McWilliam, 2000).

Our third exemplar, ragweed (*Ambrosia artemisiifolia*), is an herbaceous member of the aster family, native to the Americas. It thrives in disturbed soils and produces copious amounts of pollen that is easily windborne and attracts insects that help its dispersal across urban and rural landscapes. These characteristics have led it to become known as a prominent cause of human hay fever allergies. The plant has been noted in Europe since the mid-1800s, through numerous arrivals in diverse locations in

shipments of grain, fodder and birdseed. Over the past few decades, the plant has expanded in certain parts of Europe through inadvertent human diffusion, contributing to the growth of allergies in its new home. The plant is frequently targeted for control or removal from gardens and disturbed sites using chemical herbicides (Mitman, 2004; Brandes and Nitzche, 2006; Chauvel et al., 2006; Fall, 2013).

In sum, at the operational scale, the characteristics and behaviour of each plant are intimately entwined with human movement and activity. Their patterns of occurrence and spread are influenced in part by physical forces, soil conditions and non-human agents, but more strongly by humans, who are the key agents of landscape transformation. As Harlan and de Wet (1965: 19) commented in their classic essay, 'there can be no weeds in the absence of man'. They point out that numerous plants rely and thrive on human disturbance of landscapes. Some of these are domesticates that humans choose to grow, while others are plants that thrive alongside without the attention and care that domesticates receive. The operational scale, therefore, reveals what Harlan and de Wet felicitously call the 'biologically intimate' (ibid.) relationship between humans and weeds: they accompany humans wherever they go and prosper in landscapes that humans modify. The biologically intimate relationship is reflected in the wide range of human interactions with these plants, whether in consuming and using them, in seeing and smelling them or in labouring to cut them back, dig them out or spray them with chemicals (Awanyo, 2001; Robbins, 2007; Atchison and Head, 2013).

OBSERVATIONAL SCALE

Observational scale refers to the formalized ways of classifying and measuring a phenomenon. While operational scale can yield forms of classification and description of phenomena in terms of patterns, interactions and processes, these do not have power until they are recognized and legitimized by formal authority, whether government officials or scientists. In effect, observational categories are produced by the application of instrumental or institutional rationality – geopolitical, economic, social – for purposes of governance or maintaining order and control. The result, in the case of weeds, is a scalar jump from 'weed' as a contextual, field-based relational perception by people-in-landscapes, to 'Weed-with-a-capital-W' as a powerful bureaucratic category. A plant out of place in a particular field becomes a plant out of place in a whole landscape, region or even continent. And, conceptually, a plant that is judged on its merits (or demerits) *in place* is instead judged to have those merits (or demerits) *intrinsically*. A plant that would be considered annoying but tolerated becomes a biological entity that should be controlled and possibly exterminated.

Foucault's concept of 'biopower' is helpful in understanding how observational scale operates. Biopower represents the techniques, technologies and discourses used by governing bodies to monitor, control and manage human lives and bodies within their jurisdictions. It entails one or more truth discourses about the characteristics that categorize populations as 'normal' and also establishes different categories that mark deviance from the normal (Rabinow and Rose, 2006: 195, 197). Foucauldian biopower is exercised by authorities (such as demographers, criminologists, doctors, health

officials and psychologists) considered competent to speak truth discourses and to develop strategies for intervening in and governing the lives of people in accordance with their population categories. These population categories also act as self-disciplining mechanisms for individuals who accept such subjectification of, and interventions in, their lives in the name of collective good, public health or societal order. Biopower is thus a rationalizing mode of governance explicitly linked to discourses and apparatuses of security and surveillance. The recent emergence of the term 'biosecurity' (Elden, 2007; Bingham et al., 2008; Braun, 2011; Dobson et al., 2013) with respect to territorial border control is a literal reference to the exercise of biopower over the entry of humans and non-human organisms by national governments.

While weeds, from an operational scale perspective, are plants not purposefully cultivated but which appear in places of human disturbance, their conceptualization as 'plants out of place' is an observational scale categorization linked to the exercise of biopower. The observational scale is established in relation to institutional jurisdictions and spatial categories based on instrumental rationalities associated with agricultural production, public health or prevention of plant diseases (quarantine), or protection of landscapes and vegetation with uniquely 'national' or 'native' qualities (biodiversity). So, for instance, a plant that is pulled out from a garden or field so that another plant can grow may be categorized as an 'noxious weed' if it spreads into a landscape that is used by livestock or forestry industries, or as an 'alien invasive' plant if viewed from national biodiversity management goals. These 'jumps' of observational scale permit and condition the exercise of power by national and global networks of policy-makers, researchers, conservationists and quarantine agents.

The formal categorization of weeds through the exercise of institutional and instrumental rationality by governments – in terms of national public health, economic productivity or territorial identity (native or otherwise) – has a relatively short history. Western governments began establishing agricultural services for farmers engaged in commercial crop production in the nineteenth century, and by the turn of the twentieth century agronomy developed into a university discipline. Pioneers such as Wilfred Robbins and Alden Crafts at the University of California, Davis initiated a separate formal 'weed science', publishing the first edition of a field-defining textbook in 1942 (Zimdahl, 2010). They presented clear categories of weed types and control strategies that resonate in agronomic bureaucracies to this day. Weed services and weed science boomed after the development and large-scale production of chemical herbicides in the postwar period (Timmons, 1970; Tilman et al., 2001).

The categorization of weeds as 'alien invasives' or 'environmental weeds' is far more recent, and reflects a rise in environmental concern for ecosystem balance, health and function. Invasion biology has eclipsed older agronomic weed science. Indeed, in 1982 the 'SCOPE 37' research programme of the International Council of Scientific Unions, a major catalyst for growth in this field, stated that its aim was to 'build on the considerable knowledge base available on invaders of agricultural systems but that it should concentrate its efforts on natural systems where there had been considerably less attention' (Drake et al., 1989: xxiii). The now prolific field of invasion biology investigates the factors that enable certain species to spread across geographic and ecological barriers and their impacts on ecosystems and economies (Cronk and Fuller, 1995; Davis, 2009; Richardson, 2011). The field justifies its importance through

instrumental metrics. Pejchar and Mooney (2009: 497) call the impacts of invasives on ecosystems ‘staggering... but largely anecdotal and wide ranging’. Yet this has not deterred people from estimating their economic costs (e.g. Pimentel et al., 2005); one estimate from South Africa blamed invasive trees for a 40 per cent loss of potential economic value from the land (MEA, 2005: 57).

Invasion biology, as a global field, has major influence on the conceptualization of weeds and their importance. It plays a key role in establishing the ‘truth discourse’ of categories, definitions and facts about invasive species that are then applied to land management policies and actions. As is to be expected in any ‘truth discourse’, definitions – of invasives, environmental weeds, natives, aliens and so on – attempt to be universal in principle but are rarely so in reality (Colautti and MacIsaac, 2004; Richardson et al., 2008; Blackburn et al., 2011; Humair et al., 2014). Overall, though, the definitions put forward seek to define invasive plants by combining one or more of three characteristics: origin, behaviour and impact. Origin refers to a plant’s alien status; behaviour is the actual (or potential) extensive and rapid spread of reproductive offspring away from transported parent plants; and impact refers to actual (or anticipated) negative effects on native ecosystems or human health, society or economic activity.

The formal categories and classification of plants as ‘invasive’ shifts the observational scale from contextual, field- or landscape-based perceptions to more abstract, categorical and territorial ones. Furthermore, most definitions of invasives largely exclude the role of human activity and its collusion in assisting invasions by particular plants, particularly through disturbance. Also, while any ecologist will clarify that it is populations of a particular species that are invasive, not the species itself, the epithet inevitably sticks to the latter.

The rise of invasion biology as a ‘global’ science has driven the development of international and national lists of invasive species and associated management policies. Despite the uncomfortable fit of weed control with anxieties over food safety, epidemics and pests (Bingham et al., 2008), the discourse of invasive species has led to many government agencies dealing with agricultural weeds being subsumed or replaced by biosecurity agencies (Barker, 2008). The impact of lists of invasive species made available through a variety of online databases is that a number of plants have gained the label ‘invasive’ (which is equivalent to being labelled ‘terrorist’ by national security agencies), irrespective of context. The categorization of invasive, particularly in terms of status of origin, carries great power. A genetic study of a diminutive clover fern in the Azores by Schaefer et al. (2011) showed that it was not a rare native species but an Australian alien. This resulted in a change in the plant’s status from the archipelago’s highest conservation priority native species to an alien invasive whose further spread had to be prevented.

Our exemplar plants have all been formally categorized as noxious weeds and invasive aliens. *Lantana camara* carries these labels in most places where it has been introduced. Its widespread presence and its nuisance to agriculture and pastoralism placed it early on global lists of weeds and invaders (Thaman, 1974; Holm et al., 1977; Cronk and Fuller, 1995). *Acacia* species rank high on many national lists of invasive trees and shrubs. In South Africa, thirteen Australian acacias are legally declared as

'major' invasives that must be controlled or eradicated where possible. While commercially important species such as *Acacia mearnsii* may be cultivated, their presence outside plantations is categorized as invasive and they are targeted for removal in priority zones such as watersheds or ecosystems of 'national or international significance'. In Australia, the prickly acacia, *Acacia nilotica*, is a Weed of National Significance, with dedicated strategic plans, management guides and containment zones similar to those in South Africa (Kull and Rangan, 2008). *Ambrosia* is listed as one of the most important invasive plant species in France (Chauvel et al., 2006), and is blamed for health impacts totalling €32 billion per year in Germany (Brandes and Nitzche, 2006). Its presence in Switzerland even influenced the development of a national list of invasive plants; in the 2006 Vegetation Protection Act it is the only species listed under the category 'Particularly dangerous weeds'. While Swiss authorities initially classified plants as invasive based on biodiversity threat criteria, the event of a growing ragweed invasion led to strong political pressure for the inclusion of economic and public health criteria (Fall, 2013: 170).

In sum, at the observational scale, formal categorizations, based on instrumental rationalities and truth discourses produced in certain scientific-bureaucratic circles, aim to police the territorial boundaries of plant movement. Yet, of course, the observational interacts with the operational and interpretive scales in shaping and transforming particular landscapes. As the Swiss example above suggests, practice and politics push back against rigid truth discourses. Barker (2008: 1612) corroborates this in New Zealand, showing that biosecurity practices 'produce a complexity of semipermeable control boundaries that are flexible and sensitive to the shifting spatiotemporal geographies of indeterminate entities, and to changing and competing human values'.

INTERPRETIVE SCALE

Observational categories laden with biopower inevitably rub up against cumulative empirical, relational and interpretive phenomena. The interpretive moment manifests itself in the stories, moralities and sensibilities by which people communicate and make sense of the phenomenon of plants that spread vigorously across space. Their ideas and feelings about weeds and invasives are often a mix of pragmatic experience and 'stories' told by friends, family, scientists and officials. By stories, we refer to Foucauldian discourses that draw on archetypes to bolster their rhetorical claims to genuine or just representations. What is of interest is how people use these archetypal narratives to convey their concerns and emotions about the plants in their landscapes, how they accept, question or challenge the observational categories and management actions of scientists and policy-makers. Some may incorporate the 'truth discourses' of scientists into their narratives; others may acknowledge the scientists' views on plants but dismiss them for various reasons; and yet others may present alternative or contrasting views about the plants. Such discourses and their normative hierarchies of value become the translational moment for plants to become 'invaders', 'saviours' or 'fellow travellers', generating argument, debate or acts of resistance against authority.

The topic of weeds has generated different kinds of metaphors that deploy varying interpretive scales for narrating the 'impacts' and 'affect' of invasive species on people

and societies (Larson, 2011; Warren, 2007; Tassin and Kull, 2012). Most of these metaphors rely on conveying these impacts by invoking some combination of values and concerns related to utility, aesthetics, personal costs, socio-spatial identity or survival of life. To give a few examples: a number of agroforestry species have been described as ‘miracle plants’, providing extraordinary and transformative benefits for utility and well-being in the places where they were introduced; alternatively, other narratives may describe the same plants as ‘destroyers’ that undermine agriculture and the utility and well-being of farmers. The acclimatization movements of the late nineteenth and early twentieth centuries in European settler colonies like Australia, Algeria, South Africa and Palestine used the metaphor of ‘improvement’ of unfamiliar and seemingly unaesthetic and unproductive landscapes to justify the introduction of plants and animals from various parts of the world (Osborne, 2000; Tyrrell, 1999). A metaphor that appeals to aesthetics of uniqueness may also be evoked to justify the creation or protection of a territorially based identity. This often appears in claims made by invasion biologists about the effects that alien plants have on unique ecosystems, and how they represent ‘a human-caused breakdown of the regional distinctiveness of Earth’s flora and fauna’ (Vitousek et al., 1997: 1). Some use metaphors such as ‘McDonaldization’ or ‘biotic homogenization’ to describe the effects of introduced species on regional landscapes (McKinney and Lockwood, 1999).

Then, of course, there is the most compelling metaphor of all, that of invasion and extinction. As Seddon (2005: 223) notes, ‘the language [of weeds] is powerfully emotive. “Invasive” is a word alive with threat, and “infestation” suggests the plague and the urgent need for a pied piper to lead the invading rats to their destruction’. Charles Elton (1958) used this metaphor with compelling effect in conveying the threat of introduced plants and animals as equivalent to a wartime invasion and occupation of Britain. Metaphors of national defence and national identity were used in very dramatic or stark ways to influence social perceptions of plants in the first half of the twentieth century in Germany (Gröning and Wolschke-Bulmahn, 2003), as well as in the long ‘historical preoccupation of (mainly white) South Africans with non-native plant species’ (Neely, 2010: 871). Although there is now a well-trodden critique of the militaristic, epidemiological, nativist or even xenophobic vocabulary used to build up anxieties about weeds and invasives, by both social and natural scientists (Gould, 1997; Colautti and MacIsaac, 2004; Head and Muir, 2004; Warren, 2007; Davis, 2009), the metaphors of invasion and extinction continue to be the most popular among scientists and national park and landscape management agencies.

The discourses that frame the translational moment differ over time and space in concordance with social context, pragmatic experience and positionality. For instance, views of German forest managers towards the vigorously spreading American black cherry varied over time, initially based on their hopes for timber or soil improvement, later on their fears about invasion, and then on their hopes for feasible control. These discourses were more aspirational than based on fact, but strongly influenced forestry practices (Starfinger et al., 2003). Villagers in southern Madagascar draw on memories and stories of a prickly pear cactus eradication campaign and a famine that followed it to interpret contemporary experiences of a recent campaign against prickly pear by conservation and development agencies, and ‘re-narrate’ the invasion story and the morals associated with it (Middleton, 2012).

As for our exemplars, the story of *Lantana* in Timor shows how interpretations shift based on different discursive framings (McWilliam, 2000). At the peak of the plant's spread during the 1940s and 1950s, foresters defended *lantana* as a host or nurse plant for sandalwood, while cattle owners decried its unpalatable nature and expansion into grazing lands. Farmers were more equivocal, balancing increased labour requirements against beneficial soil impacts and firewood supply. Similarly, Mitman (2004) shows how *Ambrosia* – as a weed of disturbed areas, empty lots and railway corridors in its native land America – was painted differently according to the varied social discourses of each period – as a troublesome vagrant, as a symptom of moral depravity associated with modernity, or as a medicalized hay fever threat.

Different interpretive scales operate not only across historical time, but simultaneously among different people. In the case of *Ambrosia* in Switzerland, Fall (2013) shows how expert categories are renegotiated and transgressed through differing interpretive scales. She notes that, although environmental managers were loyal to the cause of fighting invasives, they justified not taking action in many specific cases due to personal judgements that a particular plant was not a problem, due to time or money constraints, or by referring to aesthetic or public opinion in favour of the plant. A similar example arises with differing attitudes towards the presence of prickly acacia (*Acacia nilotica*) in Outback Queensland. Rangan et al. (2014) show how pastoralists fall into different groups based on the metaphors they use to view and manage this species on their properties. The 'pragmatists' echo the 'war against weeds' discourse commonly used by government agencies, and draw on their financial support to deploy bulldozers and chemicals to eradicate the plants. The 'unsuccessful battlers' criticize the impracticality and ever-changing nature of government agency advice and policy, and speak largely of disheartenment in the face of an unsolvable problem. The 'strategists' talk of accepting the land as it is and managing the dynamic relations among cattle, grass, soil and prickly acacia from the perspective of 'doing right by country'.

WEEDS AND THE POLITICAL ECOLOGY OF LANDSCAPE TRANSFORMATION

In any particular place and time, the processes and patterns linked to the three scalar moments – operational, observational and interpretive – interact to produce their own distinctive landscapes. Biophysical and socio-cultural processes of daily life interact with powerful formal categorizations as well as emotive and normative stories and interpretations, shaping landscapes and how they are seen. The analysis of these scalar moments and their coming together produces a political ecology of landscape transformation. This chapter shows how this approach can help in understanding how the intertwined social and ecological phenomena of *plants in movement* come to matter and inspire so much research, public concern, anxiety, chemical use and contestation.

Plant movements, and indeed human movements, can be viewed through different 'scopes', such as disruption, transformation and evolution (Rangan and Kull, 2009). Most invasion biology and political ecology studies focus on immediate spatiotemporal consequences such as disruption to places, human communities or native biodiversity.

Some authors use different metaphors to talk about changes in plant communities, such as ‘novel ecosystems’ (Hobbs et al., 2006), ‘rambunctious gardens’ (Marris, 2011) or ‘melting pots’ (Kull et al., 2013), to emphasize different forms of transformation. Others describe these processes as regionalized evolution (Botkin, 2012; Rangan et al., 2012).

It is important that political ecologists and invasion biologists can adopt scopes of analysis that encompass landscape and ecological change as an integral part of the human processes of regional transformation and evolution. A good example might be the work of McWilliam (2000), who recounts three major plant invasions that have succeeded each other over the last century in the beef-producing grazing lands of Timor: first prickly pear (*Opuntia*), then *Lantana camara*, then *Chromolaena odorata*. Combining a historical perspective with a sympathetic understanding of peasant farmers’ attitudes of adaptation, McWilliam is able to tell the story with a broader, non-catastrophic scope. He mentions that, while Indonesian government pastoral officials, with Australian technical support, sought to control the weeds, most other agencies were ambivalent or positive about the plants, leading to an overall *laissez-faire* approach. He notes that the responses of the subsistence-oriented farmers and of many local officials ‘tend to be reactive rather than strategic, adaptive rather than interventionist, in overcoming agricultural threats’ (ibid.: 465). Indeed, he continues, farmers in Timor appear ‘adept at accommodating the exotic weedy visitor and adjusting their farming systems to the constraints and advantages it offers’ (ibid.: 467). From a long-term perspective, the weedy ‘plagues’ appear to resolve themselves.

A political ecological scope of landscape transformation provides a better sense of the varied ways in which plants’ biophysical agency and human activity, intentionality and control come together to transform landscapes and rework social relations than a scope of ecological and social disruptions of place. Weeds do not act alone; invasives are not inherently bad organisms. Humans and weeds go together; plants take advantage of spaces and opportunities that we create. Human desires for preserving certain social values in landscapes in contradiction to actual transformations are often at the heart of definitions of and conflicts over weeds or invasives. A political ecology of landscape transformation allows us to see how these interactions and contradictions between humans, domesticates and weeds play out over time.

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36. Bordering and scalar thickening in nature conservation

Maano Ramutsindela and Christine Noe

The links between political ecology and scalar analyses are now firmly established, with widespread agreement among social scientists on the view that ecological scaling shapes political-economic dynamics. It is also acknowledged that scale is integral to 'political ecologists' analyses of human–environment relations' (Neumann, 2009: 398). Using the concept of scale in political ecology permits the research field to capitalize on key geographical advances in the subject, while enabling it in turn to contribute to conceptual refinement. Accordingly, and since at least Blaikie and Brookfield (1987), political ecology has been attentive to different scales ranging from the local to the global.

What remains marginal to debates on ecological scaling are bordering processes that are key to both the creation of conservation spaces and the emergence of new conservation scales. Bordering processes are thus important if we are to fully understand political ecologies of scale. In this chapter, we bring together distinct but related scholarship on bordering and (ecological) scaling to demonstrate how these two concepts are relationally implicated in the production of conservation areas and their management. Our intention is thereby to show bordering to be a useful concept in political-ecological analysis relating to the question of scale.

Two broad questions structure this chapter. First, and in light of the blossoming literature on nature conservation, what is the theoretical starting-point from which we can link conservation projects, the literature on scale and bordering processes? Second, what contribution can bordering make to our understanding of human–environment relations? We try to answer these questions by bringing literature on scale into conversation with bordering processes in nature conservation. We pay particular attention to ecological scaling in bordered wildlife management areas and transfrontier conservation areas to understand the empowering and disempowering qualities of scale. Our main argument is that bordering should be combined with scale analyses to best explain the political ecology of conservation.

The chapter is broadly organized into four sections. First, we discuss the significance of the link between nature conservation and scale. This is then followed by discussion on conservation and bordering. In the third and fourth sections, we explore the manifestation of scaling and bordering processes in wildlife management areas (WMAs) and transfrontier conservation areas (TFCAs) respectively. In concluding, we return to the questions posed above to reflect on the value of combining bordering and scaling in political-ecological analysis.

NATURE CONSERVATION AND SCALING

Conservation Planning

Our premise here is that conservation is a useful context for engaging questions of scale because scale is central to both conservation planning and the interpretation of power (im)balances associated with conservation practices. From the ecological perspective, the appropriate scale at which ecological systems should be governed is clearly a crucial choice for the survival and protection of plant and animal species. This accounts for the increasing interest in bioregional planning in which a bioregion is conceived as a landscape endowed with unique natural qualities that are shaped by human–environment interactions over time (Aberley, 1999; Sale, 2000; Bocco et al., 2010).

Notwithstanding bioregionalists' shared view that the earth consists of contiguous but discrete natural regions (Sale, 2000; Williamson et al., 2011), translation of this view into precise thinking about conservation areas has led to the development of two schools of thought – each with its own conception of bioregional scale. Of particular significance to our discussion is how scalar perspectives and narratives flow from these two approaches. One school holds that bioregional planning should take place at a small or micro-scale on the basis of the idea that bioregions should act as the main organizing unit for people and their biophysical environment. The political idealism here is reflected in the perceived need to redraw the borders of the modern state to reflect the natural contours of different ecological systems (Aberley, 1999). More importantly, the rationale for advocating the creation of bioregions at a small scale is that people can best respond to ecological problems if these affect them directly in their locality. Supporting this rationale, Sale (2000) suggested that global environmental ethics is, in the end, meaningless because it calls for attention to environmental problems that are far removed from the everyday life of ordinary people who are invariably concerned with immediate environmental conditions.

The second school, which is more directly related to a majority of conservation-related scale viewpoints, advocates more expansive landscape regional planning (Brunckhorst, 2002). The conservation goal derived from such large-scale bioregionalism is to conserve an area large enough to maintain the integrity of the region's biological communities, support important ecological processes, and meet the habitat requirements of keystone and indicator species (Williamson et al., 2011). This translates in practice into conserving biodiversity over a larger area than the traditional national park system. Such a decision is supported by conservation biologists, who promote a dramatic expansion of protected areas seen as necessary for preserving species characteristics while also retaining maximum species richness (Brunckhorst, 2002). Such a theme opens up rich avenues for understanding both narratives about borders and scaling in conservation. As suggested below, doing conservation work beyond conventional park borders involves reconfiguring and realigning multiple scales in order to create and reconstitute conservation spaces. In turn, these spaces reflect a wide range of contemporary socio-political and economic borders (Ramutsindela, 2014). The scaling of conservation areas often but not always depends on creating ecological corridors.

These corridors refer to regions of the landscape that facilitate the flow or movement of species, genes and ecological processes (Chetkiewicz et al., 2006; Hilty et al., 2006). They are designed as a corrective measure for fragmented habitats, as such fragmentation reduces the amount of habitat while also increasing the number of isolated habitat patches (Bennett, 2003). Their main function is to increase the viability of local species population by allowing individual animals access to a larger area, facilitating seasonal migration, permitting genetic exchange with other populations, and allowing individuals to move away from degraded habitats (Bennett, 2003; Goldman, 2009). It is for this reason that conservation along ecological corridors has gained popularity among scientists. As part of landscape regional planning, the mechanism of ecological corridors is closely linked to the creation of TFCAs discussed below. The relevance of such planning to analyses of scale lies in the ways in which regional conservation projects involve multiple scales simultaneously while paying more attention to some than others – a process we label scalar thickening.

Scalar Thickening

Analyses of and debates on scale reveal that scale-related concepts were largely developed and refined in order to clear up confusion that existed over meanings of scale, to close theoretical gaps, and to improve understanding of social and natural realities. Thus the cartographic concept of scale was abandoned (Knox et al., 2006), while the notion of a fixed hierarchy of bounded spaces was expanded to accommodate possibilities for the reconstruction and rearrangement of scales, and the appreciation of scales as effects of networked practices (Legg, 2009).

Here we use the notion of scalar thickening to conceptualize deployment of multiple scales on the same site, as well as strategic use of certain scales within a dense network of scales to achieve a goal. Scalar thickening is hence more than the sum of multiple scales. It speaks to the manner in and by which processes of scale construction are strategically linked or delinked to achieve specific goals, and how the density of actors alters the power geometry of any given scale. Scalar thickness helps us understand how spatial imaginaries that appear disconnected on the ground can be nonetheless conceived of as a package. We briefly explore below how this takes place in the context of wildlife management areas and transfrontier conservation areas.

For the moment, we consider scalar thickening as a way of thinking about (postcolonial) spaces of conservation, and how these spaces are organized as part of new strategies for enlarging and amalgamating a mosaic of contiguous land parcels into protected areas without resorting to the overt brutalities of colonial-era conservation (Ramutsindela and Noe, 2012). The concept of scalar thickening comes close here to Zimmerer's (2000) view on scaling of land units through the intermixing of actors and institutions. Indeed, land units are relevant to the designation and demarcation of conservation areas, invariably involving a number of tenure regimes. As we show below, wildlife management areas are created by setting aside communal land for purposes of nature conservation, while transfrontier conservation areas represent an assemblage of parcels of land, including at times state, private and communal land. But there is a need to clarify how scale enables or disables such a process. Expressed differently, we need to know the qualities of certain scales that are key to the

intermixing of scales. Scalar thickening is useful for understanding the propensity of scales to coalesce in certain times and places, or even how a particular scale provides conditions for other forms of scalar production. And there is plenty of evidence of scalar thickening to be found in nature conservation projects that involve different land uses and tenure regimes. Here, conservationists concentrate on land parcels deemed critical to biodiversity conservation, and invest much energy and resources in securing them for 'posterity'.

Once secured, such land units become a cog in the broader conservation plan, leading to the coalescence of scales that reshapes certain local institutions and power geometries to engender a scale congenial to predetermined conservation goals. This explains why certain land parcels become a target for conservation even though their biodiversity value might only be average or even insignificant: they are attractive precisely because they help to validate and strengthen the desired local, national or transnational scale. They may also be significant for creating conservation areas across different scales or developing a network of scales that is hard to challenge by opponents (Ramutsindela, 2007).

Scalar thickening thus goes beyond the hierarchical relationships between scales implied in scalar structurations to account for how such relationships are configured in a manner that produces a hegemonic scale necessary for the goal at hand. If indeed scale is not unilinearly ordered, it is necessary to know how scales that are commonly placed at the 'bottom' sometimes become more powerful – in the sense of being absolutely important for a project to take off – than supposedly superior ones such as national and global scales. Scalar thickness is a useful conceptual tool here for understanding why certain scales matter more than others and how they are made to matter. It also seeks to account for the density of actors and the coalescence of specific processes at particular sites.

Scalar thickening is not confined to any particular scale. Our example of WMAs below is thus meant to demonstrate that a micro-scale could be thickened as a necessary step towards a supranational conservation project such as the creation of transfrontier conservation areas. As such, rather than privileging the micro-scale per se, understanding WMAs can also notably aid our understanding of scalar configurations in larger conservation projects, and how conservation efforts and strategies are linked across scale. Scalar configurations are, in turn, dependent on fundamentally reorganizing borders in and around spaces earmarked for nature conservation.

BORDERING AND NATURE CONSERVATION

Our premise is that bordering is useful for scalar analyses even as it also holds promise for political ecology. Nature conservation is essentially a bordering process (Ramutsindela, 2014). By its very nature, it involves setting aside land, and this requires demarcation. Much demarcation culminates in erecting fences around national parks and nature reserves, although this does not happen everywhere. As such, a great deal can be learnt from incorporating notions of bordering into political-ecology analyses of scale. Indeed, the issue of conservation provides additional opportunities

for connecting ideas about bordering and scale construction to understanding of human–environment relations.

To begin, the matter of borders in relation to conservation areas cannot be isolated from wider (often geographical) literature on borders and bordering processes. Scholars today agree that borders must be understood as sets of social practices and discourses, whose symbolic and metaphoric meanings are best understood in the socio-political contexts in which they are located (Newman, 2006; Paasi, 2005, 2012). Borders are also conceptualized as institutions – meaning that they enforce rules of behaviour like other institutions, even as bordering modalities, policies and practices are institutionalized differently (Newman, 2006; Paasi, 2009, Brunet-Jailly, 2011).

Recently, scholars have shed new light on how bordering processes work. Thus, for example, in her work on cities as frontier zones, Sassen (2013: 67–8) argues that the border needs to be seen ‘as a mix of regimes with variable contents and locations’ and that ‘the geographic borderline is but one point in the chain’. Scott (2011: 134) considers bordering as ‘the everyday constructions of borders through ideology, discourses, political institutions, attitudes and agency’, while Johnson et al. (2011: 62) view borders as a ‘manifestation of wider production and reproduction of territoriality/territory, state power, and agency’. Paasi (2012: 2307) meanwhile describes the major task for scholars as understanding ‘the ever-more complex modalities of borders, the political and social functions of bordering practices, and their effects’. Müller (2013) adds that a distinction should be drawn between the border and the function of the border in order to understand how the location of the border matters even when technology has emancipated the border from narrow spatial settings.

Such research is important because it helps to expand material and discursive appreciation of the multifaceted and often ambiguous properties of borders. There is a complex process at work here, with ‘bordering’ multiplying the number, type and sites of borders beyond the ‘traditionally’ understood national borderline long used to ‘filter’ people and goods. Scholarship on borders and nature highlights the political, social and economic aspects of nature and how these manifest in protected areas, especially national parks (Bryan, 2012) and cross-border nature conservation projects (Fall, 2005; Ramutsindela, 2007; Büscher, 2013). Protected areas divide social groups into insiders and outsiders (Sletto, 2011) and can therefore be regarded as a site of bordering. This scholarship also reveals that nature and borders are linked in various ways, including through enacting bioregional politics. Here the properties of nature are ‘rediscovered’ to stake a claim on space and natural resources, as well as to push for political decentralization. Such politics is central to the bioregionalist movement that seeks to use nature as an instrument for deterritorialization: meaning a complete reorganization of the borders of the nation-state so as to redefine the relationships between humans and their biophysical environment, while promoting transnational conservation projects (Sale, 2000; Zogaris et al., 2009).

Discussion of state territorialization in political ecology illustrates the complexity of borders and bordering, especially as work on the politics of forests has shown. Peluso and Vandergeest (2011: 588) observe that ‘the nature of forests and their representation – as jungles or national or local territories – matters to understandings of political violence, nation-state building, and forestry alike’. Similarly, Bryant (1997) shows that the state played a central role in shaping forest use and management in Burma, and that

forestry policies engendered political conflicts. In both accounts, bordering involves state policies and instruments – including counterinsurgency in the case of Southeast Asia – that lead to enclosure of forests as well as the drawing of material and metaphorical borders between people and forests. Such a complex bordering process combines political processes and ecological logics to produce a richer political ecology of forests.

These diverse insights from border studies, as well as cognate work in political ecology on political forests (Vandergeest and Peluso, ch. 12 this volume), are relevant for understanding the ways in which the notion of the border is deployed in conservation, including how conservation spaces are demarcated and bordered at, but also across, different scales. The chapter next discusses the examples of WMAs and TFCAs in order to illustrate how scalar and border narratives are brought together to promote conservation goals.

WILDLIFE MANAGEMENT AREAS

Wildlife management areas (WMAs) are a spatial expression of the community-based conservation (CBC) paradigm that seeks to embrace ecosystems approaches and participatory ecosystem management (Berkes, 2004; Murphree, 2009). As the literature notes, CBC should exhibit a clear link between conservation and community interests (Western, 1994). Indeed, it is argued in this regard that the need to reassert the local is more urgent than ever today in the face of globalization and neoliberalism (Seixas and Davy, 2008).

The call for strong local and autonomous structures like this stems from the observation that principles of economic liberalization guide the ongoing transformation of community-based conservation initiatives in keeping with a new era of nature privatization (Fletcher et al., ch. 26 this volume). At the heart of this global privatization drive is the assumption that, only once the state has accepted that it needs to disengage from ownership of natural resources will conservation produce net economic gains for local communities (Schuerholz and Baldus, 2007). In practice, this means that wildlife resources in communal lands should be managed by non-state institutions – that is, neither local government nor national line agencies (Hitchcock, 2000; Parren and Sam, 2003).

Backed by globally powerful actors, it is not surprising that there has been a rush in recent times to transform WMA management with a host of new business-savvy institutions coming to the fore. Since the notion of the ‘local’ is so ambiguous to begin with, encompassing a shifting array of state and non-state actors who often have divergent interests, the question of who will wield ultimate power over WMAs has become central to a myriad of struggles for control (Schroeder, 1999; Poteete, 2009). While the specific actors involved in this ‘WMA rush’ vary across time and space, a common theme is deep-seated opposition to centralized and top-down state policies and governance in favour of ‘better’ locally based governance structures (Measham and Lumbasi, 2013).

At the same time, WMAs interestingly manifest the concepts of scale and bordering that are our focus. Three points are to be made here. First, WMAs bring to the fore the

'footprints' of politics habitually found outside formally protected areas, while also highlighting the significance of sub-national scales in the conduct of politics and wider contests over control of natural resources. Second, they provide a useful avenue through which we can grasp processes of bordering, de-bordering and re-bordering at a given scale and in light of a clearly defined conservation goal. While border scholars have generally settled the debate on these processes, exploring the ways in which they specifically unfold in conservation areas such as WMAs enhances our understanding of how borders and scales intersect in complex ways. This intersection holds much promise for political-ecology research. Third, WMAs seek to transcend the ideological border between people and protected areas often present in 'fortress conservation' approaches by taking conservation of flora and fauna into communal land areas.

Indeed, WMAs are premised on the inclusion of humans as an integral component in the landscape to be managed alongside the flora and fauna – a premise that runs counter to bordering processes in traditional conservation initiatives. They nevertheless produce new types of borders and governance structures, some of which contradict the very premises on which WMAs are founded. For example, Tanzania's National Land Policy of 1995 (URT, 1995) and the subsequent land acts passed in 1999 divided land throughout the country into reserved, village and general land (URT, 1999). This spatial patterning is a bordering process by which certain parcels of land are put aside and land-use options in them are thereafter severely restricted. Reserved land is, for instance, set aside for special purposes, including creation of national parks, game reserves and forest reserves. Under the new Tanzanian land laws, even village land can be used for any purpose at the discretion of the head of state with or without local consent (URT, 1995).

These laws gradually impacted on the ownership and control of natural resources (Shivji, 1998). More significantly, they led to the emergence of a supra-village structure necessary for facilitating the creation of WMAs, and a new authority structure that created the conditions for setting aside village land as well as placing that land beyond the control of the village council. Thus governance structures transcend village borders to bring large portions of communal land under common management. This does not erase village borders completely, as each village council remains responsible for setting aside village land as a contribution to a WMA. By exercising this responsibility, village councils become a *de facto* 'demarcation board' concerning communal land. The conservation borders they demarcate are then confirmed by government officials. Following such demarcation, successful applications for WMAs are gazetted and handed over to the respective community-based organization, which officially becomes the 'authorized association' replete with powers to negotiate and enter into contractual agreements with tourism investors in WMAs.

By operating at district and local government levels, these associations blur the borders between villages and state institutions while also reconstituting power at the local scale. They become a new locus of power as they are in competition with existing local structures. But the WMAs attract other actors as well. Thus national agencies such as the Wildlife Division, the Treasury and the Tanzania Wildlife Protection Fund garner a share of the benefits accruing from these conservation areas. Indeed, under 2007 regulations, the Wildlife Division controls all sources of revenue (including lucrative tourist entry fees) derived from WMAs. Such a thickening of this micro-scale

results in a high density of actors who not only have diverse backgrounds, but who also pursue different political, economic and ecological objectives through WMAs. Among these feature strategies that contest old-style government control over natural resources (Ramutsindela and Noe, 2012), even as such control is yet being asserted.

The borders of village land incorporated into WMAs are fuzzy mainly because they overlap with Game Controlled Areas (GCAs) that were created under colonial conservation laws – and affirmed by post-independence laws – to manage game outside protected areas. In 2008 there were more than 50 GCAs and 150 hunting blocks (Tanzania National Parks, 2008). GCAs and hunting blocks overlap with demarcated village lands and therefore multiply borders at the site of WMAs.

Nonetheless, WMAs are valuable for nature conservation in that they facilitate the creation of ecological and wildlife corridors that are key to bioregional planning. As Ali (2007) notes, community-based projects of this kind are used as building blocks to establish large conservation areas in most developing countries. Their critical role here is to serve as a mechanism that permits the ‘release’ of communal land for large-scale conservation projects including TFCAs. We see this process as de-bordering in that it reconfigures power and space in communal lands in order to enmesh such lands in WMAs, which in turn transfer the land to the nature conservation process replete with contractual arrangements and restrictions (Reid, 2001). Not surprisingly, external (international) actors play a pivotal role in this micro-scalar thickening as part of their wider interest in transfrontier conservation. These actors use political and economic power to gain access to WMAs. For example, in March 2006, the German Development Bank (Kreditanstalt fuer Wiederaufbau or KfW, 2006) provided funding of about EUR 5 million for the ‘protection’ of the 170 km long Selous–Niassa wildlife corridor in Tanzania and, like other donors, has sought to develop the corridor through communal WMAs. Here, as elsewhere, WMAs constitute a micro-scale while being part of a network of scales that are used to promote the wider establishment of bioregions. They are a contested terrain in which multiple processes and actors become engaged in conservation politics that seeks to rearrange existing local scales and borders in pursuit of a multi-scalar and often cross-border project. Such ‘rearrangement’ usually involves seriously disrupting existing border arrangements and local scalar dynamics.

TRANSFRONTIER CONSERVATION AREAS

Transfrontier conservation areas (TFCAs) build on other conservation initiatives such as national parks and WMAs through a process that produces unique scale and border dynamics. While TFCAs are justified on political, economic and ecological grounds (Duffy, 2006; Ramutsindela, 2007; Büscher, 2013), our focus here is on the ecological ones and the bordering processes they engender. To begin with, TFCAs are underpinned by certain conceptions of borders in which both their physical properties and political functions are fused into a conservation logic. In that logic, physical features such as fences marking international borders are to be removed in order to allow ‘natural borders’ – fondly referred to by conservationists as ‘nature’s design’ – to re-emerge. This process should be understood as de-bordering as it dislodges the

historical functions of state borders through the creation of transnational spaces of conservation. The creation of TFCAs has to make political sense as well – hence the notion of discredited colonial borders (especially in Africa) is invoked. Here, a narrative of colonial borders is used to deconstruct national territories while at the same time constructing a transnational landscape. TFCAs are thus sites of multiple borders that are constructed notably through narrative means to yield entirely new biophysical spaces.

A dominant view among ecologists promoting these areas is that human patterns of social and economic responsibility as well as organizational structures of power do not match the spatial, temporal and functional scale of ecological systems. This mismatch, they argue, points to the urgent need to realign conservation and management along similar scales (Brunckhorst, 2002). In short, TFCAs are rooted in bioregional planning, not existing national imaginaries. They represent new forms of conservation delineation that facilitates the protection and management of ecosystems that do not match the geographical configuration of political systems. Their main ecological function is to restore the integrity of ecological systems by designating these systems as cross-border conservation areas to be managed jointly by participating states.

As such, transfrontier conservation areas are quite revolutionary in nature – at least in some respects. On the one hand, the bioregional borders on which TFCAs are based are defined not by political jurisdictions but by the geographical distribution of ecological systems (Zbicz and Green, 1997; Brunckhorst, 2002). The latter does not neatly conform to the former. On the other hand, TFCAs provide the basis for a novel postcolonial critique about (and possible solution to) the absurd artificiality of political borders in Africa. Those colonial creations have long been criticized for their devastating social, political and economic effects on separated African communities, with recurrent political instability and warfare a common complaint (Adebajo, 2010). Now, added to this already ample list of problems is that of ecological disruption. But the creation of TFCAs promises to rectify a number of colonial-generated ills. They thus symbolically remove these ill-fated political borders by way of transcending them through new conservation spaces and governance arrangements focused on restoring ecological connectivity. At the same time, though, the TFCAs encourage novel sorts of political engagement and integration while seemingly promising to reunite human communities long separated by colonial borders. Here, new multi-scalar dynamics prompt re-bordering efforts on a scale not seen since the colonial era. Such efforts appear to hold great political and moral appeal in that they reject widely detested colonial border impositions even as they facilitate (cross-border) community reintegration along ethnic, faith or other lines. In short, conservation narratives present TFCAs (and their new bordering dynamics) as a logical solution to a historical – as well as ecological – problem.

Of course, the argument of some ecologists that TFCAs amount to a brave new borderless transnational space goes too far. Such TFCAs do have borders, and their creation also leads to new sets of borders. Like all other types of regions, the bioregions on which TFCAs are founded have spatial limits that are defined by criteria of one sort or another. The borders of TFCAs are defined in memoranda of understanding and treaties signed by participating states. These documents specify the area covered by a TFCAs, including portions of national territory that fall within such an area. In some

instances, the outer border of the TFCA is constituted by the borders of national parks that are often the cog of these cross-border conservation projects. In this respect, TFCAs rely on some old borders and as such are not drawn on a completely new slate.

TFCAs have created two main types of borders: one between nature and people and the other between people. No doubt the promise of a bioregional landscape inhabited by people and nonhuman species is a progressive one when assessed against conceptions of wilderness that earlier informed much nature conservation policies and practice. In reality, though, TFCAs take the form of megaparks in which the presence of people is considered a threat to ideals of nature conservation at a large scale. While wildlife roams freely in TFCAs, local residents are prohibited from doing the same. The second type of border emanating from TFCAs relates to new lines that separate people. At least in southern Africa, the plan is to turn TFCAs into tourist regions in which tourists would be able to move across state borders but remain inside the area of the TFCAs. In contrast, the plan does not cater for the free movement of local residents, some of whom live on or own land forming part of a TFCA. This way, borders open up for wildlife (and tourists tracking wildlife) while at the same time remaining closed for ordinary citizens. Such a dual function is indeed a common feature of bordering.

CONCLUSION

We began this chapter by asking two main questions that framed our analysis of the political ecology of nature conservation with reference to scale and border issues. The first one pertains to the theoretical starting-point from which we can link conservation projects, the literature on scale and bordering processes. In our view, establishing this link requires attention to existing but disparate conceptualizations of borders and scale, as well as how these manifest in nature conservation thinking and practice. When placed under such scrutiny, the notions and discourses of borders and scales used in and for conservation projects are mutually reinforcing. They help to rationalize why the creation of certain conservation spaces is necessary for both society and nature.

Such spaces should be understood in turn within the context of broader discussions on the political ecology of scale. Rangan and Kull (2009) have thus argued that political ecologists should pay attention to the production and use of scale to see how ecology becomes the object of politics, policy-making and political action. This can be achieved by understanding how the elements of what they call operation, observation and interpretation work together to produce scale as a configuration and a range of values. Whereas the operational scale is produced from a combination of time, space and power in order to shape social activity and biophysical processes into particular configurations, the observational scale is produced through measurement and control and is common in empirical studies focusing on, say, extent and measurement of ecological processes. For its part, the 'interpretative scale is ... produced as a configuration of sensibilities and perspectives ... that rework the measurements and boundaries used for observation into models and symbols that signify various ecological phenomena and entities as good, bad, useful, native, alien, benign, or invasive' (Rangan and Kull, 2009: 41).

As we have discussed, conservation groups, national governments, international agencies and scholars (among others) assert a range of values in the course of promoting and debating WMAs. Such values are bound up in the entwined processes of scalar thickening and bordering – these latter processes both reflect and assert diverse values about nature and humanity's place in it. Two aspects to scalar thickening come to the fore here. The first one underscores the importance of the micro-scale as a platform on which conservation policies embodied in WMAs are worked out even as control over natural resources is fiercely contested. These policies and contests articulate divergent values in the local context. Second, WMAs have become an entry point into large-scale conservation projects such as TFCAs in which more actors become involved and are drawn to the micro-scale in order to advance the multi-scalar cause that is the TFCAs. But that 'cause' is itself infused with values that connect ecological well-being to multi-scalar considerations.

All of this binds the fates of TFCAs and WMAs together through the process of scalar thickening. This concept captures and accounts for processes that rearrange various land units, producing the particular micro-scale necessary for launching conservation in the form of TFCAs at the supranational scale. Put differently, WMAs are instrumental to the construction of a new micro conservation scale while also acting as a vehicle for linking scales for the creation of TFCAs. This way the local and supranational are inseparable in the creation of cross-border nature conservation areas that 'disrespect' colonial-era political borders in favour of patterns of ecological connectivity. And, unlike with the concept of glocalization (Swyngedouw, 2004), the coalescence of the local and the supranational scales here does not involve jumping scales, as the state (national scale) is also involved in the creation of WMAs and TFCAs. The thickening of the local scale is ascribed to networks of conservation groups and state/non-state alliances that account for the crystallization of activities at this scale.

The second question we posed in this chapter is: what contribution can bordering make to our understanding of human–environment relations? Our view is that bordering is highly involved in nature conservation, where it effectively creates conditions for the emergence of new spaces by displacing existing (i.e. political) borders. Literature on scale stands to benefit from incorporating the grammar and conceptions of borders that are pertinent to conservation thinking and practices as these have a direct bearing on scale-producing processes.

In the case of WMAs, bordering engenders three main spatial outcomes: the shrinking of land that was available to support the livelihoods of usually poor residents; the emergence of newly designated ecological corridors that link hitherto fragmented habitats; and the consolidation of land into new conservation units that usually serve in turn as building blocks for TFCAs. Against the backdrop of global processes that involve the commodification of nature, including in areas of residual biodiversity (Fletcher et al., ch. 26 this volume), it is hardly surprising that the creation of new borders encasing WMAs represents new political and economic configurations of human–environment relations in which (poorer) locals often lose control over their natural resources, including land. Here, the work of scalar thickening and bordering is devoted to the antithesis of the 'liberation ecologies' (Peet and Watts, 1996) that many political ecologists advocate. In short, these are usually retrograde measures in the

broader struggle for an ‘ecologism of the poor’ (Martinez-Alier, 2004). Yet to fully understand those retrograde steps, let alone to hope to ever challenge them, scholars need to understand how bordering processes and multi-scalar thinking draw ecology ‘in’ even as they push locals ‘out’ of nature conservation areas. The political ecology of scale is thus inseparable from a political ecology of bordering – and both are essential to the business of resisting new assertions of power cloaked in the guise of conservation.

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37. The best of many worlds: methodological pluralism in political ecology

Amity Doolittle

Political ecology as a field of inquiry spans multiple disciplines while encompassing a plurality of methods. Lacking a uniform methodological approach, it is perhaps not surprising that the methods used by political ecologists lack comprehensive explication (but see Rocheleau, 1991, 1995, 2008; Doolittle, 2010). The goal here is to highlight some reasons why there is no uniform methodology even as I selectively explore the range of methods available to scholars. My primary aim in doing so is to show that the absence of a single methodology is no oversight or weakness. Rather, methodological freedom is critical to the growth of the political ecology community, ensuring that researchers eschew disciplinary-bound thinking in favor of a free choice as to which methods are most appropriate to the research questions at hand. This characteristic of the field is rarely highlighted yet is a powerful component of its appeal to students and scholars worldwide working in diverse research settings and academic cultures.

This chapter begins by outlining themes and issues central to political ecology, highlighting thereby key challenges that work against adoption of a single methodology. Then, selected methodological choices that political ecologists make are considered, notably via a table framing such choices in terms of qualitative, quantitative and participatory methods. Next, I illustrate the value of methodological pluralism through a case study from my current research project on the environmental history of a small northeastern US city (New Haven, Connecticut). Here, I demonstrate how data collected through diverse methods are integrated through careful analysis to produce an enriched account. Finally, the chapter concludes by reflecting on some issues that adhere to the pursuit of methodical pluralism.

INTELLECTUAL FREEDOM THROUGH METHODOLOGICAL PLURALISM

To explore the value of methodological pluralism, it is important first to summarize research themes and issues central to political ecology. Key themes thus include: integration of scales of analysis across time and space; importance of local histories and cultures; marginalization of people with a perceived legitimate claim to land and other natural resources; attention to informal and formal access rules; a focus on different levels of social relations and expressions of power; and the entanglement of local concerns with wider governance and market forces (Batterbury and Bebbington, 1999; McCarthy, 2002).

Meanwhile, even a cursory review shows how political ecologists investigate an array of topics reflecting one or more of these themes. For example, research addresses: seed networks and agrobiodiversity conservation (Zimmerer, 2003); the Wise Use movement in the US West (McCarthy, 2002); loss of soil fertility and growth in cotton markets in Mali (Benjaminsen et al., 2010); Tibetan pastoralists' vulnerability to climate change (Yeh et al., 2013); degradation of forest commons in Bangladesh (Rasul, 2007); non-governmental, market interventions and community forestry in Mexico (Klooster, 2006), to name just a few.

The researcher here faces many methodological and analytical choices. Still, some generalization is possible about the origins of political ecology and their implications for methodological choice. First, most political ecologists keenly promote progressive social and environmental change (Rocheleau, 2008). Hence there is a focus on policy implications and/or political engagement, ranging from input to official initiatives to support for anti-government movements (e.g. Walker, 2006; Escobar, 2008). Yet to acquire data that are useful to foster social and environmental change, ambiguities and contradictions found within local communities over natural resources management must be understood. This cannot happen through 'statistical analyses of localities never visited, aggregate quantitative portraits of regions, [and] drive-through "fieldwork"' (McCarthy, 2002: 1297). Rather, in-depth, nuanced data on social dynamics typically merit extended fieldwork using intensive case studies and ethnographic techniques (McCarthy, 2002). Second, unlike some other human-environment approaches (e.g. land-use science), political ecology tends to focus less on producing data that are scientifically falsifiable, even as it is less interested in demonstrating correlations between variables (Turner and Robbins, 2008). Instead, many political ecologists prefer to examine underlying social and political processes, as well as society-environment interactions that prompt landscape change. Hence they lean towards sources of qualitative data. Finally, rather than making claims about the state of the environment, political ecologists habitually make claims about the claims other actors make about the environment (Robbins, 2012). Here, analysis of actor narratives and discourses looms large. In sum, the research field seeks not only to describe that which is observable and measurable in the environment, but also to understand that which is not observable, namely, less visible social, political or economic structures and processes. Once again, this interest leads to calls for intensive research based on qualitative data sources.

Not everyone agrees with this qualitative turn. Some believe, for instance, that the 'ecology' in political ecology is thereby lost (Vayda and Walters, 1999; Walker, 2005). The remedy is that all political ecology research should begin by 'taking a natural science "problem" (such as soil fertility loss) as a starting point and linking it to broader debates on environment and development issues' (Benjaminsen et al., 2010: 654). This approach thus argues that the field must conduct realist investigations of environmental change before seeking to uncover place-based and culturally specific explanations of resource use.

Others refute this argument, suggesting that our understanding of ecology and the environment need not be limited to empirically measurable biophysical changes. Instead, political ecology 'rests on the dialectics of Nature and Society in which environment can be approached in a number of ways' (Watts and Peet, 2004: 17). Rather than focusing on discrete ecological events and/or specific measurements of

environmental change, the research field is important precisely because it seeks to analytically unpack the category of 'environment', thereby enabling its exploration in terms of how it is socially represented (Watts and Peet, 2004; Escobar, 1999).

This is a productive tension in political ecology. Scholars attempt to varying degrees to integrate realist investigation of the biophysical environment with a critical gaze linked to structural and post-structural thinking that targets less tangible social institutions, processes and mechanisms in order to understand how human agency reproduces and transforms social structures that in turn complexly shape biophysical landscapes (Jones, 2008). This tension produces valuable insights into environmental change, often challenging long-held orthodoxies (e.g. Fairhead and Leach, 1996), while highlighting how environmental burdens and benefits are not shared equally. As is regularly demonstrated, a persistent class of marginalized people is produced through non-incident and repetitive structures of power that denies equitable access to natural resources (Robbins, 2012). Political ecologists remain preoccupied with the roots and consequences of such marginalization.

This preoccupation prompts scholars to criss-cross traditional disciplinary and methodological boundaries but not without facing challenge. Rocheleau (2008: 723) illustrates one such challenge in reflecting on her own experiences, noting how 'Empirical, quantitative and ecological data was routinely purged as "unnecessary" or "excessive" from [her] own publications' at the behest of editors or referees. Conversely, on several occasions as a social scientist on interdisciplinary research teams I was warned that the lead researcher wanted 'only the numbers' and that I should 'avoid that fluffy [i.e. qualitative] stuff'. These stories highlight an undertone still sometimes present in academia: disciplinary boundaries must be maintained and information is only valid if presented 'correctly'. Such narrow-mindedness makes the political ecologist's task harder than it would otherwise be as she draws on multiple perspectives, including but not limited to a realist appreciation of biophysical and socio-economic phenomena. In this sense, the quest for methodological pluralism is simultaneously an effort to transform wider scientific thinking (Rocheleau, 1995). That it is increasingly accepted within the scientific community that complex systems are inherently unknowable such that objectivity is seen now to be a myth (hence neither obtainable nor desirable) suggests wider change is under way (Rogers et al., 2013).

Another challenge relates to integrating what sometimes seem to be incommensurable data. Indeed, mechanisms for integrating data that highlight the partial or multiple realities uncovered through qualitative research with the knowledge acquired through quantitative research have not been fully articulated. An essential first step must be commitment to the idea that there is equal validity in data acquired through replicable, controlled experiments and data collected through interviews or stories. Different approaches are needed to provide answers to different questions. Thus the core challenge for political ecologists is to stretch their analytical skills so as to combine data collected from multiple vantage points and varied levels of socio-economic organization with mixed methods to create valuable understandings of social and environmental systems that withstand scrutiny from different disciplinary and methodological perspectives.

METHODOLOGICAL CHOICES

Methodologies used in political ecology are in fact richly diverse, ranging from the material to the discursive, from empirical evidence about ecology to post-structural concerns with power, knowledge and discourse. Using multiple methodologies allows researchers to blend domains of 'structure and agency, of individual and institutional, of the macro and the micro' (Moran-Ellis et al., 2006: 52) – all aspects central to the field.

Methods available to political ecologists broadly fall into three categories: qualitative, quantitative and participatory. They are those commonly used in anthropology (Bernard, 2006; Denzin and Lincoln, 1994), human geography (Cloke et al., 2004) and sociology (Babbie, 1990; Yin, 1994; Whyte, 1984). In making choices here, three important considerations must be addressed: (1) what are the epistemological implications associated with commitment to a specific research question? (2) does the nature of a specific problem look different when viewed from different vantage points or levels of social organization? and (3) how can methodological pluralism be used to enrich and strengthen analysis? Let me explore each point in turn.

First, the epistemological space that many political ecologists seek to occupy is quite complicated. They usually recognize that biophysical realities require at least some quantitative measurement. Yet they remain aware that representations of those realities must be questioned in terms of the cultural context of their production, as well as the historical and political implications that flow from them (Escobar, 1999). Hence scholars often combine elements of realism and relativism in analyzing complex socio-ecological systems, and their choice of methods must reflect this situation (Jones, 2008). The latter must notably reflect consideration about whether the research question calls for a more realist perspective (with datasets that can be quantitatively verified and replicated) or a more relativist one (with data that are qualitatively derived to enable situated understanding). Whatever the choice, there are epistemological implications that need addressing.

A second consideration relates to the multiple forms and levels of social organization that are intertwined with human–environmental problems. Our understanding of social processes varies depending on the level at which they are explored. Thus a political ecologist must consider how the perceptions of an environmental issue will vary depending on differing vantage points, such as individual, household, community, region, nation or global. Furthermore, struggles over power and the ability to control resources vary according to criteria such as gender, class, ethnicity and religion. Yet it is not possible to include all varying vantage points and criteria in one study. In turn, deciding to focus on certain levels of social organization rather than on others holds clear methodological implications. Finally, environmental problems look different at varying points in time. A historical perspective sheds light on past events that contribute to shaping present-day socio-ecological dynamics, thereby providing a level of complexity in interpretation often not available with data collected as a single snapshot. In short, the levels of social organization, array of social variables and temporal aspects that research addresses necessarily have methodological implications.

Finally, scholars need to fully capitalize on the advantages of methodological pluralism in terms of enhancing research quality. For instance, one task is to weave together quantitative data, qualitative data and/or data acquired through participatory methods to triangulate findings. Triangulation refers to the claim that more can be known about a phenomenon when data generated by multiple methods and collected from diverse perspectives are brought together (Denzin and Lincoln, 1994). Methodological triangulation can shed light on different dimensions of a phenomenon, enabling a more detailed and rounded understanding of how rich and complex a socio-ecological system is (Yin, 1994). This approach usually requires a loosening of discipline-based research boundaries. Still, what this process looks like differs from project to project and therefore requires researchers to make conscious and deliberate choices in data collection and analysis, mindful of the opportunities and constraints associated with each choice.

In sum, the choice of methods in political ecology is an epistemological matter that enables richer data collection and analysis via methodological pluralism. Given the potentially wide choice here, scholars must recognize that the rules for such things as achieving research validity and reliability or sampling strategies may differ dramatically, depending on the methods, unit of analysis, spatial and temporal resolution (grain) and size and duration (extent) of study decided on. A researcher hence needs to be aware of these choices while being able to justify them.

The preceding assessed selected issues surrounding methodological choice in political ecology. Table 37.1 provides an overview of the main qualitative, quantitative and participatory methods available to the field.

Beyond showcasing a wealth of options, Table 37.1 raises at least five other issues concerning methodological choices to be noted here. One is financial. What are the implications in terms of research funding for different sets of methods? Do funding trends in academe favor certain sets over others, and how far has this changed over time? A second issue is social. How far is methodological choice influenced by researcher networks, training and time availability? How far does one's personality condition which options are picked? A third one is political. Who will have access to the data, how should they be shared and how do different sets of methods hold different political implications? The fourth issue is ethical. How do ethical issues and challenges vary across different methodological sets? Do certain combinations impose greater responsibilities than others? A final consideration is professional. How much is research driven by the desire to fill gaps in the literature? Does commitment to rapid professional advancement render certain techniques less desirable? Does commitment to participatory research allow for local concerns to change the direction of research? Should you return to research sites prior to publication to ask community members to check your findings and interpretations? These sorts of issues (and questions) complement the three main considerations noted above. In aggregate, they emphasize the sorts of responsibilities that go with methodological pluralism in political ecology and highlight the need for political ecologists to be self-conscious and deliberate in their selection of methods.

Table 37.1 Qualitative, quantitative and participatory methods in political ecology

Qualitative methods help explore social and political processes influencing environmental change. Research seeks to understand the perspectives of people closely tied to the landscape or other natural resources while addressing ‘why’ questions. They accommodate multiple realities and produce context-dependent findings.

Participant observation	Involves a researcher becoming immersed in people’s lives to develop a complex appreciation of social practice, including gauging whether people behave differently from what they claim. Deep engagement with a community provides insights into social context to enable rich analysis of context-dependent data.
Interviews	Allow the researcher to explore and probe a particular topic in depth, habitually from the perspective of a single person. These range from more structured events (e.g. questionnaires) to more open-ended affairs (e.g. life histories).
Oral histories	A form of interviews used to gather, preserve and interpret the voices and memories of people and communities about past events. Particularly valuable in situations where there is no written history or when that history is contested.
Stories	Stories are told to record and legitimize claims, justify actions and strategize over social negotiations. The research aim here is to listen to and collect stories not so much for their ‘truthfulness’ but for their intended purpose.
Discourse analysis	Following Foucault (1980), discourse analysis focuses on the practices (ideas, ideologies, attitudes, actions, terms of reference) that systematically make up how people talk about the world. Using written records (e.g. personal journals, institutional reports, newspapers) or the spoken word (e.g. speeches), discourse analysis allows the researcher to trace the genealogy of a narrative. Focuses on the interrelationship of knowledge and power.
Archival research	A means to gain insight into the historical context of natural resources use. Caution is needed since such data usually reflect an elite perspective: those people who write laws, reports, records or memoirs.
Focus groups	Focused and moderated discussion with a group of individuals to gain information about their views and experiences of a topic; invaluable for obtaining multiple perspectives on a topic through dialogue.
Photographs	Help to spot patterns of landscape change over space and time. Build richness in analysis by complementing other methods (e.g. observation).
Quantitative methods generate data on social dynamics (e.g. household economics, demographics) and biophysical realities (e.g. soil erosion, deforestation). Quantitative data are amenable to both statistical analysis and empirical replication. Good at addressing ‘what’ questions.	
Survey	Any measurement procedure that elicits systematic information from respondents. Typically focus on economic and demographic characteristics and people’s attitudes. Questions could include information on opinions, health, diet, migration patterns, household assets, and ownership of land or livestock. Most useful when seeking a large sample size, correlations between variables and generalizable claims.

Remote sensing and GIS	Remote sensing records reflectance of visual and nonvisual wavelengths of energy from the land; useful for assessing shifting patterns of land use over time and space along with predictive models. Geographic Information System (GIS) is a computer system designed to manage and analyze spatial data. Social data such as land-use practices, administrative units, demographics and more can be added as additional layers of information to understand spatial relations, patterns and trends across various datasets.
Human–environmental measurement	Measures diverse aspects at the human–environment interface including biophysical processes, agricultural productivity and resource extraction. Open to statistical analysis and useful for statements about cause and effect.
Time allocation	Measures the amount of time allocated to a particular activity offering insight about labor investment strategies as well as labor constraints. Invaluable in research on gender and intergenerational time budgets.
Participatory methods involve generating data (qualitative, quantitative) in collaboration with local people. Collaboration varies from involvement throughout a project (i.e. from defining the problem to interpreting the data) to collaboration oriented around data collection.	
Agricultural or resource use calendars	Describe key characteristics of agricultural/resource cycles from the land user’s perspective. Explores how household labor divisions (e.g. gender, age) connect to different agricultural/resource systems; provides a visualization of crop sequencing; helps assess household responses to seasonal shortages or adverse weather.
Transect walks	Illustrate the distribution of resources across the landscape, including its natural and cultural features. Variables include: soil type, elevation, forest type, property institutions, restricted access, and cultural spaces (e.g. sacred groves).
Sketch maps	Allow land users to illustrate different representations of the landscape in culturally specific ways. They can show traditional uses, highlight areas of conflict and counter official maps by legitimizing local claims.
Participatory GIS	Similar to sketch maps, but advanced technology enables more accurate spatial data.
Wealth ranking	Best done in collaboration with key community members who determine assets, security of access to assets and local measures of wealth. Particularly important when resources are more valuable than cash equivalents due to cultural importance.
Historical timelines	Used to record memorable environmental events in the community drawn from collective memories. These events can be usefully paired with events in the broader political economy and changes in the landscape.
Ranking and scoring techniques	Used to explore the perceptions and values systems among local people. Focus is less on researcher–subject interaction and more on interaction and analysis by and between local peoples. Useful to identify conflicts between subgroups over preferences for various crops, land uses or other measures of human–environmental well-being.

A NEW HAVEN CASE STUDY: WHAT LIES BEHIND THE FENCE?

I now turn to examples from my own research to illustrate some of the methods I use to gather data in keeping with methodological pluralism. Specifically, the discussion showcases how census assessment, observation, newspaper analysis, semi-structured interviews and archival research are combined to understand a place-based case study.

Like many studies of human–environment relations, this one begins with a boundary: a fence. I discovered the fence while trying to walk around the perimeter of Beaver Ponds Park in New Haven, Connecticut. A 7-foot-tall chain-linked fence, overgrown with vines, stretches along the park’s east side, effectively denying access to the community on that side (Newhallville). In contrast, the community on the west side (Beaver Hills) enjoys easy access via a well-signed footpath. What can we glean about the socio-economic context here? The fence of course tells us nothing about why it is there, what it means or what it has accomplished. Yet it is an expression of power. Hence understanding its origin will shed light on who has the power to determine park practice.

Beaver Ponds Park is a liminal zone on the edge of New Haven. It is a hybrid of a manicured city park and an overgrown wetland, a place where the dynamic interaction of cultural forces and ecological processes is witnessed. One could easily imagine the wetlands becoming overrun with vines and engulfed by young, early successional trees. One could also image the city bringing in more mowers, building more paths, pulling down vines and adding a water fountain or bench. Both processes are occurring in a slow push and pull between nature and city. This is in turn part of larger social processes: disagreements about whether the wetland should be left in its ‘natural’ state to attract birds and other wildlife or whether there should be better access to the park for everyone through careful management of the landscape. Investigating the New Haven archives, it is apparent that such questions have been swirling around this park at least since 1880. Before considering the historical context of this landscape, let me first glean insight from contemporary socio-demographic data, as well as observation, newspaper analysis and interviews.

Most New Havenites know the reputation of Newhallville. It is a low-income area where violent crime occurs more often than elsewhere. Typical headlines in the *New Haven Independent* read: ‘Pizza no-delivery map grows’ (due to violence, 1 May 2012); ‘Yale flees Newhallville after Prof’s mugging’ (the School of Architecture abandoned plans to build a new house there, 21 May 2013); ‘Man charged with shooting woman’ (32 bullets are shot into the air, wounding a female bystander and causing kids to duck for cover, 19 June 2014). Beaver Hills, in contrast, is known as an upscale, safe community where middle-income professionals reside. Data from the 2010 census enable us to verify such knowledge. Thus, for all indicators of health and well-being, Newhallville compares unfavorably with Beaver Hills: more unemployment (14.2 percent in Newhallville versus 7.3 percent in Beaver Hills), lower educational attainment (30 percent in Newhallville versus 14.5 percent in Beaver Hills with less than a high-school degree), lower annual income (\$43 782 in Newhallville versus \$65 216 in Beaver Hills), lower house values (\$170 100 in Newhallville versus \$257 600 in Beaver Hills), more households dependent on public assistance (10.1 percent in Newhallville versus 5.8 percent in Beaver Hills) and more households living

in poverty (19.5 percent in Newhallville versus 13.5 percent in Beaver Hills) (*American Community Survey*, 2011; *US Census*, 2010).

Building on these quantitative data, I interviewed 15 community leaders to gain a more detailed understanding of community dynamics. Interviewees were selected using non-probabilistic, purposive sampling and based on their roles and experiences within the communities. One clear theme emerged in interview. On the one side, Beaver Hills residents perceived themselves as citizens dedicated to preserving the wetlands while seeing the park as an important community asset – hence comments on the value of ‘virgin land in New Haven’ and the park’s ‘natural beauty’. On the other side, Newhallville residents displayed little interest in the park, being preoccupied with concerns about drugs and violence – hence a worry that parks foster ‘drug sales or ... illicit activity’ as well as being afraid to cross ‘gang lines’ running through the neighborhood.

Interviews enabled a complex story to emerge. Thus some residents recognized that the fence was an injustice, blocking access to low-income minorities. Yet, as self-styled park guardians, they were nonetheless reluctant to remove the fence. Interviewees felt this step would only encourage more dumping of trash on the Newhallville side (a perceived problem), and, by making the park more accessible, would further compromise the ecological integrity of the wetlands. As one Beaver Hills resident stated: ‘I’m a strong believer in the natural beauty of it [the park]. I want to have virgin land in New Haven.’

An online exchange underscored the different values placed on the park that had emerged in interview. Thus one person wrote that visiting it ‘leads to both inner tranquility and to philosophical [sic] musing’ (*New Haven Independent*, 2007). In reply, a Newhallville resident caustically observed that, while Beaver Hills residents supported a ‘damned ragedy [sic] park’, they would not support a group home for children in need in their community. The writer concluded that perhaps people would pay closer attention to the plight of children living in urban poverty if the kids ‘were something other than Black/Brown’ or if they were ‘classified as a tree or shrub’.

This exchange illustrates opposing sides of a wider debate in the USA encompassing privilege and poverty, environmental well-being and social justice. By combining data from newspapers, interviews and an online forum, I gained a clear, albeit simplified, picture: communities on either side of the park have very different socio-economic needs and levels of interest in it.

To enrich the analysis by placing the current situation in a longer trajectory of social relationships and landscape changes, I needed to investigate the history of Beaver Ponds Park. What is the historical context that shaped these contrasting socio-economic circumstances and attitudes? How long has there been a dispute over the park’s management? Archival data provided the answers here, enabling a detailed historical picture of both the socio-economic roots of these two park-side communities as well as the development of the park itself to emerge.

Newhallville was first settled in the mid-nineteenth century by large manufacturers, notably George T. Newhall’s Carriage Emporium and the Winchester Repeating Arms Company. Speculators bought plots of land and built boarding houses and multi-family homes for factory workers (*National Register of Historic Places*, 1987). Sanborn Fire Insurance maps from 1911 show the high density of long and narrow (‘shotgun’)

houses which developers used to maximize the number of houses per street. Reviewing the City Directories, I found that, between 1880 and 1920, approximately 65 to 75 percent of residents worked for the Winchester Repeating Arms Company. Even then, the community had a poor reputation. Thus, in 1937 Newhallville received a 'C' or Yellow rating by the Home Owners Loan Corporation (HOLC, 1937), warning banks not to provide mortgages there because 'Pride of ownership is decidedly spotty'. Nonetheless, it was a vibrant community. In the early 1900s, there were churches, tailors, dressmakers, butchers, general grocers, barbers and even music teachers. For residents whose sole mode of transport was by foot, such services needed to be close by (*National Register of Historic Places*, 1987). However, by the mid-twentieth century, most major manufacturers had gone, leaving many in Newhallville either unemployed or tenuously employed – a situation that persists today.

In contrast, Beaver Hills was 100 acres of farmland until 1908 when the Mead family decided to divide the land into 100 lots laid out evenly on a grid of new streets, thereby creating one of the first planned communities in the USA. Rules were quite strict. Buying a home required signing a contract specifying that houses be set back 30 feet from the curb, all plans needed approving by the company's architect, the minimum cost of the house had to be \$9000 (nearly \$230 000 in 2013 terms) and houses could only be single-family dwellings. The Beaver Hills Company Advertising Brochure (*Mead Family Papers*, 1908) summarized their community vision: a 'uniform building line' appealing to the eye and uniform behavior in which 'individuals will be given every reasonable freedom in securing a house to his own taste, [but] eccentricities and undesirable cheapness of design will be barred from the neighborhood'. This vision effectively signaled that only a 'better' class of person would be accepted. Not surprisingly, Beaver Hills with its large homes received a 'B' or Blue rating from the HOLC in 1937 with the note, 'If not for the fact that the area is entirely Jewish it would command a higher rating' (HOLC, 1937). Unlike Newhallville, Beaver Hills was (and is) entirely residential, with no shops or other amenities. Since most households in the latter were headed by relatively high-income professionals, it is likely that cars were more available for commuting, making it unnecessary for stores to be within walking distance.

Census data underscored this historical contrast. Thus contemporaneous population density numbers for the two communities underlined how differently they had developed. According to the 1950 Census (the first time population data in New Haven was available at the census tract level), the population density in Newhallville was 15 543 people per square mile and in Beaver Hills it was 7986 people per square mile – a significant difference.

Archival research also sheds light on the history of the park's management. In the late 1870s and early 1880s, sanitary reforms were sweeping the USA, propelled by the belief that wetlands and swamps produced 'miasma' and 'effluvia' that helped spread disease. William Brewer (1880: 68), lecturing on sanitary science at Yale University, wrote: 'The exhalations from swamps and vegetate material decaying in still and shallow water, are universally regarded as unwholesome to men of our race.' Most feared were yellow fever and cholera, outbreaks of which had claimed tens of thousands of lives around the country. The local outcome was legislation in New Haven in 1881 authorizing the city 'to take hold of land, bodies of water, and public property

and build on them, including flooding, draining, damming, etc. for sanitation purposes to protect the health of the city' (*City Year Book of New Haven*, 1881).

In the following decade, New Haven's newspapers frequently reported on Beaver Pond Park, sometimes several times a week. One journalist summarized the concerns thus:

death lurks in every breath. The bog ... is filthy and foul beyond descriptions ... A rich green scum, double distilled nastiness, covers the lifeless waters, and the tangled underbrush and rank weeds that infest the banks ... One can almost see the odors leaping heavenward and the air seems to be alive with noiseless, grinning demons of disease, hissing out volumes of hot, seething, death-dealing pestilences. It is a veritable 'Paradise Lost' ... (*The Palladium*, 1890)

Careful analysis of the Commissioner of Parks Annual Reports (*City Yearbook of New Haven*) shows that for nearly three decades the city sought to fill in the ponds. Yet, because the ponds lie on a substrate of constantly shifting and settling peat, these efforts were largely unsuccessful.

In the early 1900s, perceptions about the park shifted dramatically. The germ theory of disease was now widely accepted by the medical community such that concerns about 'effluvia' from marshes causing fevers were allayed. Instead, planners held a new view of the landscape influenced by the City Beautiful Movement then sweeping the USA, which advocated for, among other things, well-planned public parks as a cure for the moral corruption of the laboring immigrant classes then flocking to manufacturing jobs in urban centers (Taylor, 2009). Fredrick Law Olmsted, Jr (son of renowned landscape architect, Fredrick Law Olmsted, who designed Central Park in New York City) and architect Cass Gilbert were commissioned by New Haven to write an improvement plan for the city. This coincided with a radical shift in perceptions of Beaver Ponds Park. Commenting on plans for it, the Commissioner of Public Parks thus wrote in 1907 that Olmsted was 'specially impressed with its capacities for ornamental development and predicted that it would in the future become one of the most attractive portions of the New Haven park system' (*City Yearbook of New Haven*, 1907). With no change to the landscape but merely a shift in planners' perceptions, it was no longer a place where 'death lurks in every corner' but rather one where it was possible to envision 'picturesque lakes and islands with verdant uplands and wooded banks'; 'a chief ornament in New Haven's park system' (*City Yearbook of New Haven*, 1921).

These data thus provide rich social histories about the socio-economic development of the park-side communities and Beaver Ponds Park. They illuminate how changing local perceptions of the landscape and land management practices reflected broader national and even international trends in medical science and urban planning. Therefore, while the primary research goal was to understand the social and political processes occurring in these two New Haven communities, this also entailed situating these processes in broader intellectual movements sweeping the country. And here lies an important contribution of political ecology to our understanding of the dialectics between nature and society. By understanding the rich data of a single place, we can witness how the landscape is used to advance specific political goals, whether couched in terms of protecting the health of the community from 'deadly' swamps or protecting

the wetlands from the contaminating influences of people who would diminish its natural beauty.

This research differs from those political ecology studies focusing on a disempowered group fighting for access to natural resources controlled by powerful groups. Instead, the story here is that those without park access are more concerned with issues of poverty, drugs and violence. It would be easy to conclude that Newhallville residents have no interest in the environment. But again, the advantage of using multiple methods comes to the fore here; interview data provide a richness to the story absent from demographic data. Thus these residents express their interest in the environment not in terms of park access or wetlands protection, but rather in relation to the promotion of community gardens. Aided by a local non-profit organization, they are reclaiming derelict lots to build such gardens. In interviews with residents leading this work, the clear view emerged of the importance of the gardens in building community cohesion, inculcating a sense of community pride and in making streets safer for families. In short, they choose to focus energy on incorporating nature into their community life in efforts to build social cohesion, not on protecting some ideal of nature in the park. Such insights chime well with a longstanding tenet in political ecology: the desire to support the voices of less powerful people who often have a different view of how to manage the environment than that espoused by more powerful people.

CONCLUSION

In closing, I want to reflect on several issues encountered during the research described above, issues that are intrinsic to the question of pursuing methodological pluralism in political ecology.

Take the issue of using census data. Often, such data are aggregated at spatial scales too granular to provide insight. I obtained most data I wanted down to the census tract, but what differences might be seen if data were available at a finer resolution such as the census block? Tracking socio-economic changes over time through the census is another challenge. Boundaries of census tracts shift periodically even as census questions, particularly about race, change in light of broader societal trends. This makes comparisons across time difficult. For New Haven, the finest-grained social-economic data were found in City Directories in which the name of every homeowner and their occupation is listed. Combing through these directories is immensely time-consuming. Yet the results, such as the fact that 65 to 75 percent of Newhallville residents worked in the Winchester Repeating Arms Company between 1880 and 1920, can only be found in this manner. Still, such fine-grained data are not needed for all political ecology projects; different questions demand different data resolution strategies.

The issue of interview sampling also arose. In the end, interviews were conducted with 15 community leaders, purposively selected for their insights into community dynamics. Now the literature on how many interviews are necessary to establish validity generally relies on the concept of data saturation. The latter is achieved when

the researcher determines that no novel data or themes are emerging. One evidence-based study on how many interviews are needed to achieve saturation concluded that 12 interviews will suffice (Guest et al., 2006), although more complex research questions require more interviews. For my study, I found 15 interviews were sufficient, given the depth and complexity of the issues under investigation. Yet in anthropology a much deeper engagement including interviews with a wider range of community members might be expected, while other social scientists might demand more systematic data collection so as to capture a random sample of the entire community. Ultimately the choice of sampling technique depends heavily on the specific nature of the research question – although, even here, there can be debate as to how far to go until data saturation is reached. In short, and as with the use of census data noted above, these sorts of questions about interviewing reiterate the complexity involved in each methodological choice – something that is only compounded when methodological pluralism is the norm.

Finally, adopting a mixed-methods approach as I have done not only requires being adept in the practice of different methods; it also means being skilled at the ability to weave multiple forms of data into a tight, fine-grained yet contingent analysis to produce robust explanation(s) of the socio-ecological dynamics being investigated. This can be a daunting task, even as the benefits are clear. Divergent types of data can be used to support each other, to enrich our understanding with new perspectives and to provide a more complete view of the problem. Weaving empirical data together in this way allows political ecologists to embrace complexity and uncertainty in their analyses; it is the antithesis of scholarship that seeks to generalize through ecological laws or models of human behavior. In political ecology, the reductionist principles of the scientific method epitomized by the latter have never been appropriate. Instead, and in order to understand the dynamics of contemporary, complex, multi-scale, interdependent social-ecological systems, a much more holistic approach based on methodological pluralism is needed.

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38. Integrating politics and ecology through mixed methods

Matthew D. Turner

Methods used in political ecology are diverse, including: archival and survey research, participant observation, qualitative interviews, ethnography, soil analysis, remote sensing, Geographic Information System (GIS), plant vegetation transects and wildlife censuses. This diversity reflects in part the breadth and flexibility of the political-ecological framework with different studies classified as falling within the humanities, social sciences and, to a lesser extent, biophysical sciences. It also reflects the importance of mixed methods as an integral feature of the approach. Since its articulation as an approach in the 1980s (Blaikie, 1985; Blaikie and Brookfield, 1987), political ecologists routinely combine a mix of methods to address the questions they ask. This is one of the major strengths of the approach. Thus, while others in the broad environmental studies community continuously call for ‘interdisciplinarity’, political ecological studies represent often-unacknowledged answers to these calls.

This chapter focuses on one set of mixed methods: those that combine methods of the social sciences and humanities with those of geospatial technologies (GIS, remote sensing) and the environmental sciences. This set raises important epistemological questions and difficulties. As I discuss elsewhere (Turner, 2009), the diversity of questions asked by political ecologists demands a neutral rather than a celebratory perspective on combining these methods. Simply put, the benefits of mixing these methods depend on the questions one is asking. This chapter is written for political ecologists who, as a whole, are interested in environmental politics. First, I briefly describe common social scientific treatments of the biophysical environmental response to human activities. This is simply an introduction to common pitfalls surrounding claims made by social scientists about the social roots of environmental decline or improvement. The hope is that this will serve to illuminate the possible benefits of a mixed-methods approach that transcends the human–physical environmental divide. Second, I consider how such methodological integration provides new insights into environmental politics. Finally, I discuss the complexities of incorporating methods from the geospatial and environmental sciences in political-ecological work.

CONCEIVING ECOLOGICAL RESPONSE IN THE SOCIAL SCIENCES AND HUMANITIES

Human–environment relations, encompassing dynamic relationships among social, physical and ecological processes, are strongly shaped by historical and geographical context. Hence the nature of these inter-relationships is locally specific. The upsurge of

environmental scholarship since the mid-1960s was shaped by pre-existing divisions within the academy. The policing of boundaries between scholarship concerned with human society and that concerned with the nonhuman biophysical world has not only reinforced the society–nature duality but has led to a bifurcation within the broad human–environment literature. This is understandable and widely recognized (Bakker and Bridge, 2006). In general, social scientists focus on the institutions, politics and economics surrounding human consumption, land use and waste deposition, while biophysical environmental scientists focus on ecological responses to human activities. Both sets of literature engage with research areas outside of their purview only in a limited fashion.

Still, social scientists want their work to speak to environmental transformation, while biophysical scientists aim to make their work policy relevant. As a result, they both gesture toward relationships that they do not study. Problems can arise here. For example, the conclusions of environmental science research often refer to problems of human population growth, a tragedy of the commons, the lack of resilient institutions or the need for environmental education. For scholars in the social sciences and humanities, such statements are seen to be misleading or simply downright wrong since they suggest that these are causes of the particular biophysical process being studied when in fact the social etiology of most land-use change is complex, involving the interaction of diverse social factors, all requiring empirical study.

In the case of social science and humanities scholars, meanwhile, the bifurcation has led to an implicit reliance on very simple models of ecological response to human activities. The causal pathways traced by social scientists most often only go as far as tracing out changes in human use of the environment. Most do not even do that and are instead focused on institutional, economic and political environments surrounding resource use in order to assess constraints and incentives affecting human uses. Analogous to biophysical scientists' claims about policy, social scientists seek to relate the findings of their work to environmental change. To do so, they implicitly rely on simple conceptual models that infer environmental change from changes in human activities. One such model is that of the environment as reservoir or stock. Environmental damage is seen as linearly related to the magnitude of human activity, extraction, production or consumption. A second model is the tipping-bucket model, which provides environmental response as governed by a single threshold related to extraction pressure beyond which environmental damage occurs. These are actually more sophisticated models than the outdated third and fourth models, which portray the environment as either extremely brittle or infinitely resilient – that is, either where any human activity results in persistent environmental change or where human activities (no matter their level) have no measurable effect on the environment.

Yet all of these models represent gross simplifications of the biophysical environment for a number of reasons. First, it is difficult to defend the notion that there is a singular response of the environment to human perturbation – in fact there are multiple responses. Second, ecological response today is shaped in large part by the history of human uses of the environment (e.g. 'disturbance history'). Third, the responses of ecological parameters to human activities are often not linear, display multiple thresholds, and are contingent on other ecological parameters that are in a state of flux. Fourth, ecological response is often more related to how resources are extracted or land

used than simply to some measure of extractive magnitude. Fifth, the spatial patterning of ecological processes and human activities has emergent effects on ecological response (Peterson and Parker, 1998). In short, standard portrayals of environmental response by social scientists are not neutral; indeed, they can be quite misleading.

If bifurcation is the norm, where does the integration of such analyses occur? The traditional view was that resource managers or policy makers would perform this task due to their training and/or work requirements. This hope proved illusory, given the multiple demands and constraints placed on these actors. Instead, students of the environment today receive a broader training than before. Thus, fields such as land-change science, sustainability and resilience studies and landscape ecology offer fresh opportunities for integrated analysis in the environmental sciences. Similarly, fields such as environmental history, political ecology, human ecology and cultural ecology provide opportunities for integrated analysis in the social sciences and humanities.

Across such fields, integrated research requires combining methods from both the social and biophysical sciences, with the appropriate mix depending on the questions being asked. Numerous examples now exist of integrated analyses within and outside of political ecology. Next, I selectively reference this work to illustrate how such analyses, which necessarily involve mixed methods, illuminate a major substantive focus of political ecology: environmental politics.

A CASE FOR INTEGRATION

Given its embrace of the political economic, cultural and biophysical realms of human–environment relations (Blaikie, 1985; Blaikie and Brookfield, 1987), political ecology has always been a contested label for critical work at the human–environment interface. Since the 1990s, queries about whether either ‘politics’ or ‘ecology’ is sufficiently rigorously deployed in political ecology have recurred (e.g. Walker, 2005; Watts, 1990). Often such interventions were mainly questions about how politics or ecology ought to be understood in the field. Elsewhere, I argue that the degree to which one engages with ecological and political complexities (or, more exactly, how one conceptualizes ‘ecology’ or ‘politics’) depends largely on the questions being asked about particular political ecology ‘moments’ – that is, places and events at particular times (Turner, 2009). Here, though, I stress a different point: by reinforcing the separation between ecology and politics through invocations of epistemological purity, scholars may serve only to hide areas of inquiry that reveal what I call the ‘politics in ecology’ and the ‘ecology in politics’ – areas that the research field of political ecology is ideally positioned to interrogate.

Politics in Ecology

By ‘politics in ecology’, I mean the knowledge politics surrounding the physical world that underlies much debate and contestation in resource management and environmental policy. Such politics can have a major impact on how wider development projects go forward. For instance, international development initiatives in places where

land is deemed 'fragile' or 'unproductive' are likely to be more responsive to environmental concerns raised about their sustainability than in areas not thus described. Hence, how the response of the biophysical world to human actions is portrayed has decided material effects that generate winners and losers. Yet, in recognizing this situation, it is important not to reduce environmental truth-claims mechanically to being simply an outcome of the material interests of the claim-makers, with those claims made by the socially powerful automatically assigned 'truth' status. For one thing, physical realities do not allow just any narrative to circulate and convince different actors. For another thing, institutional contexts are often quite complex, with actors involved in the production and circulation of knowledge variously influenced by training and experience, ties to particular epistemic communities (notably their 'professions'), as well as an array of economic and noneconomic values.

In practice, therefore, the etiology of claims animating environmental politics can be subtle, reflecting what Forsyth (2011) calls 'situated' environmental science. The word situated here carries a double meaning. First, it refers to the position of the observer in relation to a particular environmental process. Take soil erosion, the movement of soil through wind or water. This phenomenon was a key focus in early political ecology (e.g. Blaikie, 1985; Blaikie and Brookfield, 1987), while being used by Forsyth more recently to illustrate the need to be explicit about situated environmental assessment (Forsyth and Walker, 2008; Forsyth, 2011). Soil lost from one part of the landscape is deposited elsewhere, not always with net negative effects. For instance, sometimes one farmer's loss is another one's gain. Assessments of land degradation are thus highly dependent on the observer's spatial position in the landscape as well as their own material relationship to the environment. Such differentiation is often embedded in the very definition of an environmental problem – and, indeed, whether it is even seen by different parties as a problem at all. Take land degradation, variously defined as the persistent, long-term or irreversible decline in the (biological or economic) productive potential of land (Middleton and Thomas, 1997; Reynolds and Smith, 2002). Yet the terms 'productive', 'irreversible', 'long-term' and 'persistent' are interpreted differently by different people – foresters, range ecologists, wildlife ecologists, farmers, fisher folk and herders who, in turn, could then characterize the same ecosystem as degraded or not (Reynolds and Smith, 2002).

Second, situated refers to the often unexamined assumptions about the biophysical environment (and its human uses) embedded within environmental assessment methodologies as they are circulated. As Science and Technology Studies (STS) scholars show, the assumptions, methods and packaging of scientific and other knowledge forms reflect the position of the 'scientist' within social networks (Braun and Castree, 1998; Demeritt, 1998; Forsyth, 2003; Harding, 1998; Latour, 1992, 1999). Individual advancement here is often strongly linked to the ability to create knowledge (e.g. theories, concepts) that can be generalized. Yet environmental processes are particularly shaped by often unique historical and geographical contexts, resulting in strong limits to generalizability. The upshot is that environmental knowledge is produced through the sometimes problematic circulation of knowledge gained through environmental response to an intervention in one context but thereafter applied uncritically and with little modification elsewhere.

Biophysical scientists are aware of the situated nature of their craft (e.g. Allen, 1998; Haila and Levins, 1992). Still, under the institutional and fiscal constraints of their work, methods developed in one place circulate and may be inappropriately applied in others, with negative effects on peoples and landscapes there. This is particularly true in situations where there is a paucity of prior environmental work, funding is poor, and actors who may object to 'off-the-shelf' environmental assessment are unaware or disempowered. Take the case of range ecology as practiced in dryland areas in the western USA and the West African Sahel. In both regions, range ecologists blame overgrazing. Yet in the former, the ranching community is sufficiently powerful to challenge assessments through political lobbying, funding of alternative studies and the hiring of experts, whereas in the latter, pastoralists are often unaware of such assessments that underlie the political and physical exclusions that damage their livelihoods.

In these circumstances, social scientists (including political ecologists) who seriously engage with the environmental sciences have questioned the assumptions underpinning scientific methodologies deployed in assessing the landscapes and local people's production practices where they work (even as they often proffer alternative interpretations). Such research includes that which is focused on the equilibrium assumptions that underlie much environmental science – assumptions that may not be valid (Sayre, 2008; Zimmerer, 1994), as well as more focused interventions in such areas as savanna fire ecology (Bassett and Zuéli, 2000; Laris, 2002), soil science (Duvall, 2011; Forsyth, 2011; Gray, 1999), fishery science (Acheson et al., 1998; St. Martin and Hall-Arber, 2008), systems modeling (Taylor, 2005), rangeland ecology (Behnke et al., 1993; Sullivan and Rohde, 2002; Turner, 1999a), wildlife ecology (Goldman, 2007; Home-wood and Rogers, 1991), wetland assessment (Robertson, 2006), and forestry (Cline-Cole, 1998; Langston, 1996; Lélé, 1994; Robbins, 1998).

Such literature is usually not path-breaking natural science – but then, that is not its purpose. Rather, it is work designed to correct scientific over-generalizations that are not only intellectually suspect but also applied in ignorance of local contexts. Instead, these critical scholars are motivated by their lived experience with particular people and landscapes to seek greater nuanced understanding of human–environment relations. Such work criss-crosses epistemic communities, often linking different scientific understandings of environmental dynamics with locally situated assessments. It may also illuminate false assumptions about production practices embedded in prevalent assessments even as it produces new biophysical data where such data are scarce. These engagements address the large gap that exists between the long-term work of trained scientists and the short-term technical work that underlies much development, conservation and policy action (particularly in the developing world). The result often shapes how human–environment relations in these places are viewed by an array of actors.

Mixed methods, involving the social sciences as well as some observation and measurement of biophysical processes, underlie most of this work. Indeed, the critique by these scholars of conventional assumptions and methods of environmental assessment stems notably from their own engagement with the physical landscape. Hence mixed methods have proven critical in illuminating the 'politics in ecology' in environmental politics.

Ecology in Politics

In a similar way, ecology has played a key role in the resource-related politics of interest to political ecologists, resulting in what I call 'ecology in politics'. While there is a general rejection of environmental determinist and environmental security perspectives within political ecology (Peluso and Watts, 2001), there is nonetheless a recognition that there are mutually constituted ideological, political and material roots to the conflicts surrounding natural resources (Turner, 2009). Two observations can be made in this regard.

First, ecology helps shape the competition for resources through its effect on the temporal and spatial distributions of 'resources' in particular. Thus early political ecology work recognized that the spatial and temporal patterning of the physical availability of resources contributed to differential access to them as well as to capital investments linked sometimes to resource enclosure (Blaikie, 1985; Watts, 1983). While not determining conflict, the spatial and temporal distribution of resources influences the nature of the conflicts over them and the institutions that develop to manage or resolve these conflicts. The spatial and temporal concentration of resources and the predictability of their availability (e.g. timber, water, wildlife, fish, non-timber forest products) influence the degree to which nonresident interests are attracted to extract or protect these resources and the extent to which institutions develop to regulate their use.

Certain ecologies attract outside 'investments' not only due to their attractiveness to international capital, but also because some outsiders seek to protect them from local use. This occurs in subtle forms when sustainable development initiatives seek to inhibit certain livelihood practices either by not supporting them or by promoting alternatives in ecologically important or fragile ecosystems. In effect, such approaches work to remove or limit the access of certain people to conservation landscapes. More obvious are outright enclosures that occur when an ecology's perceived 'attractiveness' in scientific and/or aesthetic terms leads to the state-sanctioned creation of protected areas composed of networks of core protected areas, buffer zones, corridors and so on that precipitate the displacement of people living there (e.g. Braun, 2002; Neumann, 1998; Vandergeest and Peluso, 2011). Today, this process can also prominently involve private capital, whether corporate or celebrity-led (Brockington, 2009). However this process occurs, these variegated portrayals of landscapes and ecosystems – that key into selected material properties of these environments – help to shape political dynamics while in turn having often quite profound material consequences for the environments themselves.

Second, writers describe how the effectiveness of different institutions will be influenced in part by the material characteristics of the resource in question (Bakker and Bridge, 2006; Mansfield, 2004; Robertson, 2006). Different features of the natural world are less amenable to enclosure to form private property than other features. For example, there are limits to the excludability of resources, such as the atmosphere, oceans, rivers, wildlife and fish populations. Moreover, as managers of fledgling ecosystem service markets have discovered, there are also material constraints to the simplification and unitization of ecological processes and properties that are required to construct these as fictitious commodities. More broadly, landscapes and the institutions

formed to protect or use them are co-constituted. Still, both have limits with respect to their malleability in general, let alone in terms of their responsiveness to the demands of the other (Cohen and Bakker, 2014; Prudham, 2014; Robertson, 2006).

Given these considerations of the ecology in politics, one could argue that an understanding of both the temporal and spatial patterns of the biophysical features of landscapes, attained through collaboration with other scholars or through their own fieldwork, increases political ecologists' understanding of how ecology can influence resource-related politics. Again, mixed methods that move beyond simply focusing only on either the social or the biophysical worlds can greatly assist scholars' interest in and understanding of issues of environmental governance and resource-related conflict.

SOCIAL RESEARCH AND BIOPHYSICAL MEASUREMENT

I suggested above that political ecology could be seen as an incubator for novel combinations of methods focused on human–environment relations. Here the focus is on how techniques to measure biophysical processes can inform analysis while inoculating social-oriented work against the sorts of problems noted above.

But why conduct biophysical measurement? As noted, knowledge about the spatial pattern and changes in certain biophysical parameters is important for understanding the social etiology of anthropogenic change (one focus of political ecology), but also for understanding the nature of environmental politics and natural resources struggles (another focus of the field). And, given nonlinearities in environmental response to human activities, the main interest is in cardinal rather than simply ordinal magnitudes. For example, we are interested not only that erosion has increased, but how much it has increased, given that this will affect the productivity of eroded fields as well as the potential of recovery from downstream impacts (e.g. siltation, nutrient loading). Ecological work is also often necessary because of the importance of historical and geographical context in shaping ecological response to human activities. Hence the need for measurement is clear. Where collaborations or parallel biophysical research is not possible or available, it thus falls to political ecologists to conduct the measurements themselves.

What follows is necessarily highly selective, given how specialized and numerous methods in the biophysical sciences are. General issues regarding integration of such work with social-science-oriented political ecology research are discussed in relation to two broad areas: geospatial technologies (remote sensing, GIS); and environmental science. Each is described separately, although issues facing the integration of each in political ecology show some similarities.

Geospatial Technologies

Both remote sensing and GIS techniques are used by political ecologists (e.g. Bassett and Zuéli, 2000; Butt, 2010; King, 2011; Robbins, 1998; Turner and Hiernaux, 2008) to address both the politics in ecology and the ecology in politics. Remote sensing techniques refer to the analysis of remotely sensed imagery (e.g. aerial photos, satellite imagery) to extract characteristics of landscapes (such as forested area, cropped fields,

plant phenology), whereas GIS techniques refer to the use of geographical information science to perform spatial analysis relating different types of geo-referenced data (some derived from remote sensing) to each other. In relation to political ecology, remote-sensing technology is useful for documenting measurable changes in the physical properties of soil, water quality (turbidity), vegetation cover, and sometimes species composition of vegetation. GIS technologies, meanwhile, help clarify and measure the spatial relationships among different landscape features, whether understood through data drawn from remote sensing, census or fieldwork. The use of both these techniques is shared across a number of human–environment fields, including political ecology, land-change science and landscape ecology (Turner and Robbins, 2008). Still, when compared to political ecology, the centrality of geospatial analysis is much higher for land-change science given its greater emphasis on anthropogenic landscape transformation but less attention to the complex social etiology affecting human environmental uses (Munroe et al., 2014; Turner and Robbins, 2008). The focus on questions about spatiotemporal patterns of ecological features and processes becomes even more important in landscape ecology.

For most political ecologists, then, the techniques of GIS and remote sensing are not central to their research but serve as a supplement to other methods in four (non-mutually exclusive) ways: (1) use of remotely sensed data as evidence for environmental change; (2) use of such data to increase the spatial and/or temporal breadth of their own often place-based analyses; (3) use of remotely sensed data and/or GIS to document spatial patterns of land-use or environmental change; and (4) use of GIS to display the implications of alternative spatially informed knowledge with regard to resources, ecology and territorial rights (e.g. counter-mapping). The benefits of these are briefly discussed along with some cautionary observations.

Remote sensing has revolutionized how landscape transformation is understood. It has been pivotal in broadening the spatial scales at which environmental change is assessed, thereby providing data that illuminate varying trajectories of change at different scales. In the process, these new data have also changed how we think about environmental change and variability. A prime example is that of ‘desertification’ in semi-arid areas lying south of the Sahara Desert. For many years, ecologists and geomorphologists had blamed human practices for this process in an era presumably not marked by significant changes in rainfall. Data were drawn from selected sites monitored over time as well as ‘snapshots’ provided through aerial photography. Yet these localized observations were subsequently regionalized, notably via grandiose references to the Sahara Desert ‘marching’ south (Hellden, 1991; Olsson, 1983; Swift, 1996). Such narratives could only be sustained because of our limited ability to monitor broad areas. Remote sensing changed all that. Its power was revealed by Tucker et al. (1991), who were able to conclusively show wide year-to-year oscillations along the desert edge that were largely driven by fluctuations of rainfall (and hence refuting the prior narrative of the ‘marching desert’).

Still, one should be cognizant of the spatial scales being adopted when using remotely sensed imagery which may or may not be appropriate for the particular socioecological relationship of concern. Moreover, just as the watershed in watershed management can naturalize and lead to an overemphasis on a particular spatial scale in environmental governance (Cohen and Bakker, 2014), the remotely sensed image can

do the same thing with respect to human–environment research, with important ‘downstream’ effects on governance as well. Thus scholars need to be clear about the type of information and its resolution that they seek to extract from remotely-sensed data. And, changes to their study design in order to fit the resolution and size of remotely sensed data – while not uncommon – must be done deliberately with a clear sense of what might be both gained and lost through such methodological rescaling.

Both a power and weakness of remotely sensed data is that it is generally gathered without researcher interest or involvement. The power associated with this is that data are gathered over time that can be used to look back in time by a researcher. This temporal depth has proven to be very useful for monitoring environmental change over time. Such depth is indeed a boon for research, enabling scholars to gain greater precision in their measurement of biophysical change over both short and long time periods. Still, one needs to be careful about the stories that these snapshots in time produce. Consider again the saga of the Saharan Desert once deemed to be ‘marching’ south. That belief had been sustained in the Sahelian region in part by the timing of the two regional aerial surveys – one conducted in the early 1950s, the other in the mid-1970s. The former was a period of relatively high rainfall, whereas the latter was a time marked by drought. Not surprisingly, therefore, vegetative cover and landscape quality were seen to have seriously declined. Since two points (in time) form a line, the decline appeared to be steady. Hence the temporal aspect to the aerial photographic surveys produced a narrative structure in the remotely sensed data themselves.

Even today, though, political ecologists need to be mindful of potential drawbacks of relying solely on remotely sensed data to look into the past. True, today’s satellites collect data at much more regular and frequent intervals than aerial photography of the past, meaning that the sheer density of data makes them less prone to have narrative structure. Still, high-resolution data for a particular place may be available for certain dates only, thereby creating temporal irregularities. Moreover, different sensors have blind spots seasonally, similarly puncturing smooth data flows. Such possible limitations need to be accounted for in using remotely sensed data to estimate change. Indeed, ancillary data (rainfall, land use), which provide information about more frequent, episodic changes, should be consulted in conjunction with remotely-sensed data. Moreover, using data from multiple points (>2 points) in time is *de rigueur*, ideally corresponding to changes in human land use identified by people in interviews.

The nature of the technology has shaped the research process in other ways that scholars need to be mindful of. Despite widespread availability of sensors outside of the visual spectrum, remote sensing has worked to re-emphasize the visual in environmental assessment. Arguably this has led to an emphasis on certain types of environmental change, especially deforestation. Although deforestation is certainly a major problem, the fact that the loss of forest cover is easily revealed on a remotely sensed image has contributed to an emphasis on deforestation research (often at the expense of research on other environmental problems), while somewhat reworking even how deforestation is conceived of as a problem. Thus, rather than tracing out the decline of the productive potential of land or of broader species composition shifts in plant or wildlife communities associated with deforestation over time, deforestation is

implicitly treated as a short-term process of tree removal – the endpoint of environmental change being the deforested patch. Much less work is consequently done on post-cut trajectories in soils and vegetation, even though these processes have important implications for more persistent change.

Of the two geospatial technologies, GIS has so far been taken up less regularly by political ecologists than remote sensing. This is perhaps surprising, given that GIS is a powerful tool for exploring the spatial relationships among features of the biophysical landscape and human land use/settlement – something that ought to appeal strongly to scholars in the field. Indeed, that appeal was clearly foretold in the landmark political ecology text: Blaikie's *The Political Economy of Soil Erosion in Developing Countries*, and specifically a complex figure contained in that book (Blaikie, 1985: 108–9). In that figure, Blaikie traces how different assets and resource-access situations experienced by households affect the pattern and intensity of land use, which, depending on how subject to erosion the soil is, will lead to a decline in both biological productivity and the natural assets available to the farmer. Today, that figure looks strikingly like a structural diagram of a GIS. In fact, Blaikie (*ibid.*: 111) notes that the framework was operationalized into a computer simulation – a simulation that, if tied more explicitly to landscape, would resemble contemporary GIS modeling. Here, then, was an early appreciation of the utility of a systems perspective based on tying biophysical and political-economic systems to landscape – something resonant in GIS today.

A unified systems view of human–environment relations has, if it ever existed in political ecology, been replaced by more fragmented ontological and epistemological views of human–environment relations. As such, GIS tends to be used only to understand a circumscribed set of relations or ‘intersecting processes’ (Garcia-Barrios and Taylor, 1995) within broader ‘chains of causation’, with a key focus being to connect human land uses to landscape features of variable ecological sensitivity and response (e.g. Turner and Hiernaux, 2008; Butt, 2010). Unlike some work in human ecology (e.g. Moran, 1990), political ecologists generally do not seek to incorporate the broad structures and processes shaping the distribution of resource access into systems models like GIS. True, these phenomena could be incorporated as constraints or boundary conditions. Yet political ecologists often examine contingent social power relations (and associated fluctuating asset distributions) that are seen to be in flux (Taylor, 1992). Moreover, the spatial delimitation of such relations is difficult. After all, how can you meaningfully create clear spatial boundaries around the reach of authority, knowledge or social interaction? Indeed, such relations are more associated with fluid networks among people than with well-defined territories (Rocheleau and Roth, 2007).

One area in which GIS is deployed in the field relates to the presentation of alternative geographical knowledge systems in the form of maps. Here the political ecology of counter-mapping intersects with critical and participatory GIS literatures that explore the politics surrounding different spatial representations and concepts (Harris and Hazen, 2006; Peluso, 1995). Such work is often designed to help indigenous groups make ancestral domain claims and the like, and hence resonates with the field's social justice agenda. That said, a GIS analyst would undoubtedly categorize such efforts in methodological terms as cartography rather than GIS *per se*.

Overall, the use of geospatial technologies has so far been uneven in political ecology, despite the seeming benefits, and perhaps reflecting wider epistemological debates and the qualitative methods predispositions in the field.

Environmental Science

Measurement of biophysical phenomena drawing on environmental science can also provide important insights for political ecology, revealing both the 'politics in ecology' and the 'ecology in politics' dimensions discussed earlier. As with the geospatial technologies, environmental science techniques bring with them similar scaling constraints (temporal and spatial) to integration (epistemology). These need to be seriously considered when seeking to tie biophysical measurements to social change and politics. Moreover, there are divergences and disjunctures between biophysical and social processes (ontology) that can surface when measurement occurs.

Let me explore these ideas through a discussion of my early work on grazing in the Sahel region of West Africa. The Sahelian grazing literature has long been dominated by short-term, visual assessments of range conditions that were thereafter used to prescribe changes in stocking levels (Turner, 1993). The politics in this ecology was that destocking of pastoralists' herds through top-down policy was the only management response to poor range conditions of unknown persistence and cause (e.g. is it grazing, farming or climate?). My work focused on the underlying political-economic influences on livestock population size and mobility within a region bordering an important floodplain in central Mali. Analogous to the figure in Blaikie (1985) discussed above, this analysis tackled the social etiology of the spatiotemporal distribution of grazing pressure across the landscape. I found that the combination of increased retention of livestock in the regional economy, government regulation of herd movements and labor divestment from herding had led to an expansion of grazing pressure at key places along the pastoralists' transhumance circuit. Left at that, my work simply added to narratives of decline then popular, albeit deflecting the social roots of environmental degradation from over-population, ignorance and open resource access to shifts in access to resources within local/regional political economies (Turner, 1993, 1999b).

However, this narrative was significantly destabilized through my own involvement in biophysical measurement drawing on environmental science methods. I performed transect, enclosure and clipping studies in the area used by the pastoral clan with whom I was working. These are standard techniques in range ecology studies (see Holechek et al., 2004 for an introduction to these techniques), which had been performed in a handful of previous studies in the region but with less understanding of local livestock grazing practices. Here the integration of methods took shape in my fieldwork. For example, transects were laid out in relation to historical gradients in grazing pressure. Similarly, clipping studies were performed during the season that waves of herds moved through the area. These spatial and temporal aspects to biophysical measurement were shaped by my intimate knowledge of the land-use history of the area developed through long-term ethnographic engagement with my host pastoral clan.

The result was a new understanding of grazing ecology that sharply questioned prior policy and scholarly framings. And that new understanding could only have emerged

from such an integrated research process. My research revealed a complex picture. It found that, in general, grazing had a relatively small effect on rangeland productivity compared to year-to-year fluctuations in rainfall. At the same time, species composition of rangeland vegetation was strongly influenced by long-term gradients in grazing pressure affecting nutrient availability in soils (Turner, 1998, 1999a). The temporal aspect was also found to be important. For example, same-season effects of grazing were complex, with short bouts of grazing during the rainy season actually increasing same-season production but persistent grazing during the rainy season significantly lowering production (Hiernaux and Turner, 1996). Overall, these findings strongly questioned the equilibrium assumptions underpinning prior work in the region, while directing attention to the importance of livestock mobility, particularly during the rainy season, for the maintenance of rangeland productivity. In this way, I demonstrated ecology in the politics surrounding livestock husbandry. Hence the need to move livestock during the rainy season is not an example of 'primitive' pastoral behavior, but an ecologically rational measure by knowledgeable herders. As such, these movements of people and animals (and problems that they may cause for farmers notably in terms of crop damage) need a multi-scale and complex response not reducible to local or national action. In turn, this merited new co-management approaches based on a new state–local politics.

While brief, this discussion drawing on my early research helps to illustrate how the combination of insights gained from both longstanding local social science research (i.e. ethnography) and biophysical measurement drawing on ecological science techniques is more than the sum of its parts: it leads to new integrated knowledge that enriches political-ecology understanding in a manner not otherwise possible.

CONCLUSION

A range of prior work in political ecology has shown the promise of incorporating various forms of biophysical measurement (geospatial technologies, environmental scientific techniques) into political-ecological analysis. To understand environmental politics, there is a need to grasp both the politics in ecology and the ecology in politics – something to which this field is well placed to contribute. Measuring biophysical features of the landscapes within which scholars work can simultaneously reveal disjuncture and synergy among biophysical and social processes, including emergent political and ecological effects that would remain hidden without such efforts. The promise of such integrative work is hence great.

Still, this chapter does not call for the wholesale incorporation of biophysical measurement into political ecology. Many questions posed by political ecologists do not need it. Further, even where needed, the incorporation of geospatial or environmental scientific techniques into political-ecological studies must be undertaken with great caution. After all, such measurement is never neutral: these techniques place their own demands on the spatial and temporal scaling of inquiry. As in all mixed-methods work, therefore, researchers should deliberate carefully about which methods to combine in order to address the questions that they wish to ask.

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PART VI

CONNECTIONS AND TRANSFORMATIONS

39. Globalizing French *écologie politique*: a political necessity

*Denis Chartier and Estienne Rodary**

Political ecology has become established in English-speaking countries notably through academic institutionalization (particularly in the USA), whereas French *écologie politique*, which derives from a longstanding culture of economic, social and political criticism of ecological issues in France, is in contrast structured more around a partisan institutionalization. These differences are coming sharply into focus today, as discussions between epistemic communities intensify. This is especially so in contexts where the domination or global ‘march’ of English amplifies the tensions between French *écologie politique* and English-speaking political ecology. The various theatres in which these problematic encounters occur are both widely used and criticized. They are notably used by scientific ‘knowledge brokers’ who turn their linguistic and networking skills into a product. They are criticized by some English-speaking writers, for instance, when the latter protest against the partial blindness induced by domination (Kim et al., 2012), and by some French writers when, in a process that combines ‘provincialization’ and ‘heritagization’ (discussed further below), they attempt to reinvent an idiosyncratic environmental tradition that, at the end of the day, is more about reacting against globalization than it is concerned with achieving any major social scientific progress.

This chapter examines the interplay of these sorts of language-related ‘geographical’ interventions in relation to the trajectories of various (nationally oriented) political ecologies. It argues that, while the very existence of a debate on the globalization of political ecologies is evidence of the obsolescence of these nationally centred intellectual traditions, the network-building processes currently under way are nonetheless shot through with both unjustifiable hierarchies and irrepressible diversity – something that must be accounted for in critical social scientific enquiry. Indeed, political ecology and *écologie politique* must each think about themselves as an intellectual community in the same manner that they think about their subject-matter: politically. Today, this must involve systematic acceptance of the need to engage with the question of globalization; this is the only way of remaining relevant when it comes to criticizing configurations and dynamics that are themselves global, even when they involve identifying and defending diversity and localization.

The challenge here is great. Thus political ecologies need to take into account a myriad of individuals and places around the world (including all the complexities and differences involved therein: identity, scale, perceptions etc.) at the same time as considering the earth in its fullness – in short, promoting a critical social science capable of incorporating all the asperities (or ‘roughness’, even ‘unruliness’) of a world filled with jostling humans and other living beings. Such work also needs to be capable of conceptualizing its own stakeholders (i.e. those who produce and receive this

knowledge) within a global and diverse dialectic, in particular by examining the means and form of the production of narratives. Without this combination of thinking centred on multi-scale globalization dynamics and a capacity for reflexivity, French *écologie politique* (like other forms of political ecology) runs the risk of remaining shackled by divisions and hierarchies that it can neither apprehend nor control.

FRENCH *ÉCOLOGIE POLITIQUE*: IDIOSYNCRASIES AND PROVINCIALIZATION

French research is currently going global, as is the case with research in many other countries around the world. This process has had its share of clashes and frictions arising from local resistance (whether overt or covert) to this fairly abrupt change of scale and ethos. This is particularly so in the social sciences, where France has long maintained a certain form of idiosyncrasy or ‘exceptionalism’ underpinned by two elements. First, there is a general weakness in foreign-language training among French scholars that places them in a weak position as soon as they leave a French-speaking environment. This situation is quite visible in Europe (e.g. EF, 2013), but also in former colonies in which use of two or three languages is the norm (as a West African proverb puts it, ‘he [who] only speaks one language [is] just like the cows’). Second, the tendency toward idiosyncrasy has been reinforced because the French social sciences have a certain degree of international renown as the land of theorizing (e.g. Foucault, Deleuze, Derrida) – which, in a telling sign of the times, is now known (even in French-language texts) as ‘French theory’ (Cusset, 2005). Specific to the field of *écologie politique*, this idiosyncrasy has been expressed through a fully fledged tradition of French thinkers who have developed new theories about the intersection of the environment with politics.

For reasons made clear below, addressing this situation in this chapter does not involve expanding on the intellectual particularities (often linked to theorizing by its pioneers) of French-speaking *écologie politique* or reviewing its various components. Indeed, a fair number of publications have already done so (e.g. Jacob, 1995; Whiteside, 2002; Chartier and Deléage, 2010; Mouhot and Mathis, 2012; Mathis and Mouhot, 2013; Flipo, 2013). However, it is important to take a moment to clarify here what could otherwise be a source of misunderstanding: it is indeed possible to compare English-language political ecology and French *écologie politique*, even though the former is often labelled ‘scientific’ whereas the latter is deemed to be ‘militant’, and even though they come from different disciplinary traditions. Thus, in North America, there are some political-ecology authors who are rarely (if ever) drawn on by academics in this field – presumably because they are seen as being too militant (like Murray Bookchin, for example). Yet the affinities between the research undertaken by the latter and work done by the militants or architects of French *écologie politique* should be noted. Thus, and until recently, *écologie politique* was developed by ‘French-style intellectuals’ (Juilliard and Winock, 1996; Winock, 1997), who alternated between a scientific and a militant posture, as well as between broad theorizing and highly specific political engagement. These intellectuals (such as André Gorz, Bernard Charbonneau or Alain Lipietz) often lurk beyond the borders of academia in a kind of

'open space'. At the same time, and despite a strong trend towards cross-disciplinarity within the community of practice of *écologie politique*, this field has mainly structured itself (based on the dominant disciplines of the archetypal French intellectual) around philosophy and sociology, whereas English-speaking political ecology has been mainly centred on geography and anthropology (and to a lesser extent sociology). Such a divergence suggests that differences between the two fields are more a matter of interdisciplinary communication than one of language or academic 'tradition'. While we are mindful of these differences, we nonetheless assert that these two communities of practice can be compared. Hence all political ecologies are indeed talking about similar things, cross-comparison is justified, and investigating the existing links between such practice and different traditions of political ecology is feasible.

With these points in mind, the main focus of this chapter is on the specific process of provincialization of French *écologie politique* in a wider world in which political ecology, as established in the specific cultural context of the English-speaking university environment, is imposing itself as *the* community of practice in terms of it being *the* scientific and institutional benchmark worldwide (Robbins, 2012). The main reason for this process of provincialization is that the membrane that formerly isolated French-speaking research from non-French-speaking research is leaking like a sieve. It thus no longer nurtures the distinctiveness (and yes, indeed, often ignorance) that formerly made it possible to move forward in terms of research that paid no heed to the outside world and that, perhaps sometimes, enabled it to produce original science (as argued, for example, by Whiteside, 2002). And 'perhaps' here because the issue of whether any originality is the result of distinctiveness (i.e. distinct and often isolated contexts of scientific production in terms of networks and languages) is not yet fully resolved – even though this argument is made by many protagonists in France who insist that French should be maintained at all costs as a major scientific language in the world. In any case, the degree to which this membrane is now porous, and thus is constantly calling into question the fundamentally 'distinctive' nature of French *écologie politique*, has had three major consequences: a form of 'provincialization' expressed via scientific knowledge brokerage; an internalization of a provincialist position; and a process involving the 'heritagization' of French environmental 'protection'. The chapter next examines each of these in turn.

Scientific Knowledge Brokerage

The first consequence of the increasingly porous nature of this membrane is the emergence of a new category of researcher whose recognition by French academe is related mainly to their ability to read and write in English (and/or other languages), establish trans-linguistic networks (for instance, through regular visits to North American universities and participation at international conferences), and to then integrate the expertise derived from these activities into French teaching and research. These knowledge brokers, cousins of development brokers (Bierschenk et al., 2000), exploit both the fact that the membrane still exists and the growing prevalence of holes in it to benefit their enterprise. This is not, strictly speaking, a new phenomenon, but it is expanding as the porosity increases.

When it comes to *écologie politique*, such brokerage is reflected in vigorous dissemination of the term ‘political ecology’ – written in English even when research is presented in the French language – to define the subject-matter of what these French researchers are investigating (e.g. Benjaminsen and Svarstad, 2009; Castro-Larrañaga, 2009; Gautier and Benjaminsen, 2012). This move is clearly designed to replace the French term *écologie politique* – although the latter has been widely accepted since the 1970s. The argument in defence of this change in terminology – which holds that ‘political ecology’ is an established science whereas *écologie politique* is more about political militancy – is not without merit. In France, it is true that the notion of *écologie politique* makes reference first and foremost to streams of thought and politics that aim to incorporate ecological issues into political, economic and social action. Until recently, it was backed mainly by the Green Party (Les Verts, which became Europe-Écologie les Verts in 2010) and environmental NGOs such as Friends of the Earth. As such (and as noted above), some ambiguity persists about the positioning (scientific or militant?) of researchers keen to work in *écologie politique* (even when the researchers in question are far removed from the militant sphere).

And yet, while *écologie politique* is certainly about action-focused thinking, considering notably how to transition towards a world that is fairer both ecologically and socially, it nonetheless maintains a separation between ‘political’ and ‘scientific’ production. But, in the end, the relative proximity of the political and scientific spheres matters little here as the key issue lies elsewhere. Specifically, that issue concerns the way in which some scholars have made a complete break with the past (and hence the French status quo) to adopt a new position linked firmly to external knowledge and networks. Thus, for example, organizing workshops about political ecology (such as those that gave rise to Gautier and Benjaminsen, 2012) or even publishing in French an anthology of political-ecology research that is almost exclusively by English-speaking authors (and with the only French speaker being Bruno Latour, who publishes widely in English and is far more active in the English-speaking world than in France; see Hache, 2012).

Of course this process is notably about contemporary French academic politics. Thus, for many individuals, such action is an attempt to establish a framework of legitimacy for their work (with respect to French university institutions) – a legitimacy that the weight (or lack of weight) of the disciplines involved as well as recourse to non-academic authors tends to weaken; whereas marshalling equivalent resources from the English-speaking world that are increasingly acknowledged to be important in a more internationally minded French academia (a trend in turn clearly related to French government policies going back to the Sarkozy era of 2007–12) allows a certain degree of scientific legitimacy to be attained. (We can affirm this situation in relation to our own work: in the early 2000s, we found it nigh on impossible to have our research on NGOs and conservation policies recognized in our field in France; the subject-matter, we were told, was seen to be too ‘political’ and hence ‘unrelated’ to our core discipline of geography.)

Make no bones about it: this is a survival strategy of modern French academics. Indeed, the ability to obtain and retain a post in that academic world depends on it. However, by depending on theories and perspectives from the English-speaking world, and by in turn seeking to validate their research practices in light of such imported

knowledge, these researchers are in danger of becoming known as merely the specialist of ‘this or that foreign theory or approach’ without necessarily having sought to extend such work in an original manner. In the end, the main problem – and chief danger – of such a brokerage outlook is that, while it may be worthwhile to use certain non-French authors while making them accessible to French-speaking audiences, it nonetheless thereby inadvertently risks diminishing or even erasing French-speaking scientific production rather than encouraging a constructive dialogue between two different and mutually autonomous traditions of thought.

Internalizing a Provincialist Position

The second consequence of the porous nature of the membrane separating French-speaking and non-French-speaking research builds on the previous consequence relating to the rise of new knowledge brokers and concerns the internalization of a provincialist position in French academic circles.

A specific academic exchange at the political-ecology study days organized in Montpellier in 2009 offers an example of this situation bordering on the ludicrous. The exchange involved one of the French participants asking Paul Robbins (a leading US political ecologist) to give his definition of power. The latter answered that his entire understanding of the concept of power came from Foucault – and that, because of this intellectual debt to a French thinker, he did not feel equal to the task of explaining it to a French audience that was probably much more familiar with Foucauldian concepts than he was. This reference to Foucault certainly (if inadvertently) highlights a longstanding lack of interest in this internationally renowned French thinker in both French geography (Fall, 2007) and the French social sciences generally, at least until the early 2000s (Cusset, 2005). Yet it is not so much Robbins’s answer but rather the fact that the French scholar even asked the question in the first place that is of interest here. In effect, it provides an *ad absurdum* demonstration of the internalization of a provincialist position: that is, the felt need to pass things through the centre in order to become legitimate oneself – a process with which African specialists (see Darbon, 1998), and indeed all other specialists who are located on the fringes of academic life, will be only too familiar.

This internalization is mirrored in turn in the ‘centre’ (that is, in those places where English-speaking political ecology is produced) in curious ways. On the one hand, it is sometimes discovered there that topics being researched by English speakers have already been covered in French writing. This is clearly so in the seemingly unending search for a new ‘French Theorist’ to provide intellectual gravitas for the empirically oriented research of English-speaking scholars. Indeed, even the French geopolitical scientist Yves Lacoste was ‘discovered’ by critical human geography (e.g. Dodds and Atkinson, 2000), while it is easy to imagine that someone like Bernard Charbonneau (prominent in French *écologie politique*) could one day also be ‘discovered’ and translated into English, or André Gorz (who is once more being translated from the French – e.g. see Gorz, 2010, 2013) might find a wider readership and larger set of intellectual ‘disciples’ than before in the English-speaking world. On the other hand, there are approaches that are more engaged with empirical research that seeks to identify counterpart international production at the fringe precisely with a view to

encouraging diversity in the modes and sources of analysis, thereby to escape the institutional predominance of Anglo-American universities (e.g. Kim et al., 2012). But even here, a more ‘open’ approach is seemingly only really open if it provides an opportunity for enrichment at the centre: in effect, an anthropological approach that showcases ‘exotic’ scholarship. Yet, and however well intended, this approach runs the risk of falling back into familiar patterns of behaviour at the centre in which otherness is basically seen as a means of understanding oneself, rather than serving as a dialectic engagement with difference wherever it is found around the world.

And yet, while internalization thus works in both directions, these processes occur against a wider backdrop in which the growing ascendancy of the English language in academic knowledge production, combined with the increasing (and often forced) global orientation of most scholarship (marked out and also enforced through such things as global league tables), means that it is provincialization in French academe that no doubt carries the greater risk of intellectual impoverishment.

The ‘Heritagization’ of French Environmental ‘Protection’

But it is the third consequence of the porous nature of the membrane separating French-speaking and non-French-speaking that is most problematic of all: the quest for a supposedly French particularity that would help France (and French academe) stand out more in a world of increasingly global and non-French-centred scientific practices by speaking to ‘universal truths’ (as revealed through specifically French empirical practice). This is, in effect, all about playing the ‘France-is-a-special-place-and-hence-merits-worldwide-attention’ card.

Now, since the environment is today hardly the brightest star in the French scholarly firmament (whether in research about it or in actual policy and practice: see Bess, 2003; Mathis and Mouhot, 2013), this campaign tends to focus on the historical aspect to France and the environment. Environmental protection ‘à la française’ (the title of a conference of historians and the resulting book: Mathis and Mouhot, 2013) thus becomes a kind of ‘bargaining chip’ for a nation that has been internationally marginalized on these issues. This is not the first time that such an effort has been attempted, though (Viard, 1990). In research on nature protection, for instance, authors have long prided themselves on deploying the concept of ‘heritage’ in connection with a history of ‘sustainable management’ of natural resources. Such analysis starts with the famous order by Jean-Baptiste Colbert (the Controller General of Finance under King Louis XIV) concerning use of water and forests in 1669, through forestry-related reforestation efforts in the nineteenth century, to the setting up of a system of Regional Natural Parks in 1967. A critical history of the resurgence of this concept of heritage, its inclusion as an ‘environmental’ notion, the role played in this process by France’s leading agronomic and forest institutions (Ollagnon, 1989), and the attempts to export abroad such a hard-to-translate concept (a campaign notably tried via work linked to UNESCO) has yet to be written.

What is of most interest here is that this is a prime example of what can happen in French scholarship when globalization affects France: the so-called ‘Gaulish village’ syndrome (translator’s note: this is a reference to the comic-book hero Asterix the Gaul, whose ‘indomitable tribe’ resisted the invading Romans). This attitude is notably

reflected in the work of some French geographers who go so far as to reference such ‘Gaulish resistance’ in a decidedly eco-sceptical work entitled *Le Ciel ne va pas nous tomber sur la tête* [*The Sky will not Fall on Our Heads*; usefully subtitled ‘Fifteen leading geographical scientists offer reassurance about our future’] (Brunel and Pitte, 2010). This well-promoted book had its 15 minutes of fame in the media, thereby giving its authors a prominence unusual in French geography. Indeed, it led to a situation later on in which they were chosen to present a French Geographical Society award to Claude Allègre – a geochemist, former government minister and author of climate-change-sceptic books – citing ‘brotherhood’ in the ongoing climate wars (Allègre, 2010). In addition to a stance asserting that geography is the most suitable science for addressing contemporary environmental problems, and indeed that it has already addressed – and perhaps even provided solutions to – most of them (i.e. hints of the environmental protection *à la française* theme here), the authors boast of their ability to attain an objective critical distance concerning the subject-matter of their research that is not shared by most other research fields, including the ‘politically militant’ *écologie politique*.

Such ‘Gaulish resistance’ is above all resistance to the import of concepts to France from the English-speaking world that, in practice, are often actually a caricature of how those concepts are understood and vigorously debated in that world. Thus, for example, Brunel and Pitte (2010: 11) assert:

The idea that industrial societies are harmful to some form of nature that is alleged to exist independently of humanity has produced a culture of refusal and turning back the clock; this emerged in the English-speaking world with the defence of the wilderness. In this particular worldview, which ecology has made an article of faith, mankind is seen as simply one species amongst others, belonging to an ecosystem in which its behaviour is harmful.

The philosopher and former minister Luc Ferry similarly seeks to rewrite ecological thought in his widely read book *Le nouvel ordre écologique* [*The New Ecological Order*] (1992; published in English in 1995). Here, he argues that the vast majority of ecologists prefer to see humanism as merely incidental – just one element among millions of others in the biosphere; indeed, it is the ‘least friendly element, since it is the least symbiotic in this harmonious and ordered universe, into which it is constantly... introducing the most unwelcome disorder’ (Ferry, 1992: 25). But, as has already been amply demonstrated since this book’s publication (e.g. Deléage, 1993; Latour, 1993a; Saint-Upéry, 1993), this theory rests on an extremely fragile argument, based as it is on a blinkered vision of Anglo-American thought regarding political ecology (while, tellingly, relevant French lines of thought here are either largely ignored or assimilated to their English-speaking counterparts). Thus a key argument of the book involves reducing ecological thought to a caricature of deep ecology in its most conservative and reactionary aspects. In the process, ongoing debate in political ecology (academic or otherwise), notably about the issue of ‘wilderness’, is simply swept aside (e.g. Cronon, 1995; Callicott and Nelson, 1998). This response by one part of the French political and intellectual elite bespeaks a fear of globalization and cultural upheaval, prompting the development of a rather ‘rancid’ humanistic universalism that shamelessly invokes socially resonant normative concepts of ‘republic’ and ‘progress’ to sustain their analysis.

Thus, and whether invoking French heritage or denouncing English-speaking thought, many of these intellectuals are clearly aiming more to rehabilitate a certain pride in *French* ideas than to provide any rigorous and in-depth investigation of environmental issues. In this view, *écologie politique* is seen as a battlefield on which broader military objectives may be achieved: defence of a French identity. This certainly does not apply to most authors engaged in this field, but rather to a minority who tend to eschew active engagement with regard to environmental issues in favour of using these issues for other purposes. Indeed, and in sharp contrast to this minority, the core of French researchers in *écologie politique* – as reflected in research produced both for specialist journals such as *Écologie & Politique*, *EcoRev*, *VertigO*, *Développement Durable et Territoires* and *Entropia*, as well as for more general journals such as *Multitudes* and *Cosmopolitiques* – precisely do explore alternative avenues to that of reinventing some sort of quintessentially French legacy. In turn, these are the foundations on which a transition to a global view, capable of taking on board clearly situated knowledge and shifting diversity, may be envisaged; and on which an *écologie politique* that is ready and willing to engage in dialogue with other political ecologies may be established.

TOWARDS A GLOBALITY REplete WITH ASPERITIES

The first step towards assuming a global view involves overcoming methodological nationalism by embracing the Anthropocene. Provocatively, Beck (2005) refers to the nation-state as a ‘zombie category’, thereby underlining the fact that the history of the social sciences has been widely characterized by efforts to describe and define ‘society’ as something that simply coexists side by side with the state. The point here is not that nation-states are no longer a reality today, but rather that they are obsolete as a category into which the social sciences may be subsumed. Such subsumption is indeed quite dangerous. Thus, if the nation-state is the starting hypothesis, then it becomes extremely difficult to examine phenomena relating to European or global contexts. Moreover, at both scholarly and practical personal levels, we may come to believe ourselves to be ‘immune’ to the impacts of distant processes or events with which we are familiar through research or the media, but which in fact affect the whole of the planet. This need to go beyond nation-state-based methodology is particularly applicable to research in the field of French *écologie politique* in which historically a nation-state frame of reference has been the norm (Whiteside, 2002) – and one which, as we have seen, is still a central concern for defenders of the national heritage perspective.

But it is growing acceptance of the notion of the Anthropocene in academia that most clearly underpins calls for the rendering of *écologie politique* (and political ecologies generally) more cosmopolitan in outlook and approach. The Anthropocene is certainly a geological event, but it is also a political one. Political, because it ‘involves deciding between various antagonistic forms of human imposition on the planet, between the footprints caused by various human groups (classes, nations) and different technical and industrial options, and between different forms of lifestyle and consumption’

(Bonneuil and Fressoz, 2013: 45). Breaking free of national and scientific boundaries that subtly and not so subtly constrain research practices is therefore vital.

The issue here is not only one of the ‘globalization’ of biogeochemical data; this aspect has already undergone worldwide integration. Rather, it is also one of the globalization of social questions. However, such globalization must address ‘geographical asperities’ – that is, all socio-environmental elements whose idiographic dimension cannot be denied. Now, biogeochemistry and its technological application is attempting to smooth out these asperities (e.g. through satellite analysis, globalized databases, standardization, normalization); and, depending on ‘hard’ science and technological input, some in the social sciences have followed this trend towards homogenization (Carrière et al., 2013). The approach promoting globalization of ‘sustainable’ socio-ecosystems is a case in point (for a critique, see Agrawal, 2013), as are social theories developed by the ‘anthropocenologists’ that purport to explain the advent of the Anthropocene. (The latter are defined by Bonneuil and Fressoz, 2013: 64 as ‘a phalanx of renowned researchers who have had the daring to name our own era’, and reflect an array of standpoints ranging from those put forward by Paul Crutzen to those by Jacques Grinevald.)

In both cases, we must beware of any perspective based on the idea of a unique earth and humanity taken as a whole, as a unique biological and geological entity. Such vision is inevitably imbued with the ‘geopower’ of some parties, and this in turn could lead to proposals based on the assumption that human problems should be examined and dealt with at a global level via recourse to technical solutions. If we reluctantly end up following Stengers (2009) in accepting ‘the intrusion’ of what James Lovelock dubbed the Gaia hypothesis, we must address this hypothesis politically; in other words, by examining what led to its intrusion, as well as the ensuing consequences. Any such response entails empirical recognition of attachment, difference and diversity, while developing a theoretical approach to geographical asperities.

The Need to Theorize Asperities

These asperities should not be seen as a hindrance to understanding in political ecology. On the contrary, the challenge is to include them in theorizing. To do so, however, it is vital to avoid diverse theoretical or conceptual pitfalls.

The first pitfall to avoid involves seeing issues of political ecology only as the outcome of biogeochemical issues whose social consequences are dictated at the global level. Here, the ‘tonne-equivalent-of-carbon’ approach can antagonistically help direct attention to and define those asperities that are relevant to the urgent matter of climate change without engaging in the production of culturally induced ignorance linked to publication of misleading scientific data – something currently characteristic of initiatives around the UNFCCC (Proctor and Schiebinger, 2008; Oreskes and Conway, 2010). The second pitfall (less in vogue at present) is a form of globalized historic materialism that draws on worldwide economic and political determinants to explain current socio-ecological conditions, particularly in terms of centre–periphery rationales. In contrast, the third pitfall is very influential today – namely, neoliberalism. Here, political and economic determinants flagged up by the previous universalizing approach are flatly denied, with instead a firm (but still universal) emphasis on the

ability of the 'individual' to subvert limits. Yet both approaches are similar in that they perform a sort of scalar increase that leaves no conceptual room for particularities as an integral part of the overall phenomenon. A fourth pitfall more specific to ecological thought advocates a return to the local as a way of ensuring that asperities can endure. Too often, though, this approach overlooks the fact that the local is fundamentally shaped by the global – a weakness found, for example, in bio-regionalist movements (Harvey, 1993; Appadurai, 2012).

These four pitfalls represent hindrances to genuine comprehension that must be avoided at all costs. At the same time, though, accounting for asperities in all their complexity is a daunting task and involves theorizing on the basis of elements that are not nomothetic. Striving for political ecologies that can achieve relevance in today's world therefore involves taking into account places and human communities in all their differences, while at the same time considering the earth in totality. This 'ecumene' (Berque, 2000) should not, however, be seen as a handy container for all our action: on the contrary, it should enshrine the fact that this earth is as diverse as it is full and finite.

Situatedness, Reflexivity and the Conditions for Scientific Production

These observations have clear consequences in terms of what should be taken into account when establishing a French *écologie politique* for the global age (Albrow, 1996). Entering into a world that is total yet differentiated involves more than simply situating and distinguishing research topics within this framework. It also involves reintegrating situatedness at the heart of the research process itself. This approach is well understood today, particularly in those domains in which 'identity' plays a determining role in inequalities of production (e.g. gender studies, subaltern studies). In this view, knowledge is never delocalized, fixed or definitive, but is rather rooted in multiple places, voices and resonances (Dorlin and Rodriguez, 2012). Indeed, a scholar needs to embed her/himself in a given place as well as knowing how to situate her/himself, knowledge and the context of scientific production (Haraway, 1991).

Political ecologies engage fully with these epistemological concerns as they integrate investigation of 'societies' within an ecological context, and as they re-situate the ecological question within a political context. This stance, which may appear rather reductionist in its most rudimentary expression (i.e. opening up ecology to politics), does, however, acquire a whole other dimension in that it inevitably leads to a complete review of all the categories that have been used to classify the modern world (Latour, 1993b), as well as revisiting the question of humanism to re-situate it within its biological and spatial contexts (Sloterdijk, 2005).

Yet even more is required here. It is simply not good enough to engage with these sorts of epistemological concerns without further examining the conditions in which scientific practice in the research community itself is produced. The role of identity in scientific production is not a mere conceptual concern. Rather, it requires engagement in a profound reflexivity that is firmly connected to practice (Bourdieu and Wacquant, 1992). Yet such reflexivity is weak in *écologie politique* (as well as in other political ecologies and the social sciences generally), where it is often reduced to a tokenistic stance such that the material implications of an ability to introspect as a situated

producer disappears. For example, this can be seen in some work in US anthropology where a defence of the know-how of the least well-off leads to authority effects which contradict this stance (Hardt and Negri, 2000; Comaroff, 2011). The same can be said of English-speaking political ecology, where its defence of the peasantry usually involves an assertion of political engagement as part of the research process – an assertion that is often repeatedly emphasized but little analysed let alone justified (Walker, 2007; Altieri, 2004).

In short, if the simultaneous quest to focus on an asperity-laden Anthropocene while advancing the globalization of French *écologie politique* is taken seriously, it is imperative to examine the ‘ecumene’ in all its diversity, as well as the circumstances of the person expressing this new state of affairs. This is not an easy matter for any scholar anywhere in the world, but it is especially difficult for writers in French *écologie politique* since it appears to condemn them to a life in ‘the provinces’. For those in academia, this is not so much because French research budgets lag behind those of other countries, but rather because such writers often find themselves far less well equipped than others in terms of English skills (EF, 2013). Despite this situation, the assumption in French universities is that this is a matter for individual action (i.e. they should learn English). While this assumption may be realistic when seen in a context of intense competition in today’s increasingly globalized research system, it nonetheless tends to ignore the effects of the brokerage discussed above, let alone the broader impact of the marginalization of national research communities. Solving this problem would seem to involve taking into account the vital necessity of learning a globalized language (i.e. in current times: English). Having the *political* willpower to achieve social fluency in two languages, a vernacular language and a vehicular language, would appear to be the sole way of being in the game (in Bourdieu’s sense of mastering the rules of the game) on both levels. Being situated without being isolated, being connected without being acculturated, involves above all having the multifaceted linguistic capacity for communication.

For some, focusing on the issue of language here may appear to be too restrictive in the light of the immense challenge of constituting a globalized research project in the field. However, we believe that it addresses a fundamental aspect of the forms of mobilization and association that are taking place at the global level. For instance, consider how language is central in the construction of response capabilities of social movements that challenge what they see to be unjust global political and economic systemic structures. Thus the ways in which globalized activists mobilize appear unlikely to promote genuine mass movements, because the former remain network-centric and elitist compared to the latter. And this is particularly so in terms of a differentiated command of English (where English fluency determines how effective lobbying by some activists is; see Foyer, forthcoming). For French *écologie politique*, focusing on the language question is all the more important in that other obstacles to its globalization (notably, funding) are less pressing than they are for other scholarly or activist communities around the world.

More fundamentally, raising the question of language (English or otherwise) in the practice of political ecologies is very much an ecological and political stance: to paraphrase Berque (2009), it interrogates the links that are woven by history between humans and geographical environments. These links are inevitably produced through

language – something that applies to the practice of the social sciences just as much if not more than in any other human endeavour. It is in this respect that the asperities of French must ultimately be included within a much broader field of which the earth itself henceforth represents the outer bounds.

NOTE

- * We thank David Buick for translating this chapter into English. In this chapter, we use the term ‘French’ rather than ‘French-speaking’. Indeed, the definition of boundaries here is the subject of considerable debate; for our part, we seek to invalidate these somewhat jingoistic manoeuvres at the national-language frontier. For clarity, we use the English term ‘political ecology’ to designate English-speaking practice and/or research done by French-speaking scholars who draw on that practice, whereas ‘*écologie politique*’ designates a longstanding and ‘home-grown’ French set of practices. To designate various political ecologies (English, French and other variants), we leave the term in its plural form.

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40. *Jahát Jatítotòdom**: toward an indigenous political ecology

Beth Rose Middleton

Indigenous residents of Kivalina, Shishmaref and Newtok in Alaska, Isle de Jean Charles in coastal Louisiana and the Carteret Islands in the South Pacific will be among the first forced to relocate due to climate change. Their homelands are eroding, flooding and sinking beneath a rising ocean, fueled by warmer temperatures and melting polar icecaps, caused by the highest global concentration of atmospheric carbon dioxide in the last 800 000 years (Kroh, 2014). Resources for relocation and rebuilding, as well as policies acknowledging the disastrous proportions of climate displacement are, however, often myopically focused on cost–benefit analyses (Maldonado, 2014) or legal definitions of impact, disaster and refugee status (Grossman and Parker, 2012; Shearer, 2012). A 2014 court case in New Zealand made international news when it denied refugee status to a Kiribati man whose homeland will become uninhabitable within his lifetime; the court ruled that Ioana Teitiota did not fit the definition of a refugee, as he had been violated by the international community in environmental terms but not by anyone in a political sense (Godfrey, 2014). This construction interprets the purview of the United Nations High Commission of Refugees (UNHCR) as excluding climate change refugees – even though it addresses climate-induced displacement (Warner, 2011). Many of these refugees are indigenous people.

A political-ecology perspective enhances understanding of environmental degradation, even sometimes helping to improve policies that do not blame or penalize those who suffer most from this degradation. It also increases comprehension of the complex impacts of interventions (e.g. aid, mitigation) within differentiated communities (Schroeder, 1999). Nonetheless it is limited by a reliance on Euro-derived concepts of power, political economy and human–environmental relations. Such reliance may reproduce colonial relations of power, while eliding indigenous peoples’ own solutions to problems. While political ecology treats the biophysical environment as inherently political (e.g. Blaikie, 1985), Carroll (2015) suggests that ‘the *political* is inherently *environmental*. In common with other indigenous peoples throughout the globe, American Indian political struggles always come back to the issue of land and the degree of our connection to it’ (italics in original).

Indeed, scholars writing about American Indian territories stress the centrality of place rather than time or political economy in understanding cultural landscapes (e.g. Deloria et al., 1999; Grande, 2004; Cajete, 1994; Clifford, 2003). Here, place is a storied landscape embodying personal and collective history, and offers lessons on correct behavior: responsibilities to particular places to maintain right relations with other beings (Basso, 1996; Escobar, 2001; Espeland, 1998; Risling-Baldy, 2013; Johnson, 2014). Clifford (2003: 8) thus argues:

When thinking of differently articulated sites of indigeneity, one of the enduring constraints in the changing mix will always be the power of place ... Many people live where they have always lived, even as the habitat around them goes through sometimes violent transformations. As the scale of 'tribal' and 'national' existence alters dramatically, people living exiled from ancestral places often sustain and revive a yearning, an active memory of land. This 'grounding' offers a sense of depth and continuity running through all the ruptures and attachments.

Deloria Jr (1994: 63) critiques Western ideologies for emphasizing time rather than place and human relationships to it: 'American Indians hold their lands – places – as having the highest possible meaning, and all their statements are made with this reference point in mind ...'.

As indigenous identity, knowledge and spirituality are grounded in place, so coloniality and colonial violence are also expressed in and through place. The attempted appropriation of indigenous sovereignty, identity and existence by colonialists is rooted in land. As Tully (2001: 39) explains, 'the essence of internal colonization ... is the appropriation of the land, resources and jurisdiction of the indigenous peoples, not only for the sake of resettlement and exploitation ... but for the territorial foundation of the dominant society itself'.

The centrality of place in indigenous cosmologies on the one hand, and of resource-based political economy in political ecology on the other, results in complementary approaches: 'whereas American Indian studies centers relational and spiritual approaches to land and nonhuman beings, political ecology emphasizes the deeply political process of land and resource allocation and control ... The two approaches augment each other ...' (Carroll, 2015). Yet much political ecology focuses on political economy and related indigenous discursive positioning, with less attention to indigenous cosmologies (e.g. Andrews, 2003; Li, 2000). Better is anthropological work, notably Basso (1996) reframing landscape from Western Apache perspectives or Escobar (2001: 146) recognizing that 'local people's engagement with the landscape ... reveals that the landscape is endowed with agency and personhood'. Even here, though, critical elements may be missing.

This chapter thus contributes to bridging perspectives from American Indian Studies and political ecology by articulating an indigenous political ecology approach, with reference to climate change and mainly US-based examples. Specifically, an indigenous political ecology is distinguished by: (1) attention to 'coloniality' or ongoing practices of colonialism (e.g. displacement of indigenous peoples from their lands; no recognition of indigenous self-determination); (2) culturally specific approaches reframing analyses in keeping with indigenous knowledge systems; (3) recognition and prioritization of indigenous self-determination, as expressed through indigenous governance; and (4) attention to decolonizing processes that explicitly dismantle systems of internalized and externalized colonial praxis. At least one or more of these elements is typically excluded from, or not considered central to, a non-indigenous political ecology.

Scholarly positionality is always important. Following Grosfoguel (2011: 67), I articulate my 'body-politics of knowledge' as a rural-based, mixed-race African American scholar of Native American Studies (with roots in Central America, Eastern Europe and the Caribbean). I come to this work with a sense of political urgency and

commitment. The stakes could not be higher in the Anthropocene: unless we contribute to a framework that articulates specifically indigenous political, economic, ecological and cultural analyses of climate change impacts, adaptations and mitigations, indigenous people and lands will continue to be severely impacted, with scarce understanding or support from government or international institutions.

FROM THE LAND: AN INDIGENOUS POLITICAL ECOLOGY

Political ecology has long focused on land-based struggles. Yet it has not usually delved deeply into how ‘land’ can be much more than simply a source of material livelihood, especially but not exclusively for indigenous peoples. With a goal of visioning an indigenous political ecology connected to indigenous epistemologies, I begin with Black (2011), who takes the reader on a walk between various Australian aboriginal camps of Senior Law Men (SLM). Wisdom shared in each camp reveals that the laws guiding humans here are not derived from a text, but rather emerge from and are embedded in land. Landforms and seasonal shifts remind humans of responsibilities, offer embedded genealogies, and provide warnings about the results of wrongdoing. As such, the impacts of land change affect indigenous legal systems and protocols. Hence indigenous political ecology must engage with an indigenous law typically attached to territory.

In contrast, Western law habitually ignores indigenous jurisprudence. Thus, while from an indigenous viewpoint behavior needs to be tailored to the site in question – accessed at certain times, perhaps by specific people, and for well-specified purposes (e.g. Deloria et al., 1999; Beggs and McLeod, 2003) – a Western framework emphasizes the monetary value of the site for development while upholding the rights of the titleholder. Consider the case of San Francisco Peaks near Flagstaff (Arizona) in the Coconino National Forest. The peaks are sacred to over 13 tribes with certain activities only traditionally permitted there (Fort, 2010). From a Western perspective, the US Forest Service controls them. According to cases heard over 30 years, this agency acquired the right under US law to lease land to businesses that may manage it in a way both spiritually and ecologically repugnant to indigenous stewards (Echo-Hawk, 2010; Fort, 2010; Beggs and McLeod, 2003). Such decisions are, unfortunately, common (e.g. 1988 *Lyng* case; 1998 *Bear Lodge* case).

How would mainstream and indigenous political ecology address the Peaks case? The former would likely examine ecological conditions, political-economy dynamics (at multiple scales, over time, and accounting for differences between actors) and their mutual constitution. There would be analysis of how the concessionaire (here, a ski resort) became established on site, its relationship to other actors (e.g. concessionaires, agencies), its impact over time on the local ecology and political economy, as well as larger political-economic processes framing concessionaire and landowner practices (e.g. state and national laws). In contrast, the latter would likely begin with the researchers themselves, notably ensuring local indigenous co-researcher involvement. It would also seek to ascertain – subject to it being culturally appropriate to do so – traditional names for the peaks as well as their multifaceted meanings. Research could ‘place’ them in indigenous cosmologies, including indigenous systems of law and

teaching regarding appropriate behavior. How do (and ought) people relate to the peaks? How do they figure in local frameworks of rights and responsibilities? Researchers would also (or only, if the above questions are inappropriate) examine colonial history – how did they escape indigenous ownership? How does colonialism persist through continued denial of access to the site by traditional stewards? Whereas mainstream political ecology identifies intersecting global, national and local political-economic flows and power, indigenous political ecology directly challenges colonial logics as expressed in property ownership and policymaking, nodes of power, and epistemological hierarchies infusing Western law and policy. The latter approach foregrounds indigenous epistemologies while asserting decolonial frameworks (explicitly dismantling neocolonial perspectives) rooted in indigenous experiences, histories and knowledge.

Above all, indigenous political ecology moves from a Western frame (including Marxism and post-structuralism) to site-specific indigenous frames. This does not mean that Marxist or post-structural thinking is irrelevant, but that it is de-centered in favor of indigenous framings derived from indigenous jurisprudence, story, art, language and ceremony. These become the primary ordering system within which intersecting ecological, political and economic factors are understood (alongside issues of scale, differentiated populations and time).

The research implications here are immense, as the chapter next elaborates in relation to four key elements of indigenous political ecology, with reference to climate change and a mainly US context. Although briefly outlined here, this framework is likely to resonate around the world. Articulating an indigenous political ecology aims to change the context of knowledge production and consumption, and, thereby, the questions that inform policymaking regarding indigenous places and populations hit by the effects of climate change. This approach also responds to Walker's (2006) question – where is policy in political ecology? – by asserting indigenous counter-narratives that reframe responses to climate change (Roe, 1994).

Coloniality

Coloniality is central to indigenous political ecology in that it draws attention to how political, epistemic, racial and cultural hierarchies established during colonization remain entrenched. It is often expressed in relation to indigenous communities in terms of spatial and ecological marginalization, including large-scale removal to officially designated 'reservations'. These were often places that more politically powerful groups did not want due to aridity or poor agricultural quality. For the same reasons, they may be among the first affected by climate change (Redsteer et al., 2013). Histories of American Indian tribes thus often include experiences of displacement. Wildcat (2009: 1; italics in original) compares indigenous climate-induced removals to violent displacements during the American Indian Removal Era (i.e. much of the nineteenth century when southern and eastern tribes were removed to Oklahoma Indian territory, and western tribes were removed to reservations in newly formed states including California, Oregon and Washington):

I get angry when I think about global warming ... because I know the history of involuntary removals and relocations indigenous peoples ... have endured ... when ... I began hearing the reports of what was beginning to manifest ... on the landscapes and seascapes of the circumpolar arctic ... I got angry. Angry because I thought, *here we go again – another removal of indigenous peoples.*

Indigenous political ecology must thus be historical: events now threatening indigenous lands and life-ways are situated in a longer record of harmful impacts. As Grande (2004: 27) explains, federal American Indian policies ‘all provided greater access to [American] Indian lands and resources and, as such, proffered the federal government a windfall in capital gains’. Historically grounded analyses also counter state narratives seeking to relegate legacies of violence toward indigenous people to the past. Thus, as Wildcat notes above, violence is ongoing via such things as designation of ‘sacrifice’ zones and peoples (Maldonado, 2014), and the rush to claim new spaces for global capital (e.g. the Arctic). Indeed, indigenous homelands afflicted by storms and/or rising waters are what Peluso and Watts (2001) call ‘violent environments’. As Maldonado (2014: 63) affirms in a context of pending forced evacuations from coastal Louisiana, ‘environmental degradation is a form of tacit persecution’.

Coloniality is also an epistemological phenomenon. Epistemologies that enable thinking of nature as ‘resource’, areas as ‘sacrifice zones’ and peoples as ‘exotic’, ‘noble’ or ‘wards of the state’ (and hence objects rather than subjects of decision-making) underpin coloniality: “‘the [American] Indian problem’ is ... first and foremost, a problem that has been consciously and historically produced by and through the systems of colonization: a multidimensional force underwritten by Western Christianity, defined by white supremacy, and fueled by global capitalism’ (Grande, 2004: 19).

Coloniality is expressed in and through the land. As Echo-Hawk (2013: 150) observes, it is difficult to develop an American land ethic if Americans remain rooted in a mentality of exploiting the ‘colony’, when ‘colonization of Native lands is *invariably* accompanied by destroying the habitat that supports the tribal way of life’ (italics in original). This is also clear from Maldonado’s (2014: 66) history of Euro-derived notions of landownership rationalizing colonization and privileging ‘anthropocentric thinking that put humans at the center of the world’.

Investigating coloniality – how power dynamics instituted in colonial times are expressed in contemporary governance, ecology, culture and politics – is central to indigenous political ecology, prompting researchers to engage fully with indigenous epistemologies and decolonial futures. Here, one comes to understand how particular configurations of power came into being and remain entrenched, as well as how certain epistemologies undergird dominant human–nature and human–human relationships. Then one asks: what might be different about indigenous epistemologies? How might they inform different relationships with other beings, enabling better adaptation to and/or mitigation of climate change? Such questions lead to decolonizing actions, methodologies and strategies that build from indigenous epistemologies to dismantle colonial ideologies.

Indigenous Knowledge Systems

Indigenous political ecology is distinguished by culturally specific approaches that reframe analyses in keeping with indigenous knowledge systems.

Climate change is often framed as a problem caused by overpopulation and/or overconsumption, yet it is also a problem of epistemology – how do we know what we know about climate change and how does it influence our actions to either mitigate or exacerbate the problem? Wildcat (2009: 5) argues that climate change is socio-cultural: ‘what humankind actually requires is a ... cultural climate change, a change in our thinking and actions – if we are to have any reasonable expectation that we might mitigate what increasingly appears to be a period of dramatic plant and animal extinction’. Such change must prompt a transformation in how humans see themselves in relation to other beings. How might our understanding of climate change be altered if viewed through a lens such as that articulated by Deloria Jr (in Deloria et al., 1999: 34)?

‘We are all relatives’ when taken as a methodological tool for obtaining knowledge means that we observe the natural world by looking for relationships between various things in it. That is to say, everything in the natural world has relationships with every other thing and the total set of relationships makes up the natural world as we experience it.

This resonates with ecological understanding of the ‘web of life’, differing only in that it includes rather than excludes humans. Yet indigenous political ecology does not advocate a New Age approach of blending indigenous epistemologies so as to reframe non-indigenous viewpoints. Nor does it romanticize indigenous knowledge as always being about ‘sustainability’. Barnes et al. (2013: 541), for example, recognize that ‘[indigenous] communities are not homogenous, isolated, static, or all-knowing. But ... local observations of changes in the climate and local mechanisms developed to deal with those changes can lead to contextualized understandings of climate change impacts and thereby inform adaptation policy’. Indigenous political ecology advocates a deep respect for indigenous knowledge systems. From this foundation, non-indigenous people give long-overdue credence to place-based indigenous perspectives, critically analyze the privileging of Western knowledge, and reflect on their own backgrounds to salvage possible narratives of connection and resilience consonant with contemporary social and ecological justice.

An indigenous political-ecology approach is specifically by and for indigenous peoples. As Simpson (2001: 135) writes, ‘to use Indigenous Knowledge in a respectful and appropriate way requires Indigenous People’. Simpson and others affirm long-held indigenous epistemologies habitually ignored by Westerners. This approach even differs markedly from mainstream political ecology. The latter, for instance, describes indigenous positioning in a field of political–legal relations (e.g. Moore et al., 2003; Li, 2000, 2001; Braun, 2002). In contrast, indigenous political ecology focuses on how indigenous worldviews frame understanding of human and human–environmental interactions. Examples here include Carroll (2015), Wildcat (2009), Johnson (2014), Maldonado (2014) and Maldonado et al. (2013). What unites such writing is that authors start from or otherwise seriously engage with indigenous worldviews rather than relying on Western frameworks.

Turning to those worldviews, Cajete (2000: 268) defines indigenous knowledge or science as ‘that body of traditional environmental and cultural knowledge that is unique to a group of people and that has served to sustain those people through generations of living within a distinct bio-region’. In relation to climate change, indigenous scientists closely observe interactions between species and how these are changing in particular locations (Krupnik and Jolly, 2010). Hence indigenous political ecology challenges a coloniality of power that admits only certain (non-indigenous) epistemologies into conversations about climate change.

Rather than seeing humans as having ‘dominion’ over other creatures, many indigenous epistemologies describe humans as the ‘younger brother’ of them, therefore needing to learn from plants, animals and other beings how to behave. This outlook entails certain responsibilities in the sense of learning and behaving with respect to older ‘family members’. Deloria Jr (in Deloria et al., 1999: 51–2; see also Cajete, 1994; Sams, 1999) describes the relationship of respect and responsibility that humans have toward other creatures as a ‘covenant’ – a concept that is useful in unpacking and responding to climate change:

The idea of the covenant ... is an early and important concept for tribal peoples. Stories explaining how the people came to hunt the buffalo, how the salmon came to be the major food supply ... all derive from early interspecies communications in which other forms of life agreed to allow themselves to be used in ceremonial and economic ways. A covenant places responsibilities on both parties and provides a means of healing any breach in the relationship.

Such a covenant is subject to change involving renegotiation and renewal. Ceremonies are a key mechanism in this regard (Cunningham, 2006; Deloria et al., 1999). Climate change is one example of changes to relationships – a process that prompts the question: how did the covenant between humans and other beings now disappearing change? What actions might help renew or rebuild the covenant? This gives new meaning to restoration work (i.e. efforts to rehabilitate relationships between humans and the immediate ‘environment’). The latter is not nature writ large, but the suite of specific beings that one lives with locally that are embedded in narratives:

[American] Indians do not talk about nature as some kind of concept or something ‘out there’. They talk [instead] about the immediate environment in which they live. They do not embrace or love all rivers and mountains. What is important is the relationship you have with a particular tree or a particular mountain. (Deloria Jr in Deloria et al., 1999: 223)

Hence, while indigenous political ecology attends to broader multi-scale flows of capital and politics, the main focus is on how these flows pertain to direct relatives in the land where people live. As Black (2011: 15) explains:

a Creation story becomes a particular group’s theory of how things came to be and, more specifically, how people should lawfully conduct themselves in a particular place. The difference here is that in the Creation story, the emphasis is not on answering abstract questions of existence; rather, it is on understanding how humans were patterned into a certain tract of land.

Some political ecologists examining broad structures treat land as ‘capital’ that may be ‘accumulated’ for wealth, but, as Black (2011: 41) explains, ‘Land was never perceived as a resource but always addressed as a “thou”’. In indigenous political ecology, researchers must address the groups whose traditional land it is. How do they see themselves in relation to the land? How do they understand the land? How does taking their knowledge seriously – as *the* frame for understanding socio-ecological issues in that place – change how one studies the intersection of politics and ecology? As Carroll (2015) muses, does it turn us from understanding ‘the environment as always political’ to seeing ‘the political as always environmental’?

Such questioning may lead to different answers about how to respond to climate change. Framing political-ecology questions in terms of indigenous creation narratives makes them look quite different. For example, the question of how indigenous peoples in Clayoquot Sound (British Columbia, Canada) (Braun, 2002) respond to environmentalists and state actors (both seeking to access their homelands) may be framed instead by nested relationships in which each actor exists in relationship to, and thus has responsibilities toward, other actors both human and non-human. As Black (2011: 57–8) notes, drawing on the thoughts of Aboriginal Australian Senior Law Man Mowaljarlai: ‘the right/responsibility binary embeds in humans in an assured balance ... with a legal system that emerges from an understanding that humans have a direct impact on and responsibility towards their food resources, we may see more interest in balance, rather than simply the acquisition of resources’.

Researchers can thus develop very different viewpoints in respect of nature: as elder brother, as family, as extension of self. Indigenous scholars argue that real engagement with indigenous perspectives ‘in research studies, policy developments, legislation and in environmental decision-making means that different decisions will be made, better decisions’ (Simpson, 2001: 135). Indigenous epistemologies can reframe how climate change is understood – perhaps as imbalance between humans (e.g. political economy) and the land. As Black (2011: 168) advocates, we require a ‘refocusing of the jurisprudence towards the “rights” of the Land and the “responsibilities” of the human towards the Land’.

Indigenous epistemologies thus need to come to the fore in analysis. Indigenous peoples worldwide have their own knowledge systems linked to long histories of experience with particular places. Such knowledge is unique, prompting unique questions for political ecology. Rather than asking about indigenous relationships to ‘capital’, ‘accumulation strategies’ or the nation-state, scholars ask about the relationship of capital and accumulation to the *Djang* (life force) in aboriginal Australia (Black, 2011) or, in the Mountain Maidu context (California), to the precept *jahát jatítotòdom* (noted in this chapter title). As Grande (2004: 27) argues, there is little room for indigenous self-determination or epistemology in either Marxist or capitalist frameworks: ‘both Marxists and capitalists view land and natural resources as commodities to be exploited ... by capitalists for personal gain, and... by Marxists for the good of all’. These frameworks may include indigeneity in analysis, but usually in a way described as ‘epistemic coloniality’ (Grosfoguel, 2007) – where Western thinking is still in charge. In contrast, indigenous political ecology advances Red pedagogy ‘rooted in the fourth space of indigenism – a distinctive, alter-native space with its own history and discourse’ (Grande, 2004: 169). To apply indigenous concepts to analyses of

political economy and environmental change, it is necessary to '[import] the language and visions of our ancestors to the concerns of the present' (ibid.).

Indigenous Governance

Indigenous political ecology also focuses on indigenous governance, encompassing a realm of political relationships described by such terms as sovereignty, self-determination and human rights. Such governance is more than a Western concept of sovereignty that only recognizes governments mirroring Western forms (Alfred, 1999). Rather, indigenous governance is the all-encompassing structure of relationships and responsibilities between individuals, families and non-human relatives in a specific place.

Tsosie (2013: 80–82) differentiates cultural sovereignty – traditional responsibilities toward and jurisdiction over particular places – from political sovereignty – jurisdiction formally recognized by external institutions. All indigenous peoples (whether or not other governments recognize them) possess cultural sovereignty by virtue of being indigenous. Tribal sovereignty pre-dates the rise of nation-states that were established in and around indigenous polities, and that thereafter 'granted' the latter highly restricted recognition.

Researchers must be attentive to the recognition (or lack) of tribal sovereignty in environmental decision-making. Possible governance-focused questions relating to climate change include: does the tribe conceptualize itself as responsible to the lands/water impacted (thereby asserting cultural sovereignty)?; does it have recognized jurisdiction over these areas?; does it have recognized jurisdiction over immediate industrial processes impacting tribal lands/waters, such as mining on or adjacent to tribal lands (Katahdin Films, 2005)?; is the tribe recognized as an equal partner in regional, national and international strategies and institutions to address climate change (e.g. US Task Force on Climate Preparedness and Resilience, established in 2013)? These questions address both how the tribe sees itself and how others perceive it in climate change decision-making.

Indigenous political ecology must engage with indigenous epistemologies informing indigenous institutions, the coloniality of power that may undermine them, and decolonial approaches that support and foster indigenous self-determination. As these questions indicate, the concept of tribal (political) sovereignty, and the authority it connotes over resources and processes, may be a limited tool for advocating redress in light of climate change. This is partly due to the truncated American concept of indigenous peoples as 'domestic dependent nations' (see Justice Marshall in the 1831 Supreme Court case *Cherokee Nation v. Georgia*). In contrast, the UN Declaration on the Rights of Indigenous Peoples (2007) does not use the terms 'sovereign' or 'sovereignty' in reference to indigenous peoples: instead it recognizes 'Indigenous peoples have the right to self-determination. By virtue of that right they freely determine their political status and freely pursue their economic, social and cultural development' (Article 3). Such articulation leaves room for asserting indigenous rights to resources and homelands affected by global development. It also establishes the nature of indigenous formal government-to-government participation in negotiations on climate change mitigation and adaptation.

Both the degree of recognition of indigenous self-determination and the (neo-colonial or decolonial) nature of indigenous governance structures have profound consequences for the operation of a global political economy addicted to ‘natural resources’ (e.g. oil, gas, uranium, coal) often concentrated on indigenous lands. In the USA, for example, tribes have jurisdiction today over substantial energy resources: ‘about 1/3 of the coal in the West ... [and] large amounts of oil ... and timber’ (Fixico, 2013: 168). The extraction, production, sale and distribution of such resources are determined at the intersection of indigenous, as well as federal- and state-level sovereignties. When tribal sovereignty is recognized and respected, tribes are successful at stewarding and marketing resources (e.g. Harris et al., 1995). When it is disregarded or disempowered, though, tribes suffer the consequences of resource ‘development’ without any benefit (e.g. Weaver, 1996). As the consequences of human-induced climatic change become more severe, tribes will continue to weigh the benefits and costs of extraction-based economies. From human rights and justice-based perspectives, as well as the strong record of tribal-led resource management (e.g. Anderson, 2005; Risling-Baldy, 2013; Clow and Sutton, 2001; Middleton, 2011; Moyle, 2014), it is vital that tribes as sovereign/self-determining jurisdictions do this weighing rather than non-Indian institutions.

In light of accelerating environmental change, recognition of indigenous sovereignty (both cultural and political) may ensure that tribes and neighboring jurisdictions alike can adapt and respond to climate change. Adaptation mechanisms may involve applying indigenous knowledge of resource stewardship patterns to intergovernmental negotiations, as in the case of land transferred from the US National Park Service to the Quileute Tribe (Bennett et al., 2014). Indeed, tribes working with multiple levels of the US government as well as non-governmental organizations are developing innovative land-based collaborations to restore and protect traditional areas (e.g. *The Oregonian*, 2011; Middleton, 2011). These collaborations highlight the potential of self-determining indigenous entities (all with cultural but not necessarily political sovereignty) in leading cross-jurisdictional efforts to address climate change.

Decolonization

Finally, indigenous political ecology addresses decolonization – the process seeking to dismantle systems of internalized and externalized colonial praxis. According to Grosfoguel (2011: 66), ‘a decolonial epistemic perspective requires a broader canon of thought than simply the Western canon (including the Left Western canon)’. From a basis in indigenous epistemologies while attending to expressions of indigenous self-governance that challenge coloniality, one of indigenous political ecology’s greatest contributions is to pursue research that helps to develop decolonial possibilities. How do we build from indigenous knowledge systems to address climate change by dismantling neocolonial approaches, as inscribed on the land and in environmental governance?

Indigenous scholars identify key structures in Western thought that are especially problematic, including ‘belief in progress as change, in the universe as impersonal, in reason as the preferred mode of inquiry, and in human beings as separate from and superior to the rest of nature’ (Grande, 2004: 3). Indigenous peoples examine the

adverse impacts of Western thinking on their communities and lands, as part of wider ‘re-patterning’ of themselves with the land (Black, 2011: 115). Decolonizing thus rejects Western frameworks by reaffirming the existence of much longer-standing indigenous relationships with the land, including re-asserting local names for places, local stories connecting humans to particular places, and local human responsibilities to those places.

Such thinking must simultaneously address the ‘realities’ of climate change, which, as noted, are weighing ever more heavily on indigenous communities that must make painful choices about where to go as local ecological conditions worsen. Yet scholars observe that policymaking revolving around the costs and benefits of restoration, relocation and mitigation requires increased indigenous scrutiny and input. Indeed, policy is clearly inadequate with ‘no Federal government agency mandated to manage communities’ relocation efforts and no funds for ... moving an entire community’ (Maldonado, 2014: 74). Deficiencies in service to climate change refugees or even recognition of the impact of climate-induced migration on indigenous communities cannot be sustained when decolonial thinking is foregrounded. A decolonial perspective recognizes that indigenous modes of structuring the world, knowledge development and governance are linked to particular places, while coloniality operates to remove people (physically and spiritually) from those places. Hence, climate-change-induced displacement is indeed, as Wildcat argues, the latest removal. We must therefore examine how Western epistemologies have led to and perpetuate degradation and removal, and ‘how traditional indigenous knowledges can inform the project of decoloniz[ing]’ (Grande, 2004: 56) adaptation and mitigation. For example, if displacement is inevitable, removal and resettlement should be approached with respect for indigenous governance, knowledge, history and identity in a process led by indigenous peoples. A decolonial response to climate change begins from a foundation of recognizing indigenous relationships and responsibilities to land and community.

In research terms, decolonization requires major changes in how scholars do research about and with indigenous groups. Here again, there are differences between indigenous political ecology and its mainstream counterpart. In this vein, Tuhiwai-Smith (1999) critiques much Western research as extractive, colonial and ultimately opposed to indigenous justice. In contrast, she outlines key tenets of an indigenous research paradigm – ‘the survival of peoples, cultures and languages; the struggle to become self-determining; the need to take back control of our destinies’ (Tuhiwai-Smith, 1999: 142) – while proposing 25 projects that, in aggregate, revolutionize how research is approached and conducted. These are: claiming, testimonies, story-telling, celebrating survival, remembering, Indigenizing, intervening, revitalizing indigenous languages, connecting, reading, writing, representing, gendering, envisioning, reframing, restoring, returning, democratizing, networking, naming, protecting, creating, discovering, negotiating and sharing.

What might this revolution look like in practice? Let me briefly illustrate via 25 indigenous political-ecology research projects (in italics below) that contribute to reframing and responding to climate change. Tuhiwai-Smith begins with *claiming* or the practice of research to establish the legitimacy of specific indigenous claims. Claims research is needed to establish relationships and rights to particular places threatened by climate change impacts. That research notably draws on *testimonies* such

as that of Nelson Kanuk (Ronco, 2013), Inuit hunters (Krupnik and Jolly, 2010), Kivalina residents (Shearer, 2012; Kuruvilla, 2013), tribal members in the greater southwest USA (Schertow, 2014), indigenous people in the Pacific (Merchant, 2014) and tribal members on Louisiana's disappearing coast (Cottage Films, 2011) that all affirm that climate change is immediate, personal and devastating. Within communities, research must engage with *story-telling* – how information is transmitted across generations connecting 'past with the future, one generation with the other, the land with the people and the people with the story' (Tuhiwai-Smith, 1999: 145). This centers indigenous epistemologies while providing a window into social and ecological changes over time. Both *celebrating survival*, with its emphasis on research that examines how people maintain cultural and spiritual values in difficult times, and *remembering*, with its emphasis on recalling responses to painful past events, can assist in charting a path into an uncertain climate changing future.

Scholars must foreground *Indigenizing* research, that is, centering indigenous language, land, themes, stories and images in a way that 'center[s] a politics of indigenous identity and indigenous cultural action' (Tuhiwai-Smith, 1999: 146). While this can underscore how climate change impacts indigenous groups, the next step is *Intervening* to make structural change in institutions charged with assessing climate impacts and supporting responses. Such initiatives are already under way. For example, in June 2014, Rising Voices II workshop participants developed a list of recommendations for the US State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience. Rising Voices is 'a community of engaged Indigenous leaders, Indigenous and non-Indigenous environmental experts, students, and scientific professionals' (Rising Voices, 2014). Among their recommendations, Rising Voices II participants advocated including indigenous perspectives in all federal 'assemblies concerned with natural resources, environmental management, and policy' and recommended forming a 'Climate Change Corps' to engage youth and veterans in mitigation, adaptation, planning and disaster preparedness with vulnerable communities (Rising Voices, 2014).

Many of Tuhiwai-Smith's other projects speak to reinvigorating attention to, respect for, and application and circulation of indigenous epistemologies. These include *revitalizing* indigenous languages, which then can offer indigenous concepts for aiding in adapting to and mitigating climate change. Further, research may involve *discovering* and, as appropriate, *sharing* indigenous climatological knowledge and observations of change over time. *Connecting* and *networking* indigenous peoples worldwide through fora such as Rising Voices, the UN Indigenous Peoples Caucus, and indigenous delegations to the World Parks Congress and the World Wilderness Congress creates opportunities for dialogue, mutual support and coalition building between peoples facing similar challenges, including inadequate attention to impacts of climate change on indigenous life-ways, lack of resources for indigenous adaptation, mitigation and relocation, and non-acknowledgment of indigenous climate knowledge.

Applying Tuhiwai-Smith's projects to climate change in American Indian territory also transforms dominant narratives, in part by critically *reading* imperial histories of people and place that may mischaracterize indigenous identity and land stewardship, and *writing* back from indigenous perspectives. Writing is but one form of indigenous people *representing* themselves, and *naming* their own experiences, identities, histories and epistemologies in international climate conversations. Another aspect of indigenous

self-representation examines indigenous gender roles misunderstood or disrupted by colonization, and how examining that disruption may contribute to more equitable initiatives to address climate change in American Indian territory.

This chapter is predominantly concerned with *reframing* the articulation of climate change issues and responses from indigenous, place-based perspectives, and *democratizing* the process of who gets to be at the table crafting regional, national and global responses. The work in a context of climate change is *envisioning* more just responses for those most impacted. An indigenous political ecology contributes to *creating* and *negotiating* a framework that departs from exclusively European-derived understandings of the problem. This involves *restoring* indigenous principles of governance and dispute resolution, particularly in terms of recognizing indigenous self-governance in situations of government-to-government negotiations with federal and state governments to determine climate change mitigation. This often involves *returning* homelands to indigenous peoples. Indeed, scholars prioritize research contributing to policymaking oriented to *protecting* indigenous rights, homelands, governments, histories and epistemologies in a context of global climate change.

Finally, decolonizing is not only an individual endeavor – yes, we want to decolonize our own perspectives and responses, but decolonization is enacted collaboratively within and between indigenous communities. Indigenous political ecology thus engages with and reframes the political economy of environmental stewardship from the perspectives of indigenous epistemologies to envision a decolonial future.

CONCLUSION

This chapter asks readers to consider the following questions: what is indigenous political ecology? What are its specific areas of inquiry? What are key challenges from Indigenous Studies/Native American studies to political ecology? What is unique about indigenous political ecology? What does ‘applied’ research look like here? Such questions were linked to the issue of climate change in indigenous communities mainly drawing on US experiences. Climate change there is understood uniquely and viscerally, as it impacts indigenous cultures and practices first, even as indigenous-based mitigations, adaptations and responses are rooted in indigenous epistemologies and self-governance. Not being attentive to specific indigenous impacts and responses could lead to solutions that cause more damage to indigenous peoples and lands (Redsteer et al., 2013; Shearer, 2012).

While indigenous positioning and marginalization are well discussed in mainstream political ecology (e.g., Braun, 2002; Li, 2000, 2001; Moore et al., 2003), the frameworks applied (including Marxism and post-structuralism) are external when viewed from indigenous perspectives. Such writing ascertains how indigenous people are politically, economically, culturally and ecologically marginalized, but rarely provides a way forward from this plight. Indeed, indigenous people and struggles are only visible within Western framings – resulting in a situation whereby they are seen but not heard. In contrast, indigenous political ecology re-centers indigenous ways of knowing the land as the foundation for discussing how climate change (among other issues) is both a political–economic–environmental problem and an epistemic–spiritual

problem. Indigenous histories in place and indigenous epistemologies are necessary to frame any response to this unfolding, violent planetary change.

NOTE

- * ‘You will be good to each other’. This term comes from the Mountain Maidu in Northeastern California. I am grateful to Farrell Cunningham (*yatâm*) for his use of the term in inspiring presentations on Maidu land stewardship, rights and history, and to Ken Holbrook for his work with Maidu orthography to offer a standard spelling of the term.

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41. From ecological modernization to socially sustainable economic degrowth: lessons from ecological economics

Hali Healy, Joan Martinez-Alier and Giorgos Kallis

Recent years have seen the emergence of an important debate over the ongoing relevance of political ecology as an area of academic enquiry. This state of affairs is undoubtedly related to the multidisciplinary origins of the field, and the intellectual push and pull of its component parts. Some opinions in the debate, for instance, emphasize the importance of preserving the field's early biophysical roots. Here there are fears that a political ecology 'without ecology' risks forsaking a rich methodological history and spawning a crisis of intellectual credibility (Walker, 2005). Others have urged that the future of the field lies in understanding how shifting political-economic configurations in today's world contribute to ecological as well as political, economic and cultural transformations (Neumann, 2005). Still others, seeking to maintain the more radical edge of the field, have expressed a desire for the emergence of a political ecology capable of not merely understanding, but of influencing and helping to organize, a transition to a more just and sustainable society (Castree et al., 2010; Leff, 2015).

In line with the latter position, this chapter introduces the emergent sub-field of 'degrowth' in ecological economics. The authors highlight the interconnected ways in which degrowth theory and practice challenge dominant modernization thinking and policies, and aim to develop concrete political alternatives for the construction of a 'post-capitalist' society. In the face of persistent critiques about the limited impact political ecology has had outside the confines of academia (Walker, 2006; Swyngedouw, 2008), we argue political ecology can learn valuable lessons from a 'political' branch of ecological economics engaged with grassroots movements and radical economic policy as part of the degrowth debate. Such insights are in our view crucial if, as Castree et al. (2010: 3) argue, 'We are in this game to change things, directly or otherwise.'

This chapter describes the shared lineage and common purpose of the fields of political ecology and ecological economics, and highlights some of the ways in which cross-fertilization has occurred. It then presents a line of ecological-economics research that employs a particular political-ecological-economic vocabulary and analytic framework to analyse environmental conflicts and injustices, both of which are central subjects of political ecology. Emergent work by political-ecological economists around the eco-egalitarian imaginary of 'degrowth' is subsequently introduced and briefly described. We argue that this field offers valuable insights to political ecologists seeking to supplant the depoliticizing discourse of ecological modernization. We conclude, moreover, that a deepening of exchange and collaboration between political

ecology and ecological economics holds considerable transformative potential, and may well pave the way for the emergence of a ‘reconstructivist’ political ecology (Escobar, 2010).

POLITICAL ECOLOGY AND ECOLOGICAL ECONOMICS: DISTINCT ORIGINS, COMMON CONCERNS

Political ecology, widely acknowledged to combine ‘the concerns of ecology and a broadly defined political economy’ (Blaikie and Brookfield, 1987: 17), emerged from the fields of geography and anthropology, and their critiques of predominantly apolitical, outdated explanations of environmental problems. Cultural ecology, for instance, was seen to pay insufficient attention to power relations (Hjort, 1982; Grossman, 1984). Political economy, meanwhile, placed too little emphasis on nature and environment (Watts, 1983). Neo-Malthusian notions of population pressure, moreover, were seemingly oblivious to production and consumption processes, and the political-economic conditions that drove these (Darden, 1975; Lowe and Worboys, 1978). Out of these critiques, political ecology has evolved to produce a rich analysis of the detrimental effects of modern capitalist processes of production and consumption on the conditions for sustainable human survival (Escobar 1996; Peet et al., 2010; Leff, 2015).

Ecological economics was born out of dissatisfaction on the part of economists and natural scientists with the treatment of environmental issues by mainstream economics (Røpke, 2004). Seminal were Georgescu-Roegen’s (1971) critique of economics based on the laws of thermodynamics, Kenneth Boulding’s (1966) thesis on the bio-physical limitations of economic activity on (Spaceship) earth, and Karl William Kapp’s (1970) reframing of environmental externalities as the pervasive social costs of private enterprise. Ecological economists focus on the links between economic growth, energy and material flows, and also reject the rational, ‘*Homo-economicus*’ assumptions of mainstream economics, which not only accept, but privilege, cost–benefit mediations of human desires (Norgaard, 1994; Martinez-Alier, 1998, 2002).

Despite these distinct disciplinary origins, political ecology and ecological economics share a great deal of intellectual DNA. Fundamental to both fields have been Howard Odum’s work (e.g. Odum and Odum, 2001) on systems ecology and energy analysis (Watts and Peet, 2004; Costanza, 1991), as well as the cultural ecology of Rappaport (1968), with its appreciation of the energy efficiency of subsistence producers and the value of non-formal environmental knowledge (Norgaard, 1994; Berkes, 1999; Robbins, 2003; Biersack and Greenberg, 2006). From different vantage points, then, both fields have been shaped by a rejection of dominant productivist rationalities and modernizing assumptions, namely, that environmental sustainability and economic growth can be achieved through increased commodification of resources, advances in scientific and technological innovation, and market institutions, or, in other words, the ‘ecological modernization’ thesis (Mol and Spaargaren, 2000; Mol, 2003).

Sharing the intellectual lineage that they do, it is not surprising that some cross-fertilization has occurred. Political ecologists have, for example, applied insights from ecological systems theory developed in ecological economics (particularly nonlinearity,

complexity and resilience), linking ecological transformation to wider cultural and political-economic processes at different scales (McCarthy, 2001; Zimmerer and Bassett, 2003; Evans, 2011). Critiques of policies informed by oversimplistic notions of stability and equilibrium, especially as they have negatively impacted local and marginalized communities, have also emerged (Turner and Robbins, 2008). Conversely, ecological economics has seen the emergence of a radical line of thinkers who distance themselves from their neoclassically oriented colleagues engaged in ‘environmental-economics’ approaches such as ecologically ‘correct’ pricing and valuation of and payments for ecological services. The ‘Barcelona approach’ (coined from its origins in the Institute of Environmental Science and Technology at the Autonomous University of Barcelona) nourishes insights from political ecology (Escobar, 1996; Rocheleau et al., 1996; Peet and Watts, 2004; Robbins, 2004) with regard to the ways that social, economic and political power influence control over and access to resources. These ecological economists advance a political line of research concerned with conflict and justice, calling for equity in the distribution of environmental risks and benefits, recognition of the diversity of affected peoples and cultures, and increased participation of those affected in the political processes for the creation, management and implementation of environmental policy (Takeda and Röpke, 2010; Avcı et al., 2010; D’Alisa et al., 2010).

POLITICAL-ECOLOGICAL ECONOMICS

This ‘political’-ecological economic line of research, one with which political ecologists may not be familiar, uses the term ‘ecological distribution conflicts’ to examine conflicts over access and distribution of environmental costs and benefits (Martinez-Alier and O’Connor, 1996; Martinez-Alier, 2002). This term was coined in conversation with political economy, which refers to the notion of ‘economic distribution conflicts’ for the distribution of profits between capital and labour. The simple idea expressed with ‘ecological distribution conflicts’ is that a second line of generalized conflict runs along the lines of the distribution of environmental goods and bads, and that this conflict is not always captured either in monetary terms or in relation to the conflict between labour and capital (or in relation to other economic distribution conflicts as between farmers and landlords, or between trading partners, or in the price ‘scissors’ between agriculture and industry) (Martinez-Alier et al., 2010). Expanding the initial focus on the uneven distribution of pollution faced by disadvantaged ethnic groups in the USA of the environmental justice literature (Bullard and Alston, 1990; Bullard and Johnson, 2000), this line of research studies unfair resource extraction and waste disposal practices in the global South and the conflicts these generate.

Of particular interest is how social and economic power shapes who takes part in ‘participatory’ processes for natural resource management and environmental problem solving (Agarwal, 2001; Zografos and Howarth, 2010), and who has the capacity to ‘simplify complexity’ and impose one language of valuation, usually that of money, over alternative ones (Martinez-Alier, 2002; Gerber et al., 2009; Kallis et al., 2013). This emphasis on ‘languages of valuation’ is a distinctive feature of this particular strand of ecological economics, which considers the incommensurability and weak

comparability among different expressions of value (Martinez-Alier et al., 1998), and analyses the concrete struggles and institutional processes in which competing languages of valuation clash and are mediated.

Recognizing the role of activists in such struggles and the wealth of knowledge they possess, the study of ecological distribution conflicts has involved a substantial amount of collaborative work between ecological economists and environmental justice organizations (EJOs) (Martinez-Alier et al., 2011). Attention has been given, for example, to the mutual co-production of knowledge, and how activists benefit from mobilizing scientific concepts developed by ecological economists (such as critiques of cost-benefit analysis or net present value) to win in struggles, and, conversely, how ecological economists formalize knowledge and concepts developed first by activists (Martinez-Alier et al., 2014). An example of the latter is the concept of ecological debt, defined as

the accumulated, historical and current debt, which industrialised Northern countries, their institutions and corporations owe to the peoples and countries of the South for having plundered and used their natural resources, exploited and impoverished their peoples, and systematically destroyed, devastated and contaminated their natural heritage and sources of sustenance. (Donoso, 2003: 13)

Tracing its origins to the 1990s among Latin American activists in a context of growing external financial debt in that region, demands for its repayment have been enthusiastically taken up by ecological economists (Martinez-Alier, 1998). Some, for instance, have made arguments for large-scale international debt relief (Torrás, 2003). Localized studies have also appeared, accounting for ecological debts or environmental liabilities owed as a result of the cultivation of transgenic crops in Argentina (Pengue, 2005) or from lead de-silvering operations in Antwerp, Belgium (Meynen with Sébastien, 2013). One outstanding contribution aimed to quantify the ecological debt owed by the wider global North to the global South (Srinivasan et al., 2008). In Copenhagen in December 2009 at the United Nations Climate Change Convention's 15th Conference of the Parties (COP 15), no fewer than 20 heads of government or ministers explicitly mentioned the ecological debt in their main speeches, with some using the loaded terminology of 'reparations'. Arguably, then, the extent to which the concept of ecological debt has gained visibility in national and international policy arenas is at least partially due to the joint efforts of activists and ecological economists.

Closely related to the environmental justice movement now burgeoning in the global South is another movement calling for 'socially sustainable economic degrowth'. It has deep roots in France but has expanded to Southern Europe (e.g. Spain, Catalonia, Greece, Italy), North America, Australia and beyond. The degrowth movement uniquely comprises activists and academics (many of them ecological economists) who are increasingly allying themselves with advocates of environmental justice. This alliance is based on the recognition that struggles for justice in the global South need allies in rich Northern nations that are willing to challenge patterns of excessive resource consumption in the global North. Yet the topic of degrowth has to date received relatively little attention from within the field of political ecology.

INTRODUCING SOCIALLY SUSTAINABLE ECONOMIC DEGROWTH

Degrowth is a keyword used to describe a socio-environmental movement formulated around a diversity of strategies (oppositional activism, building of alternatives and policy proposals), actors (practitioners, activists and scientists) and networks advocating steady-state macroeconomics, ‘prosperity without growth’, and *post-Wachstum* (post-growth in Germany). Overall, degrowth calls for a radical, multifaceted transformation of society (Muraca, 2013). Described in greater detail in Demaria et al. (2013), the sources of degrowth are numerous and wide ranging, with origins in both activism and academia. As such, degrowth comprises multiple streams of thought and action.

Intellectual sources of note include culturalist/anthropological critiques of the relative cultural homogenization that has occurred through the global adoption of new technologies as well as consumption and production patterns from the global North (Polanyi, 1944; Latouche, 2009). Proponents of degrowth take particular issue with the depoliticizing effects of the ‘sustainable development’ discourse, pointing in particular to the depoliticization of Western parliamentary democracies, characterized by a lack of genuine democratic debate on economic development, growth and technological innovation. Castoriadis (1988) has been especially influential in this line of thought, particularly in his advocacy of the autonomous ‘self-institutionalizing’ society, one able to constantly reflect and question its laws and assumptions (Asara et al., 2013).

The field of ecological economics itself has provided important foundations to degrowth as well. Of note is the bioeconomic approach of Georgescu-Roegen (1977), which demonstrated how human activity transforms energy and materials of low entropy or good quality into waste and pollution that are unusable. Ecological economists concerned with material and resource flows point to the failure of economies to ‘dematerialize’ (Haberl et al., 2004), evidence of the declining returns of energy return on energy investment (EROI) (Martinez-Alier, 2011), and the phenomenon of ‘peak oil’ (Kerschner and Hubacek, 2009). They argue that it is not enough for rich countries to aim for a steady-state economy (Daly, 1991), described as one that is stable, but mildly fluctuating in size, without degrowing first (Kallis, 2011).

Concern with justice has also been a significant influence on degrowth thought and action. Justice has been recognized as key to redressing North–South inequality (Ariès, 2005), and this has bolstered demands among some degrowth advocates for the global North to repay the ecological debt owed for past and present colonial exploitation in the global South. This strain of degrowth thinking has been especially influential in alliance building between political-ecological economists and activists, in both academic writing (Martinez-Alier, 2012; Goeminne and Paredis, 2010) and in the campaigning and policy advocacy work of NGOs and their networks such as Oilwatch International, Friends of the Earth International and Jubilee South (an international Christian movement on debt and development). These alliances have grown organically around issues such as ecological debt and, more recently, climate justice.

Taken up by ecological economics as an area of academic enquiry, ‘socially sustainable economic degrowth’ has been defined as ‘an equitable downscaling of production and consumption that increases human well-being and enhances ecological

conditions' (Schneider et al., 2010: 512). Interest in degrowth has profoundly influenced ecological economics, leading to the development of a wide range of policy and institutional innovations for building an alternative economics. These include financial/monetary proposals, the promotion of alternative forms of property, measures for reducing global carbon emissions equitably, caps for resource extraction, and work-sharing proposals (see the special issue by Kallis et al., 2012). Selectively outlined below, these proposals represent concrete interventions and, in our view, herald the ascendance of what could be a new phase of 'properly radical critical emancipatory enquiry and politics' (Swyngedouw, 2008: 3).

KEY PROPOSALS

A key tenet of the ecological modernization discourse calls for the allocation of environmental 'goods' and 'bads' by markets. The assumption, for example, is that carbon markets will lead to the optimal allocation of pollution (abatement), and that somehow this will trigger a decarbonization of economic activity. In the degrowth literature, there have been strong arguments, both theoretical and empirical, illustrating, first, that decarbonization is not occurring, second, that, even if it were to occur, it would not be sufficient as long as the economy continues to grow (Jackson, 2009), and third, that technological improvements in how efficiently we use carbon are likely to reduce the cost of carbon and hence increase total consumption (the so-called 'rebound effect' or Jevons's paradox). Degrowth advocates are, moreover, very critical of the commodification of pollution control and the establishment of new markets, since these tend to displace and crowd out other languages of valuation and logics of action.

In this vein, a key degrowth proposal favours governmental action to cap carbon use, sharing this cap among countries on the basis of their previous carbon debt (i.e. contribution to climate change). Richard Douthwaite (2012), for example, developed a 'cap and share' programme that imposes a declining annual global cap on CO₂ emissions and allocates a large part of each year's tonnage to everyone in the world on an equal per capita basis. According to Douthwaite (2012), permits, if less plentiful than the supply of fuel, would capture 'scarcity rent', which implies higher prices based on relatively low supplies. Allocated permits would be sold by individuals (using the income as a buffer against increasing energy costs) to a central purchasing institution (he suggests a Global Climate Trust, possibly instituted by the UN/G20, acting in essence as a cartel of oil consumers). This institution would then sell the rights to fossil-fuel producers to cover their emissions output for the given year. Long-term stability would be achieved in theory, as boom and bust cycles engendered by fluctuating prices become diffused. The incentive for fuel producers to join such a scheme, Douthwaite argues, is that, although their output would be reduced each year, the price paid would increase to maintain their income.

Another set of proposals focuses on employment. Here interest is with policies that can secure meaningful employment in a context of no or degrowth if productivity continues to increase. Normatively speaking, the ambition is the deprofessionalization and deprofessionalization of the economy (Nørgård, 2013), with an expansion of what French political ecologists have called 'the sphere of autonomy', that is, the sphere of

non-paid production for pleasure, community and use. Jackson (2009) refers similarly to a 'Cinderella' economy of low-carbon, labour-intensive, part-time service activities that have high social value, but are undervalued in monetary terms. These policy proposals are in fact supported by empirical evidence that uses a case study approach to show that effecting such a shift in the UK could produce a significant decrease in GHG (greenhouse gas) emissions and high levels of employment (Jackson and Victor, 2011).

In this context the guaranteed basic citizens' income (Alexander, 2011; Schneider et al., 2010) has been proposed as a key institution. In contrast to a minimum wage, a basic income is conceived as a monthly stipend granted upon birth (or perhaps later, at 16 or 18 years of age) to all citizens of a nation and financed through taxation (Raventós, 2007). Its implementation, proponents argue, would provide a minimum safety net to all citizens, reduce the importance of paid employment (and hence the social distress from unemployment) and create an environment in which low-resource-intensity, non-commodified activities such as political participation could flourish. One effect of a basic citizens' income is that it would subsidize individuals to form collectives in the autonomous sphere.

Calls for institutional changes in the domains of private property and money have also emerged from degrowth thinking. Private property has been a targeted area of policy change, due to its role as collateral in the 'virtual' (based on unrealized, transferable paper assets) economy of finance (van Griethuysen, 2012). Arguing that the capitalization of property generates the imperative of growth through a process of cumulative feedbacks, van Griethuysen proposes breaking the cycle of property accumulation through legislation that could delineate the scope and temporality of property ownership, restraining the potential for its concrete use and its use as capital, while developing new forms of communal ownership. Degrowth proposals also call for the resocialization of money. In contrast to money issued as debt by private banks to fuel growth, 'public money' (Mellor, 2010) can be issued by the state, without debt, to meet public needs, for example by financing a basic income or by subsidizing cooperatives, care services or renewable energy projects. Public money is seen as a means of recapturing the enormous rents currently collected by private banks that control the supply of money and 'lend' it to the state.

These conceptual challenges to current state-level policies, related to resource use, employment, property and monetary institutions, are complemented by action research conducted by grassroots movements that develop actual alternatives and institutions on the ground. For example, eco-communities, rural-urban squats (Cattaneo and Gavaldà, 2010) or co-housing projects (Lietaert, 2010) experiment with forms of non-private housing where users share common space and invest physical labour in the making and maintenance of their shelter. Cooperatives of workers and users (consumers) challenge the corporate form of privatized ownership of the means of production and do away thereby with rents and profits. Unlike corporate agri-businesses, 'back-to-landers' produce for subsistence and for alternative food networks linked directly to consumer cooperatives without passing through markets. In urban gardens accessed and preserved in common, city dwellers produce their own food and conserve their own recreation spaces, investing unpaid labour in subsistence and leisure.

Degrowth researchers are also interested in various new institutions that are emerging for education or care, such as parental-cooperative daycares and schools, where parents

contribute with their own labour to the education of their children. Such ‘nowtopias’, as Carlsson and Manning (2010) call them, share five features: first, a shift from production for exchange to production for use (by participants or end-users); second, a substitution of non-paid labour for wage labour, meaning a decommodification and deprofessionalization of labour; third, an anti-utilitarian logic that challenges the primacy of money via exchanges moved, at least partly, by barter and reciprocal ‘gifts’ rather than the search for profit; fourth, an intrinsic value assigned to connections (‘commoning’) and relations in and for themselves; and, fifth, the lack of an inbuilt dynamic to accumulate and expand.

What is particularly interesting to ecological economists in terms of the sustainability of nowtopias is the relative low-carbon/material content of such alternatives compared to conventional state or market systems that provide the same services. In some cases, for example food production, alternative systems may be less efficient than conventional systems per unit of product, given the lower degree of specialization and the limited division of labour (though this would be less certain if one were to account also for the environmental costs of inputs such as oil). Even so, such alternatives are likely to be more environmentally benign precisely because their unproductiveness limits their scale (creating an inverse Jevons’s effect).

INSIGHTS FROM ECOLOGICAL ECONOMICS?

Any sceptical political ecologist worth her or his salt would doubtless be quick to indicate that the political economy of the reforms outlined above (and most others) would face tremendous opposition from numerous vested interests. This point has not been lost on ecological economists working on degrowth proposals. Rather, it has stimulated a parallel and growing interest in understanding the vital role social movements have to play in effecting structural change. For example, one key question is whether the nowtopias described above create a collective sense of experience that can mobilize political action and articulate related changes at the level of state institutions. Degrowth researchers are thus keen to investigate alternative spaces, to understand the motivations of grassroots organizations for engaging in non-capitalist practices, explain how people organize (in collectives or networks) when initiatives succeed or fail, and how post-capitalist alternatives might propagate and evolve within capitalist economies.

Interest in the role of social movements in affecting change is also a core focus of some political ecologists (Gibson-Graham, 2006; Escobar and Osterweil, 2010). Post-constructivist political ecologists are, for example, increasingly examining the dynamics of socio-political change through the conceptual lens of ‘flat ontologies’ (Marston et al., 2005; Escobar, 2007; Jones et al., 2007), studying the way that social entities evolve through relations of difference and power to develop autonomous, localized and interactive practices. The study of the wide range of practices, initiatives and proposals being carried out under the degrowth banner could therefore provide fertile subject matter for political ecologists seeking to translate insights from social movements into political strategies (Escobar, 2010), thereby generating valuable knowledge on the socio-political dynamics of change.

Benefits to socio-political theory aside, there are other practical insights to be gained by political ecologists from connecting to ecological economists working on degrowth. First, while political-ecology analyses frequently focus on capitalism, discussions of the links between environmental problems and the requirements of this particular mode of production, as well as the unequal power relations it rests on and perpetuates, tend to take place on an abstract level. In contrast, ecological economists have become adept at unpacking the 'mechanics' of capital and its institutions (notably the interrelated roles played by property, interest rates and debt), highlighting the concrete effects of growth in a range of localized contexts. Equally, degrowth research is concerned with how capitalist discourses of sustainable development, eco-efficiency and ecological modernization produce commodification and growth imperatives, and how economists and economics perpetuate the 'growth fetish' (Hamilton, 2003). Such contributions from ecological economics could arguably enrich political-ecology analyses of the necessary foundations for systemic institutional change and, consequently, the ability of the field to contribute to the reconfiguration of institutions for a more just, sustainable society.

Second, engaging with degrowth research and activism could substantially increase the capacity of the field to contribute to practical problem-solving. Limited influence in this area to date may be a result of the uneasy relationship some political ecologists have had in the past with environmentalism. Some, for instance, have been critical of the narrowness of 'backyard' politics that lack a universalizing emancipatory agenda (Swyngedouw, 2008). Others have been critical of the ways some international conservation NGOs have legitimized violent state oppression of minorities in selected African countries (Peluso, 1993) or facilitated the expansion of neoliberal governmentality in Asia (Bryant, 2002).

To these critics, we would point out that the environmentalisms of the global environmental justice and degrowth movements are distinct from older and less radical conservation movements in that both are explicitly political, sharing an essentially universalizing agenda that calls for the environment to be protected and for production and consumption to be limited, not only for the sake of the environment but also for the sake of creating a better and more equitable world for everyone to live in. While conservative or particularistic backyard elements exist within certain EJOs and bio-regionalist variants of the degrowth discourse, it would be an analytic oversight for political ecologists to discard the concerns and activities of the burgeoning number of grassroots movements that employ discourses of environmental limitations while motivated by questions of social justice and livelihood defence.

We realize such engagement is a messy and risky endeavour. Ecological economists have not shied away, however, from publicizing and supporting demands for ecological debt reparations and resource caps, or proposals for leaving resources under the ground, for a basic income, for the socialization of money or for a reduction of the working week. These proposals are of course highly problematic, especially since the call for a transition beyond capitalism rests on (radical) reforms from within capitalism. At a minimum, however, they provide useful thought experiments on what a post-capitalist, post-growth society could look like and how it might be organized. By paying particular attention to the circumstances under which contentious degrowth proposals succeed (or do not succeed), and analysing how particular struggles for reform bring

(or do not bring) about change, political ecology stands to become directly involved in the formulation of practical solutions to a wide range of sustainability issues.

Third, while political ecology has produced a vast body of literature critical of so-called ‘sustainable development’ policies and their negative impacts on marginal societies and communities, it has been much less successful in influencing policy change. A cumulative benefit of paying increased attention to grassroots proposals and initiatives in the manner outlined above is that political ecology will place itself in a much better position from which to influence public debate. This is crucial, for, as Walker (2006) points out, policy change is rarely effected by insightful critique, no matter how well grounded in rich theoretical analysis. What is required is a ‘compelling counter-narrative’ (Walker, 2006: 384) – one capable of capturing and convincing the public imagination. Degrowth, we propose, with its implicit and explicit connection to environmental justice, offers such a counter-narrative. It is, moreover, a counter-narrative that is growing in popularity, gaining support across global civil society, and increasingly penetrating policy circles to challenge the entrenched notion of ‘economic growth as development’.

CONCLUSION

The promises of ecological modernization (i.e. dematerialization of the economy, economic growth linked to lower environmental impacts, win–win sustainable economic development) cannot be fulfilled. On the contrary, these promises and the assumptions on which they are based have evolved into discourses that legitimize the opening up of new spheres of capital circulation and accumulation. The ascendancy of the rhetoric of the ‘green economy’ or even ‘green growth’, and the promotion of markets for carbon and ecosystem services, illustrate this well.

In this context, a crucial question (as posed by Leff, 2015) is whether political ecological thought and practice is capable of deconstructing the current unsustainable world order, and mobilizing social thought and action towards a sustainable future. For Smith (2010), social change and political transformation are inevitable, but he warns that transcending the current crisis will require the assemblage of a sort of ‘post-capitalist toolkit’ of intellectual ideas, imaginaries, as well as social and political organizing. Concurring with this view, we argue that ecological economics, through its analytic focus on the mechanics and discourses of the institutions of capitalism, on-the-ground engagement with grassroots proposals and the emergent but powerful counter-narrative of degrowth can contribute significantly to the assembly of such a toolkit (Healy et al., 2013).

In this light we make our own normative claim – that political ecologists should recognize and acknowledge that EJOs, degrowth-inspired movements and their networks together constitute a critical force for making the world economy more sustainable and equal. This is because EJOs often reject dominant political and corporate framings of financial compensation, particularly because these preclude the use of other valuation languages such as human rights, indigenous territorial rights, the rights of nature, livelihood or sacredness. Degrowth organizations similarly refuse to be

coopted by capitalist pro-growth discourse, be it ‘smart’ growth, ‘pro-poor’ growth, ‘sustainable’ growth or, most recently, ‘green’ growth.

In analysing struggles for environmental justice and degrowth, and taking an active part in evaluating and disseminating alternative proposals for social and economic organization, lies the potential for the development of a more potent political ecology of the North and South. Such efforts would certainly strengthen the field’s normative claims that prosperity is not about development as usual (i.e. aggregate economic growth). More crucially, however, a political ecology enriched with insights from the political strand of ecological economics could go far in supporting the emergence of a ‘movement of movements’ built on an alliance of progressive social movements focused on achieving environmental and social justice beyond growth (Kallis et al., 2012; Speth, 2012).

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42. Urban political ecology ‘beyond the West’: engaging with South Asian urban studies

Anna Zimmer

Urban political ecology (UPE) differs from its rural counterpart in that it is still a rather new field of enquiry. Slowly emerging in the late 1990s, with a first overview published in 2003 by Keil, this body of literature is now quite substantial, featuring a wide array of topics, issues and theoretical approaches.

Early on, UPE was mainly based on case studies of cities in the North (with notable exceptions being Gandy, 2006, 2008; and Swyngedouw, 2004). It is only recently that a more substantial investigation of non-Western cities has occurred, with work on urban agglomerations in countries as diverse as South Africa, Sudan, Brazil, Ecuador, Mexico or Sri Lanka. Yet much of this literature has concentrated thus far on such perceived problems as water supply, waste management, and air or industrial pollution, while Northern cities have often been scrutinized on issues such as urban restructuring, or phenomena such as urban tree cover, lawns, amusement parks and more. Such a divide seems to suggest that Southern cities are understood in UPE, as in some other fields of study, as being inherently problematic.

Postcolonialism is a critical tool that helps to break away from such assumptions. Yet, and despite its ‘critical’ and ‘radical’ roots (Watts and Peet, 2004), political ecology’s engagement with postcolonialism is rather limited (Kim et al., 2012a). The field still struggles with the North/South divide (Collins, 2010; see also Joshi, ch. 9 this volume) through its attempt to include a variety of perspectives and entry points into analyses and theory-building. In this context, a recent collection on ‘Other political ecologies’ (Kim et al., 2012b) raises the important question of authorship and gathers works by scholars who do not identify with the label ‘Western’. In addition to crucial debate on authorship, the question of the geographical starting-point of theory-building and the conceptualization of the ‘non-West’ or global ‘South’ remains.

This chapter extends this debate into the subfield of urban political ecology to move forward the engagement of political ecology with postcolonial thought. I argue in particular that UPE can benefit from a dialogue with debates on urban theory ‘beyond the West’ (Edensor and Jayne, 2012a). A recent contribution by Lawhon et al. (2013) (which appeared after the present chapter was first drafted but which has now been incorporated into the argument where appropriate) has forcefully shown several of the benefits such an engagement can have by bringing UPE into debate with recent literature on African urbanism. The sorts of questions that emerge here are: how can reflections on cities other than Western ones contribute to intellectual advancement in UPE? What can UPE itself add to the debate on cities across the world?

This chapter proceeds as follows. The next section briefly discusses selected recent developments in urban studies that attempt to rewrite urban theory from a starting point of the South and/or from thorough comparisons across the globe. Subsequently, I

examine selected narratives that emerge from urban scholarship on South Asia of most pertinence to UPE. Then, UPE work is discussed that investigates Southern cities to tease out how such research might contribute to the larger urban studies project of theorizing cities ‘from the South’. Concluding remarks draw these insights together and open further avenues of investigation.

URBAN STUDIES AND ORDINARY CITIES

Recently, some scholars in urban studies have sought to include cities other than the usual famous large Northern cities in both their empirical and theoretical efforts. This initiative has been heralded by Robinson (2006: 1), who holds that thinking about cities should adopt a ‘postcolonial framework’.

A major point of critique is that urban theory has so far tended to view Southern cities as problematic – lagging behind or chaotic or at least inherently different from Northern counterparts (Chattopadhyay, 2012; Edensor and Jayne, 2012b; Roy, 2009a). In contrast, Robinson (2006) demands that all cities be seen as distinctive and unique – as ‘ordinary’ (a term inspired by Amin and Graham, 1997) – no matter their size or location. Similarly, Edensor and Jayne (2012b: 1) call for an appreciation of the ‘diversity of cities’ that leaves behind dualisms, including the one of ‘North’ and ‘South’, that moreover suggests an apparent homogeneity between vastly different regions. The wording ‘beyond the West’, chosen by Edensor and Jayne (2012a), has been criticized by Chattopadhyay (2012: 76) for suggesting ‘an “outside” [that] ... remains tethered to the “West” as the point of reference’. For want of a convincing alternative I use ‘Southern’ and ‘South’ in this chapter.

In their ‘desire of multiplying the readings of the non-Western city’ (Edensor and Jayne, 2012b: 24), the authors stress the fundamental connectedness of all cities to, and embeddedness in, ‘multiple elsewheres’ (Mbembe and Nuttall, 2004: 348). Acknowledging this demands that cities are conceived as spaces of flow, inherently ‘in motion’ (Mehrotra, 2008: 206) and, in this constant change, always contested (Edensor and Jayne, 2012b).

Moreover, cities are made up of a multiplicity of overlapping spaces that are heterogeneous and partly disconnected (Amin and Graham, 1997; Edensor and Jayne, 2012b; Simone, 2012) and remain ‘opaque’ (Benjamin, 2010: 7). As a result, cityscapes may be contradictory and complex (Anjaria and McFarlane, 2011). It is with this complexity in mind that urban studies is called upon to approach not only cities in the ‘South’ but also cities in the ‘North’ – for, even here, the shiny, apparently ordered and homogeneous cities carry different cities within them that risk being overlooked (Robinson, 2006).

CONTRIBUTIONS FROM URBAN STUDIES IN SOUTH ASIA TO UPE

To make sense of how these sorts of debates and issues relate to the elaboration of UPE, this chapter next draws on selected narratives in urban studies research on South Asian cities. In particular, the everyday forms of complex negotiations that surround both state and urban society are highlighted as possibly beneficial to UPE.

The first major narrative here is that of a highly heterogeneous, fragmented and complex state. True, within political ecology, the state has long received attention: for example, Bryant and Bailey (1997) discussed it as being the first among five large actor types, arguing that the state's dual role of developer and protector of natural resources is one fraught with tension. Robbins (2008) also elaborated on the variety of roles the state can have in environmental governance. In the Indian context, meanwhile, Agrawal (2005) drew on Foucault's notions of governmentality to spell out the historically contingent nature of state institutions, assessing multiple governmental actions that attempt to shape people's environmental practices. Yet Ioris (2012) criticizes an ongoing under-theorization of the politicized role of the state in the field, and notably in UPE. Thus state actions are conceptualized superficially if at all and the field fails to reflect the subtle and complex ways in which the state is an expression as well as terrain of societal contestation and negotiation (Ioris, 2012). In this context, the discussion now draws on diverse literature on the state so as to advance UPE's understanding of this crucial institution.

In the last decade, anthropologists and social geographers have been examining the question of the Indian state by studying its everyday practices as well as representations (Fuller and Bénéï, 2001). Foucault long ago pointed out that the state is not a given institution – rather it is the effect of the (re-)production of certain forms of knowledge, discourses and the governmentalization of a variety of institutions (Foucault, 2010; Lemke, 2007). Anthropologists have subsequently elaborated this key insight. Thus they show how, in the absence of a clear demarcation between society and state, boundaries are constantly reproduced by discursive and imaginary practices even as they are an effect of power in the end (Sharma and Gupta, 2006; Verkaaik, 2001). Relationships between citizens and states are not necessarily direct; a host of intermediaries mediate access to the state and its resources, including elected politicians (Berenschot, 2010; Chatterjee, 2004; Jha et al., 2005).

Indeed, this conceptualization recognizes that state representatives, too, have complex relationships with state institutions (Bawa, 2011; Tarlo, 2001). These individuals thus juggle diverse social roles, expectations and claims, while being under constant pressure from other actors both within and outside the state (Anand, 2011). They therefore adjust their behaviour continuously in relation to shifting and plural institutions. For example, in case studies from Dhaka and Delhi, state officials deemed collecting a fine for breaking regulations inappropriate where the wrongdoer was seen as poor and struggling for a livelihood (Etzold et al., 2012; Zimmer and Sakdapolrak, 2012). Again in Dhaka, other state employees were actively engaged in negotiating access to public space for different kinds of informal uses and livelihoods, for instance respecting the construction of an illegal mosque due to religious norms (Hackenbroch, 2011). Such individuals have thus been found to deploy rules flexibly, negotiating them

through everyday interactions (Gandhi, 2012a). This leads to a situation where a 'routine state' exists under a monolithic image of the state made up of a multiplicity of 'everyday institutions' (Corbridge et al., 2005: 5; see also Oldenburg, 2006).

This troubled and multifaceted relationship between the state and its rules is elaborated by Roy (2009b), who insists that informality is deeply rooted in state practices. In an apparent contradiction, state disciplinary action against informal activities even represents a kind of legitimation practice in so far as it amounts to a tacit recognition by state actors and institutions of their 'right' to exist (Anjaria, 2011). Thus the sovereignty of the state remains – much as the water supply network of Chennai – 'patchy, layered, segmented' (Coelho, 2006: 500), with administration often 'improvised' (Gandhi, 2012b: 50).

Here is to be found a key debate in urban studies literature on South Asia. Thus some argue that fuzziness of regulations or entitlements, and associated political mediation, are beneficial in that they enable access of poor groups to state services and urban space (Anand, 2011; Benjamin, 2008; Gandhi, 2012a). Others, in contrast, point out that powerful elites are almost always in a better position to take advantage of such negotiations (Hackenbroch, 2011). Indeed, the very dependence on political mediation is found to intensify poor people's sense of social exclusion – especially as connections to influential people or the possibility of entering into an exchange of favours are often lacking by precisely those who are most in need of a helping hand (Ruud, 2000; Verkaaik, 2001). Dependence on intermediaries may also make poor citizens more vulnerable to violent conflict when political parties mobilize patronage networks to organize communal or ethnic riots (Berenschot, 2009). For some, this difficult situation requires knowledge production to achieve clarity of claims to empower the poor, while others think that the opaqueness of claims itself is empowering them (Anwar, 2011; Roy, 2009c).

The second major narrative emerging from urban studies research in South Asia that is of interest here is that which depicts a complex, highly fragmented and politicized urban society. Indeed, a 'Northern' UPE stresses that class, race and gender play an important role in (re-)producing urban environments (e.g. Byrne et al., 2007; Finewood, 2012; Heynen et al., 2007). Yet it does not sufficiently acknowledge complex questions of identity, subjectivity and social relations (Lawhon et al., 2013; Leonard, 2012). In contrast, the South Asian literature precisely provides important insights here, showing how cities act as 'privileged theatres ... for the performance of contentious politics' (Tawa-Lama Rewal and Zérah, 2011, § 8). Fault-lines appear, for example, where different kinds of settlements along the formal–informal residency continuum characterize many cities; where the 'middle class' is complexly divided into subgroups; where religious, sectarian and (in the Indian context) caste differences play a role; and where societies are multi-ethnic and multilingual – all resulting in highly complex positionalities (Ahmad, 2013; Budhani et al., 2010; Chakrabarti, 2008; Gazdar and Mallah, 2011; Harriss, 2005; Hull, 2012; Jarvis Read, 2010; Lemanski and Tawa-Lama Rewal, 2013; Roy, 2009a; Véron, 2006; Zérah, 2009). Empirical work demonstrates the impact of such complexity. Thus Mehrotra (2008) highlights the pluralism of a mega-city like Mumbai, noting that, in effect, different worlds occupy the same space but use and understand it differently. Affectively, such differences can lead to the experiencing of space in terms of exclusion and inclusion (see Butcher, 2012 on Delhi).

Conflicts often result as actors attempt to rearrange urban space or resist such an effort. Likewise, inequality of urban environments can spill over into larger conflicts. In the case of Karachi, for instance, specific conflicts around housing and urban space are at the root of what appear to be larger ethnic conflicts (Gayer, 2007; Gazdar and Mallah, 2013). Political parties become involved in such conflicts for the sake of patronage and electoral gains, further exacerbating tensions (Ahmad, 2011; Berenschot, 2009; Gazdar and Mallah, 2013; Verkaaik, 2001).

Yet it is rare if not impossible that a specific interest group can realize its goals completely. Excluding others from urban spaces is never completely successful and never lasts for ever (Gandhi, 2012b). Citizens claim and 'invent' spaces continuously (Miraftab, 2004); in some cases they do so overtly through legal mechanisms, while in other contexts they choose stealth-like strategies to avoid attention (Anwar, 2011; Bayat, 1997; Benjamin, 2005; Roy, 2009c).

These scholarly contributions from the South Asian literature prompt several points worth considering in the study of urban political ecologies. Although slightly exaggerated, it can be argued that UPE narratives, when seen through the lens of the debates just outlined, do sometimes seem too straightforward, smooth and dichotomized. What then are some of the ways in which UPE could benefit from the insights of this urban studies literature?

First, scholars in the latter emphasize major spaces of perpetual negotiation – within both state and society – that need to be analysed to understand the production of urban environments. This raises several questions: who has access to these spaces and how is access constantly (re-)negotiated? Who can use the state and its agencies for their interests? How and under which circumstances can some actors advance their agenda? From such a vantage point, it becomes clear that governmental projects or policies that aim at (re-)producing certain urban political ecologies are not simply drafted and then implemented – rather, they are negotiated at every step and turn of the way. Urban studies writers here draw attention to the often subtle mechanisms of marginalization and resistance in cities where negotiations over rules are the order of the day. Ironically, this dynamic has been a core concern of political ecology research conducted in rural areas (Watts and Peet, 2004), but is something that has yet to receive adequate discussion in its urban subfield.

Second, urban studies writers highlight that, to fully understand the production of urban ecologies, it is necessary to minutely analyse the myriad of actors, conflicts, political strategies (including those of self-positioning) and performances that are the warp and woof of everyday urban living in cities in South Asia and beyond. This includes attention to how and when state-related roles are enacted by certain actors (such as politicians) who otherwise interweave a wide variety of roles at the state–society boundary. It also encompasses addressing differences within groups (caste, family, class etc.) to highlight the rich and complex experiences, imaginaries and practices of individuals in their everyday lives. These powerful and multifaceted practices, and their effect on urban environments, are fruitful objects of fuller enquiry for UPE.

CONTRIBUTIONS FROM UPE TO THEORIZING CITIES ‘FROM THE SOUTH’

UPE is clearly a work in progress that has much to gain from the sorts of conversations with urban studies noted above. In relation to a UPE of the South, research remains uneven, with a smattering of informative but still limited case studies even as ever more work is now being produced. The impetus to recognize ‘other’ political ecologies that is growing in the field as a whole is likely to impact on UPE in the future, thereby influencing the kinds of issues and perspectives deemed important (Lawhon et al., 2013).

And yet it would be wrong to underplay the important contributions that UPE has already made to theorizing cities ‘from the South’. Three such contributions stand out here. The first one is the way that UPE traces how urban nature plays an often pivotal role in much larger social and political struggles. Because ‘mundane’ environment-related practices constantly reproduce power relations (Loftus, 2007: 55), social differentiation and positioning are enacted through material practices such as fetching water from this rather than that source or defecating at certain sites only (Birkenholtz, 2010; Blanchon and Graefe, 2012; Swyngedouw, 2004; Truelove, 2011). It is also achieved through a process of ‘othering’ certain poorer and/or weaker actors declared to be dirty, unhygienic or polluting to the environment (Ghertner, 2011; Véron, 2006; Zimmer, 2012). Indeed, specific practices or discourses are used to criminalize or marginalize some individuals and groups (Ghertner, 2012; Truelove and Mawdsley, 2011). Debates on environmental practices significantly contribute here to the creation of distinct if changeable urban subjectivities and identities: for instance when middle-class residents see themselves as privileged preservers of urban and peri-urban nature; when gender and class subjectivities are reinforced through the bodily experiences of women who have to struggle daily to access water; or when residents of informal settlements resist ascriptions of dirtiness and lack of understanding about the local environment (Doshi, 2013; Truelove, 2011; Zimmer, 2012).

Environmental practices also serve to delineate urban spaces such that they include or exclude certain actors from them. Attempting to gain access to water in Delhi, for example, can painfully highlight ‘invisible boundaries’ that delimit where (weaker) groups can and cannot venture (Truelove, 2011: 148). State practices are often implicated in such boundary drawing. In Khartoum in the Sudan, state authorities thus sought to regain control over certain urban areas by expanding micro-networks of water supply into previously non-served areas (Blanchon and Graefe, 2012).

Environmental practices serve to divide urban societies, but so does environmental knowledge. Indeed, knowledge production can be highly contentious as conflicting claims pit actors against each other when seeking to redefine the meaning of the urban environment (Leonard, 2012). In Nairobi, for instance, plastic-bag manufacturers have been rather successful in portraying plastic bags as a contribution to forest protection (reducing the need to fell trees for paper) and poverty eradication (providing local employment), thus contradicting other actors who point out their negative impact on both the environment and human health (Njeru, 2006). Not everybody’s knowledge receives the same attention. Indeed, powerful ‘regimes of truth’ can actively displace marginalized actors’ interpretations of urban space (Karpouzoglou and Zimmer, 2012).

Conversely, the situated knowledge of a diverse range of actors is also seen to open up a 'politics of hope', as acknowledging different forms of knowledge can be considered a first step on the road to changing power relations (Loftus, 2007).

Urban political ecologists also assess how environmental imaginaries are routinely mobilized to legitimize restructuring of urban environments. This situation is recognized by South Asian scholars such as Ahmad (2013), who describes how environmental discourses are instrumental (among other dynamics) in displacing a slaughterhouse to the margins of Delhi – as arguments about river pollution were used by NGOs and the courts to engineer the eviction of slum residents from alongside the Yamuna river (Baviskar, 2011; Bhan, 2009; Dupont, 2008). 'Bourgeois environmentalism' (Baviskar, 2003: 90) has come to reshape urban space in India (as elsewhere in the South), putting aesthetic nature values before other often livelihood-based values. Urban political ecologists take such ideas forward when elaborating for example on how 'beautification' has been instrumental in sanitation development in Guayaquil in Ecuador, as well as how enclosure of river restoration sites and other pollution-control measures in Delhi displace or otherwise disadvantage the poor (Swyngedouw, 2004: 89; Follmann, 2014a; Ghertner, 2011; Truelove, 2011). Likewise, the notion of 'sustainability' has been used to legitimize the contested redevelopment of the Sabarmati river-front in Ahmedabad, which included bringing water from the Narmada to 'beautify' the urban stretch of the seasonally dry river (a condition of dryness that had extended to most of the year following the building of upstream dams) (Pessina, 2012). In these types of urban (re)development, NGOs and the judiciary have usually played a critical role, perpetuating or solidifying the hold of the urban middle classes over policy making while working hand in glove with political and economic elites (Ioris, 2012; Véron, 2006).

Such UPE work can contribute much to discussions in urban studies, notably on the fragmented status of urban society. It draws attention to the way that social fault-lines and a diversity of spaces within the urban area are created and maintained through material, environment-related practices. It also demonstrates how environmental knowledge, imaginaries and discourses are instrumental in attempting to restructure or enclose urban spaces, thereby marginalizing or excluding weaker groups.

A second useful contribution by UPE relates to the issue of spatially diverse urbanization of nature within cities as part of a wider connection of urbanization to larger political, economic and social dynamics (Swyngedouw, 2004; Véron, 2006). Studying this process reveals how many inequalities in living conditions and exposure to hazards found in and around informal areas can be understood better by studying how these areas came into existence in the first place as a result of shifting political and economic processes (Collins, 2010; Ioris, 2012; Myers, 2008; Romero and Opazo, 2011). In Santiago, Chile, for example, Romero et al. (2010) show that higher income groups, though living in high-risk areas in terms of land-slides and flooding, successfully push for public investment that allows for risk mitigation in their neighbourhoods. Postcolonial-minded writers also stress the need to understand the vastly different everyday experiences of urban living and citizenship in such diverse environments (Doshi, 2013; Shillington, 2012; Truelove, 2011; Zimmer, 2010). Attention to such experiences, notably using ethnography as a tool to carry out the research, is increasingly seen as epistemologically important to understanding crucial aspects of the

continuous (re-)production of urban political ecologies (Grove, 2009; Lawhon et al., 2013; Loftus, 2007, 2012). Such research enriches urban studies in two ways: (1) it underlines the importance of a political-economic analysis to understanding the production of urban space; and (2) it explains how differences and inequalities become tangible for residents through the urban environment and the bodily experiences they have in it.

A third UPE contribution is to demonstrate the diversity of environmental impacts that social processes and conflicts can have. Urbanization almost always brings with it a huge restructuring, notably of peri-urban areas that come under the influence of the city; but this also extends much further as urban metabolism depends on large amounts of resources drawn from distant hinterlands (Myers, 2008; Swyngedouw, 2004). Outside Rio de Janeiro, successive waves of urban expansion made possible through infrastructural development and drainage of earlier swamps led to heavy pollution of rivers and bays far from the city centre (Ioris, 2012). But even inner-city ecologies are deeply affected by powerful imaginaries and practices that actors use to reshape agglomerations. Urban infrastructure and mega-sport event projects in Delhi have, for example, altered the ecology of the Yamuna River, encroaching on a 'no-development' zone with impunity in the process (Baviskar, 2011; Follmann, 2014b). More extreme, warfare in and around urban areas can have significant negative impacts on local ecologies. In Sri Lanka, military strategies in Batticaloa and surrounding smaller urban centres included transforming water flow in and out of a sensitive and highly productive brackish lagoon, even as besieged urban residents who had lost livelihoods desperately overfished an already disturbed ecosystem (Bohle and Fünfgeld, 2007). In sum, UPE provides a multifaceted appreciation of how unequal power relations and often adverse human–environmental interaction in the Southern cities become entwined – something of great use to an urban studies literature that has hitherto tended not to emphasize enough such dynamics.

CONCLUSION

This chapter has argued that urban political ecology as a whole has been relatively slow in turning towards studying cities in the South. Lately, however, a growing literature has developed that should enter into discussion with urban studies theorizing on cities 'from the South'. I selectively highlighted some of the key benefits of such an intellectual connection.

On the one hand, UPE can contribute important insights to urban studies. These include: understanding of the role of environmental practices in enacting social differentiation; discussing how environmental knowledge is contested and related to changing subjectivities; appreciating the ways urban spaces are (re-)produced and experienced in day-to-day life; analysing environmental imaginaries at the heart of many urban projects; and documenting adverse urban environmental impacts that habitually fall most heavily on the poor or otherwise marginalized. Such insights will advance knowledge of the complex, diverse and highly political character of urban human–environmental dynamics in urban studies research.

On the other hand, South Asian urban studies can contribute important insights to UPE. In particular, the former's conceptualization of two spheres of political negotiation – the fragmented state and the heterogeneous urban society – are fruitful points of connection in that they help to complicate sometimes too simplified UPE narratives on the political production of urban socio-nature, even as they help scholars in UPE to explore more deeply the '[m]essy, complex and contested' character of state and societal dynamics in such areas (Shillington, 2012: 296). The example of complex fine-grained analyses that urban studies provides here will help to advance theorizing in UPE, starting from everyday practices, negotiations and politics that profoundly shape increasingly heterogeneous Southern cities. Such an engagement chimes with wider postcolonial thinking in promoting new research foci and other political ecologies (Kim et al., 2012a; Lawhon et al., 2013; Robinson, 2006).

And in a 'reverse knowledge transfer' (Roy, 2009a), this connection of UPE and urban studies can also contribute to new UPE understandings of Northern cities. First, it adds new research foci as the full diversity of urban spaces, societies and social perceptions is finally acknowledged through postcolonial assessments of everyday urban environmental life and imaginaries in Northern cities. This acknowledgement ought to complement pre-existing strengths, notably centred on the political economy of urban nature production. And second, it draws attention to the porous qualities of the state – something that has mostly been ignored in research on Northern cities still seemingly attached to a Weberian ideal-type of a neutral, rule-governed bureaucracy. Here, insights as to the messy, informal everyday negotiations that inform politicized state practices in Southern cities will be invaluable to the building of a more complex Northern UPE.

At the same time, both UPE and urban studies need to heed the call of scholars such as Bell and Jayne (2009) for research that analyses small and medium-sized cities around the world. This will build on the useful connections between UPE and urban studies promoted in this chapter, in that the need for greater attention to micro-level everyday practices, negotiations and imaginaries in the city is extended to all sizes and sorts of city. In the process, urban theorizing in the two fields will have put the messy experiences of 'ordinary' cities centre stage.

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43. Towards a lusophone political ecology: assessing ‘*para inglês ver*’ environments

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One of the most peculiar expressions of the Portuguese language is ‘*para inglês ver*’, widely used across the lusophone (Portuguese-speaking) countries, meaning, literally, ‘for the Englishman to see’ and, figuratively, that something ‘is merely for show’ (for the sake of appearances). While the exact origin of the expression is uncertain, it reflects the centuries-old colonial subordination of Portugal to England (the first treaty of ‘friendship’ dates from 1373, with the Treaty of Methuen in 1703 deepening the commercial disadvantages for Portugal), and consequent ‘double colonization’ endured by the Portuguese colonies (Santos, 2011: 409). The expression is a curious case of the impact on Portuguese popular culture of this relationship with a more powerful English ally – a creative way of dealing with external impositions or expectations without really submitting to them – but now used in a much broader sense regarding showing off in general.

The environmental specificities of Portuguese colonialism certainly remain understudied and deserve deeper academic attention (but see Dean, 1997; Miller, 2000; Pádua, 2005). And yet perhaps the greater peculiarity of the lusophone environmental experience resides not in environmental history, but rather in the much more contemporary, subaltern mind-set resulting from centuries of ‘colonization’ of both Portugal and its former colonies. Based on lusophone experiences on the ‘periphery’, we argue that *para inglês ver* represents an internationally distinctive way in which to conceive environment–society relations, and needs to be understood along two main analytical lines.

Firstly, *para inglês ver* serves as a metaphor of external influences in lusophone countries, with the recent upsurge in concern about the environment being a paradigmatic example of that. Even if it can be argued that there were home-grown environmental concerns and policies in these countries, the great push for environmental protection, especially since the 1970s, has mostly resulted from foreign influence. This includes externally suggested or imposed environmental practices, discourses and narratives, as well as wider conceptions of nature. Often, there is little acknowledgement of national specificities, resulting in ill-suited conservation measures and socio-environmental conflicts. The rejection of local, ‘other’ and traditional knowledge and practices by mainstream science (embedded in Northern ecological modernization and sustainable development discourses) is yet another sign of this adoption of external models.

Second, *para inglês ver* in relation to the environment has another sense involving action that is notably undertaken for the sake of appearances, and that is not necessarily

always in reaction to external influences. Here, there is an attitude involving the instrumentalization of the 'environment'. Such an attitude is manifested in environmental protection measures that are implemented purposely without real ecological utility, instead serving as a mere instrument of state strategies for international recognition over the environment and/or measures taken by private companies to green their discourses in keeping with 'corporate social responsibility'.

A range of lusophone researchers working in different academic fields has formed critical views of these *para inglês ver* environments in keeping with one or both of these analytical lines of enquiry, albeit without explicit mention of this notion. In so doing, they reveal themselves to be shaped by broadly similar approaches and agendas to writers from elsewhere in the world who subscribe to a political ecology perspective – albeit with their own distinctive intellectual articulations. Though not that visible so far in international academia (perhaps as a consequence of limited output in English and/or due to difficulties competing in the predominantly Anglo-American editorial world), they nonetheless provide compelling research explorations of the sorts of politicized environments that are a central preoccupation of the field of political ecology.

In exploring these less internationally noticed lusophone political ecologies, this chapter provides examples relating to research about and/or from scholars based in four countries, all with different 'subaltern' contexts. We start with Portugal, on the northern side of the North–South divide often depicted in political ecology, showcasing particular society–environment relations in the context of European Union (EU) integration. We then explore Brazil's case, as a resource-rich country with a history of unequal and destructive resource exploitation. Finally, we head to the African countries of Guinea-Bissau and Mozambique, with critical insights into environmental narratives from these countries. As is noted, the common thread running through these accounts is *para inglês ver* – a notion deeply embedded in the topics analysed.

PORTUGAL AND 'EUROPEANIZATION' OF THE ENVIRONMENT

After leading European maritime expansion in the fifteenth and sixteenth centuries, Portugal entered a long period of decay and subaltern status. With a tendency for national 'extroversion', the solution to national problems has been to look towards sea and empire. This has, in turn, led to recurrent outmigration, with adverse consequences (e.g. rural depopulation). The new 'salvation' once the last colonies won independence was the EU, a palpable reality in a society long centred on myths and utopia (Gil, 2004; Ferreira, 2013). Indeed, as much as there is a postcolonial lusophone Brazil and Africa, there is also a postcolonial Portugal in search of an identity based somewhere between its colonial past and a new role in Europe.

With the end of the dictatorship that lasted from 1926 until 1974, Portugal dropped its colonial-centred ethos and embraced the EU project. Since the country joined the EU in 1986 (then the European Economic Community, or EEC), it has faced new challenges imposed by a European framework designed by more powerful countries and more recently by deepening globalization and associated crises. The priority has been to close the development gap with other EU countries, notably by passively

adopting EU thinking. Here is to be found the ever-present cult of the ‘good student’ – only the latest example of a centuries-old tendency to import foreign ways (Ferreira, 2013).

Before the ‘Europeanization’ of almost everything, and most noteworthy here environmental policies, Portugal had experienced a late, incipient and geographically localized industrialization that was not accompanied by much environmental consciousness of the adverse impacts of such development (Soromenho-Marques, 2005; Schmidt, 2008). The EU was therefore a crucial external impulse for the systematic elaboration of environmental legislation and thinking (earlier work on the environment by Portuguese writers gained selective policy traction only; see Mansinho and Schmidt, 1994; Soromenho-Marques, 2005).

While most research in Portugal does not question the model of EU integration, some agrarian scholars dealing with the impacts of the Common Agricultural Policy (CAP) on the environment and on traditional land-use practices, as well as social scientists dealing with the politics of environmental conflict, provide critical insights.

Rurality, the Environment and the EU

From the late 1950s, the CAP modernization effort transformed European rural areas. Meanwhile, the Portuguese context remained practically unaltered until the country joined the EEC in 1986, except for a significant rural outmigration beginning in the 1960s (Baptista, 2011). This late arrival to ‘modernity’ after years of dictatorship, backwardness and a tightly controlled economy may help explain the persistence of an anachronistic structure based on ‘inefficient’ subsistence farming compared with elsewhere in the EU. The biodiversity-rich *montado* (an agro-silvo-pastoral system created in the nineteenth century and mostly known for cork production) and historical systems of customary land use such as the *baldios* seemed at odds with the modernizing CAP, which specifically targeted the ‘backwardness’ and the ‘natural’ disadvantages of the country (Black, 1990, 1992).

It is in this context that the CAP (like other EU policies) has been uncritically adopted in Portugal, with its suitability to the national context barely discussed. As the leading agrarian scholar Fernando Oliveira Baptista (2010) argues, this system tends to privilege products from the central and northern EU that contain the most competitive land holdings, while orienting less competitive areas towards set-aside and forest monoculture options instead. Such ‘exclusion’ in turn has important territorial and environmental impacts, including outmigration, land abandonment, afforestation with *Eucalyptus* and *Pinus* monocultures and intensified forest-fire events (Black, 1992; Rodrigo, 2003; Baptista, 2010).

Today, though, the least competitive rural areas are apparently poised to gain from the ‘environmental turn’ of the CAP. However, as Baptista (2006) argues, the assumptions underpinning this latest EU move are based on a specific spatial and temporal template of the rural transition (Jollivet, 1997) found in certain EU countries where a valorization of rural spaces in terms of their naturalness and aesthetics has been achieved – but something not yet replicated in Portugal, where the rural transition came later (Schmidt and Mansinho, 1997). Hence, in the latter, the ‘environment’ is hardly a political or social priority (a situation reinforced since the onset of the Great

Recession) and is rather therefore presented to rural areas as a ‘funding opportunity’ (Rodrigo, 2003; Baptista, 2011). Further, the EU’s agro-environmental measures and ‘wilderness’ conservation model are not tailored to the Portuguese context of extensive agriculture that, after centuries of human activity, represent biodiversity-rich humanized landscapes (Baptista, 2001; Rodrigo, 2003). The environmental question in Portugal, at least for biodiversity, thus remains inextricably linked to rural practices such as the *montado* system.

And yet the EU vision continues to unfold in Portugal. With rural depopulation and declining agriculture, the ‘environment’ becomes a new magnet as rural areas, once the setting for poverty and hardship, are now increasingly a place to be enjoyed by visitors replicating a similar pattern already found elsewhere in the EU (Rodrigo, 2003). Figueiredo (2013) provides vivid examples of this new rural–urban symbolic dichotomy, contrasting a ‘lived environment’ of locals with a ‘desired environment’ of visitors (who do not consider negative a landscape emptied of most human activity). As an example of the transformation Portuguese society has undergone recently, this process has reconfigured rural areas as ‘consumable’ places through tourism and related activities, sometimes based on ‘global’ images – what Figueiredo (2013) calls ‘McRuralization’.

True, there are positive outcomes associated with EU-led rural development in Portugal. Still, the changed rural environment becomes *para inglês ver*: biodiversity-rich humanized landscapes are emptied as the rural becomes ‘greener’, increasingly forested, touristic, less inhabited and less agricultural.

The EU and Management of Environmental Conflict

With the recent development of the social sciences in Portugal after decades of stagnation under authoritarian rule, it has only been in the last 30 years that research has started to take society–environment issues seriously (Mansinho and Schmidt, 1994). Notwithstanding common quantitative approaches, some qualitative, multi-disciplinary and critical approaches have developed at research centres such as the Centre for Social Studies (CES) at the University of Coimbra (part of an EU-funded political-ecology network), and OBSERVA and DINAMIA’CET in Lisbon.

Researchers based at these and other institutions focus on environmental aspects of EU-related modernization. EU integration is thus found to have brought profound societal and environmental changes: new institutional frameworks for dealing with the environment; improved quality of life; deepening of some environmental problems and the ‘cleaning-up’ of others; shifting public perceptions on the environment; and strengthened civic participation. New issues such as competing meanings that attach to organic food in Portugal (Truninger, 2008) appear alongside traditional concerns.

An example that illustrates the fast changes in Portuguese society since 1986 is the Foz-Côa prehistoric rock art engravings affair, analysed in depth by Maria Eduarda Gonçalves (2001, 2011). In the early 1990s the Portuguese government, acting in accordance with EU law concerning environmental impact assessment (EIA), decided to build a dam in the Côa River estuary that would flood recently discovered engravings. This generated a passionate public reaction demanding their protection. Now, the authorities initially used the EIA in a perfunctory manner (Gonçalves, 2002),

instrumentally using it to rubber-stamp an already-taken decision while giving limited scope for public input (Ferreiro et al., 2013). But intense contestation, politicization and media coverage prevented *para inglês ver* use of the EIA here. The dam was eventually cancelled after a new political party assumed power in Lisbon, while the site was later classified by UNESCO in 1998.

In this battle, social mobilization and appreciation of non-material values were seen as reflecting positive change in Portuguese society (Gonçalves, 2002; Ferreiro et al., 2013). Yet these societal changes are not necessarily reflected in institutional change (Gonçalves, 2002). As two recent cases of dam projects (in the Tua and Sabor rivers) show, contestation does not always lead to project cancellation. Outcomes even today reflect an array of factors and probably depend a great deal on socio-economic context and political timing.

Perhaps vestiges of both authoritarianism and popular passivity still affect environmental outcomes, together with the influence of economic interests that wield great material and discursive power. For example, the national electricity company EDP (whose remaining shares belonging to the state were sold to the Chinese Three Gorges Corporation as part of the privatization plan adopted in the framework of the 2011 IMF–EU bailout) has been the main proponent of hydroelectricity and the ‘national dam plan’ (indispensable to achieving greater energy independence, according to the authorities). In this role, EDP has sought to soften up public opinion about dams, for instance by depicting dams as ‘good for wildlife’ in a 2009 advert. The environment *para inglês ver* therefore becomes the only legitimate environment; green-washing here also seems to have been effective, as both the Tua and Sabor dams were constructed.

Apart from these sorts of specific cases relating to implementation of EU law, EU integration has had other overarching socio-environmental implications related to development choices made by the Portuguese authorities as well as the perceived EU role of the country in both Lisbon and Brussels. Portugal has surely seen great improvement in the quality of life since integration – even allowing for the effects of the Great Recession. Yet it nonetheless seems condemned to a permanent and accepted subaltern status, as a peripheral and weak economy in the EU. The 2011 IMF–EU bailout represents just another confirmation of this subaltern status. Thus Portugal is set to pursue its Ricardian ‘comparative advantages’ mainly by consolidating its European ‘niche’ as a prime tourist destination of sun, beaches and golf, and nowadays as a supplier of energy (from hydroelectric dams) to the rest of Europe, with all the significant environmental consequences for local residents that go with this choice (on David Ricardo’s famous example of comparative advantage in which Portuguese wine is traded for English textiles, see Ricardo [1817], 1973: 82–7).

The financial crisis and the 2011 IMF–EU bailout have severe social and environmental consequences – such as the impacts of budget cuts and privatization – that require urgent academic attention. This crisis may also constitute a historical marker of a change in national mood regarding once-always welcomed ‘Europeanization’, casting doubts thereby about the long-term effectiveness of creating ‘European subjects’ in a context in which material and discursive rifts between northern and southern Europe seem more evident than ever (Beck, 2013). At the same time, such soul-searching may also invite careful scrutiny in Portugal of the *para inglês ver* process that has for so long shaped this country’s social and environmental life.

BRAZIL: DEVELOPMENT AND ENVIRONMENT

Accounting for roughly 200 of the 250 million Portuguese speakers in the world, Brazil is the lusophone ‘heavyweight’, as well as being a global emerging economy. It houses diverse traditional communities with different histories of territorial occupation, as well as a plethora of natural resources, being therefore rich in research opportunities.

Interest in Brazil’s environment is not new. Brazil has long been a focus for foreign naturalists (e.g. Spix, Saint-Hilaire or Darwin) who portrayed it as an exuberant, naturally endowed place. The ‘birth certificate’ of Brazil – a letter from Admiral Pêro Vaz de Caminha to the King of Portugal D. Manuel I – highlights extensive wood and water resources as well as agricultural potential. These natural endowments are indeed central to Brazilian patriotism (e.g. the national anthem) and its international reputation.

Such endowments meant that Brazil was incorporated into a capitalist world system as a peripheral nation via colonial and then postcolonial extraction. At the same time, the country sees its ‘limitless’ natural endowments as key to its emancipation from the periphery, as the engine of its quest for development. This centuries-old ethos has shaped how territory has been occupied. It has also not only triggered fierce environmental conflicts, but also shaped how environmentalism and environmental policy have evolved, especially concerning their foreign influence.

Brazilian scholars have undertaken diverse environmental research over the decades, albeit not usually under the label of political ecology. While the work of the Brazilian Euclides da Cunha (especially *À Margem da História [On the Margins of History]* in 1909) may be considered as proto-political ecology (Hecht, 2013), and despite Anglo-Americans publishing some internationally known English-language political ecologies of Brazil (invariably about the fabled Amazon) – such as Bunker (1985) or Hecht and Cockburn (1989) – this academic approach has long been poorly understood in Brazilian academic circles, even if this may be changing as a result of work by the likes of Héctor Alimonda and Andréa Zhouri (both with chapters in this volume: Chapters 11 and 32 respectively).

Brazilian academics first began to seriously consider environment–society issues after the United Nations Conference on the Human Environment held in Stockholm in 1972 and especially so following democratization in the 1980s. Subsequently, interdisciplinary research endeavours flourished in Brazilian universities such as the PROCAM in São Paulo, the CDS in Brasília and the NEPAN in Campinas (Bursztyn, 2004). Major academic journals such as *Ambiente e Sociedade [Environment and Society]* and *Sustentabilidade em Debate [Debating Sustainability]* were also created (some even publishing in English). The following discussion can only sample this literature, notably political-ecology work addressing the *para inglês ver* process in terms of either the Brazilian reaction to foreign environmentalism or instrumental use of the environment under Brazilian policy.

Foreign Environmental Models and Brazilian Innovations

The influence of foreign thinking on Brazil’s environmental legislation and environmental movement has been considerable, notwithstanding some home-grown factors

(Hochstetler and Keck, 2007). On the one hand, this has prompted a backlash that has had significant socio-environmental consequences (for example, see Zhouri 2010 on how hostility toward foreign NGOs working in the Amazon has affected indigenous peoples as well as environmental protection there). On the other hand, uncritical adoption of foreign conservation models has itself sometimes led to ill-suited measures and conflict. Not surprisingly, this situation has sparked fierce academic debate as well as social movement reactions, manifest notably in the development of two distinctive Brazilian practices: ethno-conservation and socio-environmentalism.

The pursuit of ethno-conservation represents an attempt to develop a Brazilian model of integrated socio-environmental development not beholden to foreign conservationism. It is based in turn on an understanding of current dynamics that is resonant with political ecology. Those dynamics are above all marked by environmental conflict. Here, Henri Acselrad (2004) casts light on political and symbolic processes that contribute to the construction of certain kinds of hegemonic environmental notions, highlighting how conflict may ensue as groups with different modes of appropriation and territorial understanding clash. Such conflict reflects unequal power relations and social inequalities. For this reason, writers stress the need for justice in defence of culturally specific environmental rights, equitable environmental protection against socio-territorial segregation and inequality, and equitable access to resources (Acselrad, 2010).

Indeed, one conflict prompted by adoption of foreign conservation models involves traditional communities living inside recently designated protected areas. Here, anthropologist Antonio Carlos Diegues provides insights regarding conservation units in the Mata Atlântica biome (Diegues and Nogara, 1994). These units represent 'natural islands' to be defended at all cost against human activity based on the Western myth of wilderness (Diegues, 1996). By depicting such places as uninhabited 'paradises' containing virgin nature, this conservationism inevitably clashes with the myths and livelihoods of communities already living in those areas (Diegues and Nogara, 1994; Diegues, 1996). Diegues and colleagues also show how implementation and management of protected areas are often therefore authoritarian, with local communities sidelined and subjected to coercion (Diegues, 1996).

This conflict between actors and their world vision led Diegues and collaborators to develop the notion of ethno-conservation whereby conceptions of nature protection encompass the resident populations and their knowledge-systems that have long shaped the landscape in the first place (Diegues and Arruda, 2001; Pereira and Diegues, 2010). Part of ethno-science, this notion is perhaps inevitably criticized by conventional science. And yet, due to a profound articulation between natural and social worlds, ethno-conservation rejects the latter's nature-society dualism, thus providing a positive alternative in debate on the social construction of nature (Pereira and Diegues, 2010).

Another notion deserving higher visibility beyond Brazil is that of socio-environmentalism – in effect, a more socially aware form of environmentalism. It developed after the late 1980s out of the unique trajectory of Brazilian activism that followed the ending of dictatorship, assassination of internationally renowned activist Chico Mendes, the rise of a vocal rural landless workers' movement, and the Rio Earth Summit, and was premised on a discourse that saw poverty and environmental degradation as part of the same issue (Hochstetler and Keck, 2007; Acselrad, 2010;

Wolford, 2010). While a relatively flexible and composite idea, it nonetheless gains power from its interlinking of thinking about environmental justice and ethno-conservation into one unified and fairly coherent agenda.

Taken up by both social movements and academics, socio-environmentalism has even influenced public policy, notably following the 1988 constitution and subsequent laws recognizing territorial rights of traditional populations (Hochstetler and Keck, 2007; Sauer and Almeida, 2011). Its influence was also felt in other policy innovations – for example, in the creation of extractive reserves and sustainable development reserves where local populations have the right to subsist.

These policy impacts should not be exaggerated, though. Such innovations have sometimes been ineffectively implemented (and hence once again: *para inglês ver*) as rules remain unenforced and indigenous territorial rights languish unrecognized. Then there is the political backlash by sectors loath to support traditional rights that hinder unfettered capital accumulation. The powerful export-oriented agribusiness sector (which already controls most of Brazil's agricultural land) is a paradigmatic example here. As Almeida (2010) argues, this sector seeks to extend its domain over remaining suitable agrarian lands, using its immense influence in judicial, legislative and executive circles to progressively weaken all constitutional mechanisms that guarantee territorial and ethnic rights for indigenous peoples, *quilombolas* (i.e. Afro-descendant communities), *babaçu* nut crackers and Brazil nut collectors, rubber-tappers, fishing communities and others who get in the way of their interests.

Resources, Development and Instrumental Use of the Environment

The impact and response to foreign conservationism is complemented by a more wide-ranging Brazilian literature that, even if not notably about the 'environment' as understood today, has nonetheless highlighted the intertwining of destructive resource use and the formation of Brazilian society. Thus, and to name but a few examples, nationalistic analysis by Alberto Torres (1914), Caio Prado Júnior's *The Colonial Background of Modern Brazil* (1942), the magisterial 'fiction' of Jorge Amado's *The Violent Land* (1945) and Josué de Castro's *Geography of Hunger* (1946) all put 'environmental' degradation at the root of national problems.

The devastation wrought during past economic cycles (e.g. sugar, gold, cacao or coffee), combined with chronically unequal access to resources (especially land) that originated in colonial territorial and slavery practices (Freyre, 1933), helps to frame analysis of contemporary environment–society issues. And this is not at all simply 'old' history: Brazil remains one of the few countries in the world that is still 'integrating' new spaces through development that marginalizes large populations while deeply transforming those spaces (Passos, 2010; Sauer and Almeida, 2011). This occurs despite rhetoric aimed at constructing an internationally favourable environmental image of the country (i.e. *para inglês ver*). This strategy reproduces unequal power relations based on violence somewhat akin to colonialism. Hence agrarian conflict and unequal land access, notably on the Amazon frontier, persist, as small-holders, large landowners, indigenous communities and settlers (often displaced from elsewhere) compete for land (Porto-Gonçalves, 2006; Sauer and Almeida, 2011).

The Brazilian state has a crucial role in this ‘internal colonialism’, actively promoting occupation of ‘empty’ regions (e.g. centre-west, Amazon), sometimes as part of geopolitical strategies (Guimarães and Bezerra, 2011). It is thus central to environmental degradation and conflict in Brazil. Hence, and while capitalist expansion on the agricultural frontier led by powerful agribusiness is important, Brazilian scholars nonetheless stress state actions. Thus, as Zhouri (2010) observes, state-led discourse usually depicts the environment as an obstacle to development. In particular, there are the powerful state companies (e.g. BNDES, Petrobras) and state–business alliances that propel a ‘development-at-all-costs’ strategy, nowadays packaged under PAC (Growth Acceleration Programme) and IIRSA (Regional Integration Initiative of the Americas) frameworks (Zhouri, 2011; Laschefski, 2014; Lisboa, 2014).

If not depicted as an obstacle to development, the environment is used *para inglês ver* to legitimize extraction, accumulation and colonization, notably through environmental licensing. In this respect, Zhouri and others provide insight into conflicts resulting from hydro-dam projects. Thus, in a series of case studies (e.g. Belo Monte, Santo Antônio and Jirau), they cast light on how these politicized processes collide with the rights of river peoples as well as effective conservation (Zhouri, 2011). Environmental licensing here becomes a field of conflict itself between different modes of thinking about territory in which local communities are rendered subaltern. These scholars criticize such licensing for its ineffective use of local participation – indeed, residents become mere pawns in a wider legitimation exercise instead of being active subjects (Zhouri, 2011) – thereby mirroring to some extent the above-mentioned use of EU EIA practices by Portuguese authorities. Participation is therefore ‘produced’ and the overall aim of preventing environmental impacts is just *para inglês ver*.

Moreover, the environment is used to promote an image of modernity, expressed in Brazil’s participation in international environmental *fora* (its green ‘soft power’). There is, however, an ambiguity at the heart of Brazil’s stance in international negotiations, as it denounces the ‘neo-colonialism’ of Northern countries, notably over sovereignty in the Amazon, while at the same time worshipping a (Northern-initiated) developmental model that destroys the Amazon through an internal colonialism that only boosts national elite accumulation (Zhouri, 2010; Guimarães and Bezerra, 2011).

Clearly, there is a long and growing tradition of scholarship in Brazil that addresses political, economic and ecological contradictions and innovations in the nation’s development. Innovative conceptualizing has often gone hand in hand with detailed empirical investigation as well as sometimes activist input. Equally evidently, there is still much space for new research (sometimes through international collaboration) as new or existing themes and locations are evaluated in light of *para inglês ver* thinking that still exerts a powerful grip on Brazilian imaginaries and practices.

LUSOPHONE AFRICA: CONTESTING ENVIRONMENTAL NARRATIVES

Since independence in the 1970s, lusophone African countries have been mired in poverty, political instability and sometimes civil war. As the target of international initiatives on nature conservation, development aid, as well as resource and land

grabbing, they provide examples of *para inglês ver* environments that are fertile ground for political-ecology research.

Indeed, some Anglo-American-based scholars have contributed here. Thus, for example, Le Billon (2001) and Reed (2009) have assessed Angolan natural resource dynamics (notably, on oil and diamonds), while work on Mozambique has encompassed biofuels (Borras Jr et al., 2011), landmines (Unruh et al., 2003) and conservation projects (Wolmer, 2003).

By contrast, lusophone African scholars have so far engaged rarely here. In Portuguese-speaking Africa, research communities are still making their first steps after years of instability in very difficult social and economic contexts. Thus, despite some promising endeavours such as the IESE (Instituto de Estudos Sociais e Económicos) [Institute of Social and Economic Studies] in Mozambique (see Chichava et al., 2013 on Brazilian and Chinese investments in that country), society–environment issues are still largely absent from the research agenda of scholars based in these countries.

And yet lusophone scholarship does examine political-ecology themes there, drawing on Portugal's centuries-old and colonial-related research tradition in Africa. Going beyond initial eighteenth- and nineteenth-century naturalist explorations, the focus in the twentieth century was on a more concerted campaign to encourage Portuguese settlement in the colonies. Scholars helped contribute to this objective, thereby founding a Portuguese tropical geography greatly influenced by the ideas of lusotropicalism (Pimenta et al., 2011). Linked to the modernist movement, these ideas asserted that Portuguese colonialism was 'exceptional' in that (and based notably on work by Brazilian sociologist Gilberto Freyre) there was evidence of a distinctive mode of 'assimilation' via miscegenation, cultural fusion and the absence of racial prejudice (a point highly contested today). Integral to the Portuguese *Estado Novo* [New State] dictatorship, ideas about lusotropicalism informed the production of geographical knowledge, discourses and imaginaries that sought to frame and legitimate action in the African colonies (Pimenta et al., 2011).

In contrast, current research by Portuguese scholars provides much more critical insights into environment–society relations in lusophone Africa (also connecting to Anglo-American political ecology in some cases). Marina Padrão Temudo is arguably the leading such scholar on Guinea-Bissau agrarian environments, while Sérgio Rosendo conducts political-ecology research on Mozambique coastal communities.

Work by Temudo has notably investigated shifting cultivation (generally seen as a major cause of deforestation), drawing attention to the risks associated with generalizing about either local farming systems or deforestation and biodiversity loss that is not based on detailed and historically oriented empirical data. Instead, and in parallel with similar research in Western Africa (e.g. Leach and Fairhead, 2000), Temudo explores land-use change in light of its global, national and local drivers, all of which vary across time and space (Temudo and Abrantes, 2014). Such complexity is understood by combining ethnographic methods with remote sensing in case study research.

As with similar Anglo-American research, this Portuguese scholarship invites nuance in grasping human–environmental dynamics. Thus, for example, Temudo's (2009) study in Cubucaré in southern Guinea-Bissau and Temudo and Silva's (2011) work in Niassa province, Mozambique show that shifting cultivation is not the single key factor in land-use dynamics, while population growth and density never work in isolation as a

cause of deforestation – thereby de-bunking neo-Malthusian claims (cf. Leach and Fairhead, 2000). Instead, social organization and land-tenure practices of different tribes are key factors, with deforestation often being the result of a transition from shifting cultivation to cash-crop production (Temudo and Silva, 2011). Here, Temudo and Abrantes (2014) show that replacing shifting cultivation with, for instance, cashew tree orchards (in response to international and national pressures as well as local social change) leads to increased homogeneity as heterogeneous mosaic-like landscapes are destroyed, significantly impacting in turn on local livelihoods and the environment.

As Temudo points out, the consequences of blaming shifting cultivation for deforestation has led to measures that boost both social inequities (e.g. ostracizing shifting cultivators) and adverse environmental effects (e.g. accelerated deforestation). Indeed, her Cubucaré case study showed that dense, sub-humid forests have been preserved precisely due to the management system of the Nalu people that is based on sacred views of the forest. However, once the forest became the target of international conservation efforts that led to the creation of Cantanhez National Park in 2008, both resident communities and the forest were adversely affected as local practices that had hitherto conserved forest fragments unravelled even as poverty intensified (Temudo, 2012). This episode is a clear example of *para inglês ver* environments.

Lusophone Africa's coastal communities have also suffered adverse impacts linked to official environmental narratives and international conservation projects. Rosendo (with others) in particular has studied this phenomenon, notably in relation to the creation of marine protected areas in Mozambique (Bunce et al., 2010; Rosendo et al., 2011). As in Temudo's studies, local resource users are classified as being part of the problem – and hence not part of the solution – in the new marine conservationism. And, once again, the exclusion of local residents from the official conservation process ultimately undermines sustainable use of the marine resource while aggravating poverty in the community. Here too then, foreign-backed conservationism ends up being just *para inglês ver*.

In sum, research undertaken by Portuguese scholars such as Rosendo and Temudo provides evidence of growing scholarly interest among lusophone writers in the political ecology of lusophone Africa. This work often neatly complements literature by Anglo-Americans on West African human–environmental relations, notably in relation to harmful environmental narratives that end up producing *para inglês ver* environments. Much more work is needed though, especially by *in situ* scholars on such topics as the socio-environmental consequences of Angola's fast growth, foreign investment and land grabbing in Angola and Mozambique or oil palm development in São Tomé e Príncipe.

CONCLUSION

This chapter has explored the prospects for a lusophone political ecology. Clearly there are differences among scholars in Portugal, Brazil and lusophone African countries rooted in divergent academic practices and socio-economic contexts. Nonetheless, we argued that they share an elastic affinity through language and culture. Here, we suggested that the notion of *para inglês ver* is pivotal – as it is both deeply embedded

in the sensibilities of Portuguese language and culture (and specifically reflects a shared and subaltern way of dealing with external influences) and a useful analytical framework for investigation of human–environmental relations in lusophone countries.

However selective, this chapter has nonetheless highlighted diverse sorts of lusophone research that fit within a broadly understood political ecology, and which are notably informed by a sense of *para inglês ver* environments. This early ‘cartography’ of a lusophone political ecology will thus not only assist in the further elaboration of lusophone-specific research themes (helping thereby to build this transnational research community), but will also, it is hoped, contribute to wider conceptual and empirical understanding in global political ecology, perhaps illustrating points of fruitful future international collaboration. Such collaborative work must always, though, acknowledge diversity in lusophone country experiences even as points of commonality with non-lusophone experiences are noted.

Finally, elaboration of a lusophone political ecology (and wider international dissemination of its findings) would help to support a larger agenda in which ‘other’ scholars and knowledge are fully recognized. Indeed, it would mesh well with arguments by Brazil’s Eduardo Viveiros de Castro and Portugal’s Boaventura Sousa Santos, who both reject positivist (Western) science in favour of ‘other’ knowledge systems from the global South (a case also made by the Latin American scholars Enrique Leff and Arturo Escobar). Seen in this light, a vibrant lusophone political ecology would contribute to the de-colonization of society–environment research, thereby auguring an era in which more comprehensive and critical accounts fully informed by local knowledge and priorities about socio-environmental relations prevails.

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44. Political ecology in and of China

Emily T. Yeh

In January 2014, the British tabloid the *Daily Mail* ran a story with a photo of a bright red sunset projected on to a screen in smog-darkened Tiananmen Square claiming that ‘the smog has become so thick in Beijing that the city’s natural light-starved masses have begun flocking to huge commercial television screens across the city to observe virtual sunrises’. The story proved to be false – the sunrise was part of a Shandong provincial tourism ad – but not before it went viral on both conventional and social media. The episode epitomized increasingly apocalyptic Western framings of China’s environment. It also partly reflects scholarship on China’s environment, which as Tilt (2009: 4) observes, tends to ‘quickly devolve into faceless recitations of dismal statistics’. Numerous volumes now address China’s contemporary environmental situation, presenting it at the national scale as a litany of woes. This literature often also adopts, implicitly or explicitly, an ecological modernization perspective that assumes technical solutions and economic development will ultimately ameliorate China’s environmental problems (e.g. Carter and Mol, 2007; Day, 2005; Economy, 2004; Gallagher, 2006).

Political ecology provides an important alternative framework with which to critically scrutinize China’s human–environment relations, yet such scholarship is relatively limited. Here, I use political ecology to refer broadly to research emphasizing political-economic dimensions of environmental problems (rather than apolitical, managerial perspectives) and that is also shaped by a concern for historical, cultural-political and multi-scalar influences on human–environment relations. Among the dozen major edited volumes and textbooks on political ecology published in English since the mid-1990s, only two include case studies from China (Jiang, 2006; Muldavin, 1996b). I do not mean to suggest that every country should have its own political ecology, as it were, but rather to point out that such limited attention is disproportionate to China’s weight in the world, whether geopolitically, economically or in terms of its territory and population.

This lacuna is undoubtedly related to the contingencies of scholarly lineages and networks. In the USA, China geography as a subfield emphasizes urban and economic geography, rather than political ecology or political geography. But the lacuna also reflects Chinese state control on scholarship, which affects foreign researchers’ access while encouraging scholars in China to use the language and analytical lenses of the state. Human geography, the discipline from which much political-ecology scholarship arises, is a primarily technical, quantitative field in China. Nevertheless, there are growing anglophone and Chinese literatures on the political ecology of China, key themes and arguments of which this chapter reviews.

Chinese-language contributions are integrated into the main discussion because the literature is currently too slim to identify distinct concerns. Indeed, a search of

Chinese-language scholarly journals using ‘political ecology’ (政治生态) and ‘social ecology’ (社会生态) as search terms resulted in only 20 and 15 articles respectively, including a number that were simply translations of or introductions to anglophone literature. Case studies are few compared to general discussions of broad topics. Further, these works often adopt perspectives that are criticized in anglophone political ecology. For example, some take an ecological modernization perspective (e.g. Xing and Pan, 2003; Duan et al., 2000), while ignoring anglophone critiques of the ‘Open up the West’ strategy (a plan launched in 2000 to assist China’s west to catch up economically with the east while protecting its environment), which see it as a strategy of state-building and resource extraction (Herrold-Menzies, 2006a; Jiang, 2005a; Muldavin, 2013; Yeh, 2009b). Nor do they appear to consider other key political-ecology analytics such as the social construction of nature and the often-uneven effects of conservation on local people’s resource access (Coggins, 2002; Weller, 2006; Yeh, 2009a). Moreover, some scholars identifying their work as political ecology or ecological Marxism adopt statist discourses of ‘harmonious society’, ‘scientific development’ and achievement of a ‘well-off’ society (小康), even though officials deploy these to champion capitalist growth. This work also draws on a ‘population pressure on the environment’ framework (Zhou, 2000) long condemned in anglophone literature (Blaikie and Brookfield, 1987), while attributing the failure to achieve better environmental outcomes in part to the low ‘quality’ (素质) of Chinese citizens, another statist discourse rejected in anglophone scholarship (e.g. Sturgeon, 2010). Political-ecological work from China that pays more critical attention to political economy tends either to be published in English-language journals or to be written without explicit reference to the field.

EARLY POLITICAL ECOLOGY AND THE EFFECTS OF REFORM

One short chapter in Blaikie and Brookfield’s (1987) seminal edited book, *Land Degradation and Society*, concerns China. Written by Vaclav Smil, it discussed the history of human transformation of China’s environment, including the devastations of the Maoist period, while voicing cautious optimism for China’s environment since Opening up and Reform began in 1978. Though a self-described natural scientist influenced by systems thinking rather than a political ecologist, Smil’s importance to the study of the contemporary Chinese environment is enduring. In *The Bad Earth* (1984), the first comprehensive book on China’s environmental and energy issues, he rebutted ‘romantic’ notions of China’s long-term agrarian stewardship by detailing China’s many problems of agriculture, pollution, energy use, as well as land and resource degradation (see also Smil, 1997, 2004).

As China’s economic reforms happened to coincide with emergence of anglophone political ecology as a field, early research focused on the effects of de-collectivization and shifting property rights. Menzies and Peluso (1991) hence explored dramatic shifts in forest tenure, arguing that strict policies were relatively unsuccessful because their implementation emphasized only villagers’ responsibilities to safeguard forests, without also devolving rights or benefits to them, thus prompting illegal logging. Hershkovitz’s (1993) study of the contracting of small-basin management to individual households in

the Loess Plateau region appears to be the earliest published article to use the term 'political ecology' vis-à-vis China. Addressing concerns that tenure insecurity and short-term profit motives would lead to 'soil mining' and land degradation, she offers a more complex reading that pinpointed significant local innovation and variation in new forms of environmental management spanning state, collective and private ownership.

Whereas these writers targeted the environmental effects of reform, Shapiro (2001) confronted the Maoist period, contending that severe environmental destruction then was characterized by a fundamental congruence between the abuse of people and the abuse of nature. Shapiro writes against what she sees as the received wisdom, according to which China's recent, phenomenal economic growth is the main culprit for environmental degradation. Instead, she argues, the destruction of the Mao years and their legacy of disillusionment also play an important role in producing that degradation.

Though influential, this account has been taken to task. Weller (2006) argues that the environmental problems and attitudes described by Shapiro have roots far deeper than socialism, being based in modernism itself, as evidenced by the long hegemonic and anti-communist Guomindang (Kuomintang) Party in Taiwan employing slogans very similar to those that Shapiro attributes to Mao. Ho (2003) criticizes her claim that 'take grain as the key link' (a Maoist campaign usually understood as being singularly focused on increasing grain production) led to accelerated degradation and erosion. Ho argues that this unfairly conflates distinct campaigns, presenting them as uniform outcomes of the unfolding of a single and extraordinarily destructive logic, when in fact they had different origins and effects. In addition, he suggests that the campaign was not as environmentally destructive as generally believed; there were regional variations in implementation and intent. Instead, blaming contemporary environmental problems on this era is 'part of a wider discourse about the period of collectivism that has directed the present "historical gaze" toward an overly negative interpretation of that era' (Ho, 2003: 40), an argument that Williams (1997) echoes in discussing how each successive government of China has sought to deflect culpability for grassland degradation onto past regimes and local people.

These very different conclusions about Maoist campaigns reflect a lack of data availability and reliability as well as tremendous variations in physical geography, economic conditions and policy implementation, all of which suggest the need for a *regional* political ecology of China. Like Ho, Jiang finds in her study of Uxin Ju, a Mongolian community that became a national model under Mao, that the collective period cannot be adequately understood as one undifferentiated period of environmental destruction. Local people were active agents rather than passive dupes of state policies, as is sometimes assumed, and there was considerable continuity in grassland management between the Mao and post-Mao periods (Jiang, 2004, 2005b).

Joshua Muldavin's extensive publications, based on long-term research in Heilongjiang Province in northeastern China, is much more explicitly grounded in political economy, and hence critical of the market triumphalist narrative of the economic reform era (e.g. Muldavin, 1996a, 1996b, 1997a, 1997b, 2000). Arguing that in some respects the collective period was better for the environment than what came after, he cites the mining of communal capital – the non-maintenance of communally built infrastructure such as reservoirs, irrigation canals, erosion-control structures and

planted trees – and the redirection of investment towards private agricultural activity oriented to short-term production gains (particularly investing in chemical fertilizers) as key factors exacerbating environmental problems. Contrary to conventional wisdom, the national surge in grain production between 1978 and 1984 was not the result of de-collectivization ‘unleashing’ farmers’ motivation, but rather an outcome of higher prices and increased fertilizer use. Thus, he argues, individualized household production and ‘free’ markets have not led to better resource allocation and long-term productivity. In a contrasting view, Wang (2005) argues that in villages on the edge of Beijing, agricultural policies during the reform era have not caused environmental degradation but rather have improved environmental conditions.

Turning from crop agriculture to pastoralism, studies address the environmental effects of de-collectivization and property rights reform on grasslands (Yeh, 2013). Following the poststructuralist influence on political ecology in questioning ‘received wisdom’, this research scrutinizes narratives of pervasive grassland degradation (Harris, 2010; Yundannima, 2012), as well as its official attribution to overgrazing and the ‘tragedy of the commons’. Such work demonstrates that, rather than improving grasslands and herders’ livelihoods, household contracting instead often exacerbated inequality, increased conflict and produced negative ecological consequences (Banks, 2003; Li and Huntsinger, 2011; Li, 1998; Williams, 1996b, 2002; Yan and Wu, 2005; Yan et al., 2005; Yeh, 2003). Rather than a ‘mining of communal capital’, de-collectivization here is problematic because it limits mobility (Xie and Li, 2008; Yeh et al., 2014), making it unsuited for the biophysical characteristics of pastoral regions.

Studies of pastoralism also raise questions about cultural politics and ideological landscapes. Williams (1996a, 1997) and Ho (2000) focus on the ecological and landscape identities and ideologies of Han Chinese farming civilization versus those of ethnic minority pastoralists; where the latter see pasture, the former see ‘wasteland’ to be transformed and ‘improved’. Sometimes, stark scholarly differences emerge. While Williams (1997) finds that Mongolian herders value sand dunes for both aesthetic and utilitarian reasons, Jiang (2006: 306) claims that Mongolians now see sand dunes as signs of degradation, and hence needing improvement. Indeed, Williams (1996a, 1996b, 2002) presents herder–state relationships in mostly conflictual terms, whereas Jiang (2004) – critical in general of political ecology’s tendency to focus on resistance and strife – finds instead cooperation in such dynamics. These contrasting views suggest the need for further research, while illustrating how debate shapes the research field.

Meanwhile, significant regional variation in the implementation of pastoral policies, as well as legal ambiguity about the scale to which pasture use rights should be devolved through contracting, mean that the effects of grassland use rights privatization require further investigation (Banks, 2001, 2003; Yundannima, 2012). Herder agency, through resistance to or strategic use and modification of household contracting, fencing and resettlement programmes, also needs further study (Bauer, 2005; Yeh and Gaerrang, 2011; Zukosky, 2007, 2008). Finally, there is scope for additional work on ‘ecological resettlement’ programmes that move herders from grasslands to urban settlements in the name of environmental protection and development, though the sensitivity of such research remains a barrier (Foggin, 2008; Tashi and Foggin, 2012).

Taken together, this literature contributes to broader political-ecological understandings of property rights and post-socialist transition. The social and environmental effects of China's hybrid system of authoritarian state capitalism with long-term household land use rights will remain important to study as China's global economic importance grows.

CONSERVATION, GREEN DISPOSSESSION AND THE ENVIRONMENTAL STATE

Roughly 15 per cent of China's land area is now under protected status, including over 2500 nature reserves. Political-ecological studies of Chinese nature conservation can be broadly divided into three themes. The first examines how lack of capacity and funding, perverse incentives for cadres, and politics surrounding competing institutions cause nature reserves to fall short of satisfying conservation aims (Grumbine and Xu, 2011; Harkness, 1998; Xu and Melick, 2007; Zinda, 2012, 2014). The second involves examining whether and how far the declaration of parks and other protected areas affects local people's access to resources (and hence livelihoods), as well as exploring any resistance to such enclosures (Herrold-Menzies, 2006a, 2006b, 2009; Yeh, 2009a). Similarly, studies consider how peasants negotiate changes wrought by state projects such as the Natural Forest Protection Program and the Sloping Land Conversion Program, as well as how farmers involved in shifting cultivation adjust their complicated land-use patterns over time in response to state plans (Sturgeon, 2005). Overall, this research demonstrates that, as Li (2005: 391) argues, 'the effects of planned interventions have to be examined empirically in the various sites where they unfold'. It helps us to understand how specific state interventions play out in their encounters with local agents whose subjectivities are shaped but not fully determined by state power.

The third theme assesses alternative rationales for conservation, including how they articulate with or diverge from secular, scientific conservation rationales and knowledge claims. This work includes studies of village *fengshui* forests (Coggins, 2014), as well as Tibetan sacred land concepts and practices (Coggins and Zeren, 2014; Yeh, 2014a, 2014b). Political ecology here goes beyond scientific studies that simply measure, report and celebrate higher biodiversity on such lands to explore both the possibilities and perils of collaboration between alternative epistemologies (or indeed ontologies) of 'nature' and conventional epistemologies (and ontologies) adhered to by state institutions and many NGOs, which are manifest in the creation of protected areas.

One trend that researchers now address is the fact that rural conservation is no longer the only or even dominant way in which citizens are dispossessed of their means of livelihood in the name of environmental well-being. As one of the world's most rapid urbanization processes proceeds, enabled by massive land expropriation in China's 'new enclosure movement' (Zhang, 2010), an increasing number of eco-industrial zones and eco-cities are planned or built. Yet this new 'eco' phenomenon often relies on 'green grabs' in which villagers lose their land for the purported aim of environmental protection or sustainability (Neo and Pow, ch. 29 this volume). Investigating the forceful eviction of 100 000 villagers from Yixing for the construction of a 'high-tech,

low-carbon model community' and a green development zone devoted to the solar energy industry, Chen (2012, 2013) argues that this is more than simply a matter of the green-washing of enclosure and urbanization. Instead, rural land is now becoming a fungible national 'resource' made into an object of new techniques of calculation. The scalar construction of land as a resource (and thus capital) allows it to be abstracted and exchanged to implement policies of renewable energy and other forms of 'sustainable development' (Chen, 2013: 106). By framing 'displacement and rural transformation as "environmentally rational,"' enclosures for the building of eco-cities and eco-industrial zones help shape environmental governance as a mode of capital accumulation (ibid.: 114).

Whether for eco-city-type construction or for creating nature reserves and other conservation projects, green grabbing across the country shares certain characteristics linked to China's emergence as an 'environmental state' (Chen, 2013; Coggins and Yeh, 2014). One is a set of official narratives about rural villagers as backward and unable to use land in an ecologically appropriate fashion, hence justifying state intervention. There is also a scalar politics here inasmuch as those displaced and resettled are seen as expendable in the larger effort of protecting the nation from climate change, whether through boosting solar photovoltaic use and wind energy production or by saving grasslands from the dual effects of climate change and 'overgrazing'. This rationale is maintained even in the face of evidence that moderate grazing is beneficial rather than harmful to ecosystem health in the context of warming (Klein et al., 2007).

A second characteristic is the importance of officially mediated aesthetic markers of greenness. Such representations become decisive in master-planning of eco-cities (Chen, 2012) and the evaluation of green communities alike (Boland and Zhu, 2012). Far from eco-cities in China's east, the Lhalu wetland national nature reserve in Lhasa, Tibet was declared only after the wetland had been significantly drained, first in the 1960s by Maoist efforts to 'attack wasteland' and then in the 1990s by a city beautification effort that dug a canal running along much of its perimeter (Yeh, 2009a). Ironically, environmental protection efforts implemented soon afterwards enclosed what remained of the wetland, making it off limits to villagers who used it for grazing, despite the fact that earlier planning aesthetics – not villagers' livelihood activities – were largely responsible for its desiccation.

A third characteristic is that greening in both urban and rural areas is often driven as much by branding and place competition dynamics as by environmental rationales. Thus some local governments declare nature reserves, hoping to achieve administrative status, political rewards and tourist income (Jim and Xu, 2004); similarly, city officials often wish to establish green communities to win designations such as 'environmental protection model city' that raise their economic prospects (Boland and Zhu, 2012). At the very least, different line agencies and local governments compete over priorities, with some emphasizing conservation for its own sake while others see sustainability as a way to attract investment (Zinda, 2014).

A final characteristic relates to the question of public participation. Diverse studies suggest that local participation in planning facilitates the success of nature reserves and broader resource sustainability (e.g. Coggins, 2002). However, such participation in both natural resource management and urban green communities tends in practice to be limited to management issues rather than core decision-making tasks, while being

primarily performative and pedagogic in style and hence not truly collaborative. Community participation also draws on a repertoire of Maoist mobilization campaigns (Boland and Zhu, 2012), creating new forms of governance through the unexpected convergences of techniques of 'high socialism' and neo-liberalism – what Zhang (2008) dubs 'post-socialism'.

INDUSTRIAL POLLUTION

Mao famously proclaimed his desire to look out from Tiananmen Square and see smokestacks. Industrial pollution became serious while he was in power, but economic growth since then, particularly fuelled by rural township and village enterprises in the 1980s and 1990s, together with the country's reliance on coal, have severely exacerbated these problems. Indeed, though Smil (2004) and Edmonds (1999) suggest that air and water pollution may in the long run be less severe than natural resource degradation, it is dire statistics about pollution and associated serious health impacts that grab headlines and the attention of Chinese citizens themselves. Pollution-related environmental harms have also catalysed widespread discontent, making it an important concern for a party-state nervous about social stability and its hold on power.

Most research on pollution has been done by political scientists and legal scholars, who explore the development of China's environmental protection institutions (Jahiel, 1998) and explain why, despite now quite strict laws and regulations, severe problems with compliance and enforcement persist (van Rooij, 2006; Wang, 2013). The devolution of fiscal responsibilities made horizontal government relationships stronger than vertical ones, such that a county government has greater control over a county environmental protection bureau (EPB) than does the provincial environmental protection office (Jahiel, 1998; Lieberthal, 1997; Ma and Ortolano, 2000; Skinner et al., 2003). Local governments provide annual budgets to local environmental protection units. Those governments must also generate their own operating funds, through profitable enterprises, thereby putting environmental protection at a distinct disadvantage. By law, up to 20 per cent of pollution fees levied by EPBs can be retained to support their work, but, in practice, many low-level offices use a far greater percentage to support salaries and other operating expenses, thus creating an incentive to collect fees rather than to reduce pollution (Jahiel, 1998: 775). Sometimes fines imposed by local EPBs on enterprises are passed to the local government, which then provides a tax break to the enterprise roughly equal to its fine (Lieberthal, 1997: 6), giving the appearance of enforcement but not preventing pollution.

More generally, the ultimate imperative of the party-state remains economic growth, as reflected in the cadre evaluation system, the key mechanism through which the top priorities of the central state are implemented. Hard targets are prioritized over soft ones, and 'targets with veto power' are of the utmost importance (Wang, 2013). Overall performance as evaluated by these metrics determines cadres' career outcomes. Economic targets have always been a much higher priority than environmental targets; this, combined with the fact that bureaucratic planning targets play a stronger role in governance than does law, sheds light on the apparent paradox of strong environmental

laws and weak implementation (*ibid.*). In the 11th Five Year Plan (2006–10), environmental targets were elevated to a high priority for the first time, but Wang (2013) argues that this was motivated mainly by the need to fulfil non-environmental goals of greater regime legitimacy and social stability, even as such targets remain plagued by long-standing problems such as falsification of information.

The party-state's calculations about how to stay in power thus strongly shape the political ecology of pollution. In analysing small-scale coal mining, Weston (2007) argues that government actors seek to avoid brownouts because resulting industry slowdowns make it more difficult to absorb unemployment – a significant consideration given the anger and unrest generated by massive unemployment following layoffs from state-owned enterprises in the 1990s. This puts heavy pressure on maintaining coal production, especially because coal accounts for about 70 per cent of China's energy consumption. These factors also directly impact China's plans for controlling its energy use intensity and greenhouse gas emissions.

However insightful, little of this research is explicitly political ecology. An exception is Tilt's (2007, 2009) study of the local-level politics of pollution enforcement and the closure of township and village enterprises in Sichuan Province. He argues for ethnographic understanding of environmental values and experiences of pollution, and demonstrates how enforcement decisions are both shaped by political-economic transformations at multiple scales, and entangled in struggles over meaning. Ethnographic work by Lora-Wainwright (2013) also explores how villagers experience pollution and make sense of its results, particularly cancer, in terms of their understandings of a moral life. Future work should bring political-economic analyses of pollution together with investigations of cultural politics, exploring the relationship between the two.

ENVIRONMENTAL ACTIVISM AND HYDROPOWER

The problem of pollution raises the question of protests and of environmental activism more generally. Much work focuses on developing typologies of China's environmental NGOs, whether by type of work, leadership characteristics or connections to government (Economy, 2004; Ho, 2001; Schwartz, 2004; Yang, 2005a). Several surveys investigate environmental attitudes, particularly of university students (Stalley and Yang, 2006; Wong, 2003). Another theme concerns the political role of NGOs as agents of change, with studies asking questions about democratization, civil society, and how far environmental NGOs challenge the state (Economy, 2004; Ho, 2001, 2006; Yang, 2005a, 2005b).

Protests against the building of hydropower dams are a particular research focus; this is not surprising considering that China's approximately 25 000 large dams roughly equal the total number of such dams elsewhere in the world. The temporary suspension of plans for a cascade of 13 dams on the Nu River in 2004 by Premier Wen Jiabao, who called for further impact assessments at that time, drew the attention of scholars, who used the case to analyse 'pluralization' of policy processes (Mertha, 2008), the role of the media and urban-based activists in 'grassroots' environmental campaigns (Litzinger, 2007) and struggles over the moral dimensions of hydropower development (Tilt,

2015). The role of journalists was seen to be crucial here, as in China's environmental movement more generally (Geall, 2013; Liu, 2013).

Unfortunately, Nu River dam construction is back under way; the entire cascade has a potential of 21 000 MW and will displace about 50 000 people. Indeed, after several years in which environmental campaigns appeared successful in delaying hydropower projects, the 12th Five-Year Plan called for renewed development, including that of several dams once cancelled on environmental grounds. Dam building is newly motivated as an alternative to coal combustion in the face of China's status since 2007 as the world's largest annual emitter of greenhouse gases. However, there are other factors shaping dam construction, including the prominence of hydropower engineers in senior leadership, the allocation of development rights of China's major watersheds to five powerful state-owned energy companies, and inter-provincial dynamics between areas of hydropower supply and demand (Magee, 2006). From ongoing problems with the Three Gorges Dam to speculation that the 2008 Sichuan earthquake was caused by the weight of a nearby, newly completed dam, to the new push for hydropower as climate change mitigation, the importance of political-ecology analyses here can only increase.

Turning to environmental activism more generally, recent studies connect tools and concerns of political ecology to those of science and technology studies and the postcolonial literature. Influenced by Tsing's (2005) conceptualization of the 'friction' of transnational environmental collaboration, this approach suggests that it is more productive to ask how environmental activism in China is a product of global connections, formed in historically contingent ways, rather than dwell on whether it is either purely international or indigenous (Choy, 2011; Hathaway, 2013; Yeh, 2014b). Other research raises questions about sovereignty vis-à-vis transnational environmentalism to enrich the more common realpolitik lens through which such activism in China is understood. For example, Litzinger (2006) examines the Critical Ecosystem Partnership Fund in northwest Yunnan to complicate Hardt and Negri's (2000) vision of a single new imperial sovereignty by showing how transnational conservation produces instead a range of contested sovereignties. Choy (2011) links Hong Kong residents' anxieties about the return to Chinese sovereignty with how various threatened forms of life come to matter in a 'politics of endangerment'. This politics prompts an urge to name, catalogue and classify modes of life on the verge of disappearance, whether a fishing village due for redevelopment, a white dolphin or an orchid named *Spiranthes hongkongensis*.

CONCLUSION

Political-ecology scholarship on China is not only significant in its own right, illuminating human-environment relations in the world's most populous country, second-biggest economy, and largest contributor to annual greenhouse gas emissions, but also increasingly for illuminating broader concerns that enrich scholarship in the field more generally. In terms of the former, the literature provides a sustained argument against ecological modernization narratives about China (Muldavin, 2013; Yeh, 2009b), demonstrating the importance of political economy and the way in which

'greening' often denies citizens access to resources, while facilitating capital accumulation. It also transcends conventional descriptions of China's litany of environmental woes to elucidate more complex local struggles over meaning and power. Furthermore, this work counters common assumptions that Chinese citizens are too poor or passive to care about the environment, demonstrating flaws in the environmental Kuznets curve thesis, and reveals why rigorous environmental protection laws coexist with persistent and severe environmental problems, both 'brown' and 'green'.

Research on the political ecology of China also opens up new considerations that speak to wider theoretical interests. As diverse studies show, there are surprising convergences between Maoist-era forms of socialist mobilization and contemporary neoliberal techniques of governance in environmental projects – an articulation that deserves further investigation. China's commitment to economic liberalization also means that studies of the social and environmental effects of marketization, (quasi-) privatization and state capitalism remain current. Yet these effects and dynamics are never geographically uniform. The vast disparities between, for instance, the plight of Tibetan pastoralists resettled to towns and the innovators and beneficiaries of China's new 'green' industries suggests that China is better thought of as 'many Chinas', reinforcing the need for detailed regional political-ecology work. At the same time, China's environmental problems are inextricably intertwined with a global system of production, consumption and disposal wherein Chinese citizens bear disproportionate environmental and health costs associated with goods used elsewhere (Magee, 2011). Close examination of these dynamics should help political ecology refine ways of thinking about how various scales operate simultaneously and in relation to each other.

Much remains to be done. First, research must tackle the geographical unevenness of fieldwork and analysis to date. A few places have been particularly generative of political-ecology research, especially southwest and northwest Yunnan, owing to its rich biodiversity and the history of Ford Foundation funding on community forestry there, which in turn fostered a group of Chinese scholars receptive to political-ecology research (Sturgeon et al., 2014). Yet, given China's diversity and complexity, new sites ought to generate fresh insights of both national and international interest. Second, research ought to engage more with postcolonial thought. Such work might question the very idea of transposing political ecology to 'China' understood as a space that simply exists for our examination (cf. Wainwright, 2005). It might, too, examine the ongoing effects of China's semi-colonial past as well as its own history (into the present) as an imperial power concerning such themes as the contested framing of 'nature', struggles over whose knowledge of the non-human and its relationship to the human counts, and what knowledge gets erased as a result of political and ecological struggles.

Finally, there is room for growth and exploration in Chinese-language political ecology, and for exchange between those writing in Chinese and in English. While Chinese scholars draw on anglophone literature, there is little in the reverse direction, as the political-ecology literature in Chinese remains very limited. Among other things, redressing this imbalance will require scholars in China to take an analytically critical stance towards state discourse and China's current political economy. At a time when China's top social science research institution stands accused of being 'infiltrated by foreign forces' while being directed to henceforth 'treat political discipline as a

criterion of utmost importance' in assessing academic work (Huang, 2014), the prospects for this do not seem bright. Given this context, therefore, anglophone scholars might be advised to discover political-ecology activity in areas beyond Chinese academia. While the language of collaboration and critique may require subtle negotiation and mutual learning, it is nonetheless imperative that it be found, as it is ultimately a precondition for a political ecology of and in China to flourish.

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45. Emotional political ecology

*Farhana Sultana**

Feminist scholarship has enriched political ecology and resources management literatures by attesting to the central importance of gender relations in resource struggles of various kinds across places (Agarwal, 1992; Rocheleau et al., 1996). Recent work builds on this contribution by demonstrating that gender is performed and negotiated through such struggles while involving power relations that condition bodies, spaces and environments (Gururani, 2002; Harris, 2006; Resurreccion and Elmhirst, 2008; Sultana, 2009a). This scholarship renders a complex picture – notably showing how gender-related subjectivities are negotiated and embodied through social processes and ecological practices while intersecting with other subject positions, such as class, race, age or caste. How gender shapes access to, control over and ownership of resources across different subjectivities and geographical locations has been a key theme in feminist political ecology.

The present chapter argues that this research sub-field can be further strengthened by assessing the complex emotional geographies that inform resource management. Such a focus helps to elucidate the conspicuous but also hidden ways that this management can be conceived of as an emotional process defining everyday life. This connection has been scarcely made in feminist political ecology, let alone in the wider research field of which it is part. Yet the emotional geographies literature abounds with insights that are just waiting to be adapted to the topics addressed in political ecology (e.g. Bondi, 2005; Davidson et al., 2005; Pile, 2010; Sharp, 2009; Smith et al., 2009).

In this chapter, I promote such a process by outlining some of the elements of an emotional political ecology approach. In so doing, I demonstrate the importance of heeding the complex emotions and meanings attached to resource access, use and conflict in order to better understand the emotionality thereby engaged in everyday struggles. Not only does this lead to greater nuance in understanding resources struggles and politics; it also rejects the idea that ‘real’ scholarship is about ‘rational’ social interactions over resources that leaves emotive realities about how resources are accessed, used and fought over firmly to one side. Indeed, (feminist) political ecology will be immeasurably strengthened when often abstract articulations of ‘resource struggles’ and ‘resource conflicts’ are grounded in embodied emotional geographies of places, peoples and resources, enabling enhanced comprehension of how resources and emotions intermingle in everyday resource management practices. An emotional political ecology approach thus elucidates how emotions matter in nature–society relations.

How are emotions to be understood in such an endeavor? Work on emotional geographies provides a useful starting-point here. Davidson et al. (2005: 3) define emotional geography as one that ‘attempts to understand emotion – experientially and conceptually – in terms of its socio-*spatial* mediation and articulation rather than as

entirely interiorized subjective mental states' (emphasis in original). Scholars argue that emotions are fluid while being relationally produced between peoples and places, as opposed to being a phenomenon that reflects individual human subjectivities (Davidson et al., 2005; Smith et al., 2009). At the same time, emotions are always embodied experiences signifying, among other things, that a thorough understanding of specific sites and contexts is a prerequisite for any serious research endeavor – a point that sits remarkably well with a core ethos in (feminist) political ecology (Rocheleau et al., 1996; Robbins, 2012).

However, such thinking has received greatest attention in cultural and feminist geography (e.g. Bondi, 2005; Sharp, 2009; Thien, 2005; Tolia-Kelly, 2006), while scarcely making an appearance in political ecology including the feminist sub-field – as even a cursory glance at an array of key texts here affirms (Blaikie and Brookfield, 1987; Rocheleau et al., 1996; Bryant and Bailey, 1997; Peet and Watts, 2004; Robbins, 2012). Yet this is surely a grave oversight: emotions matter in resource struggles. Thus they influence outcomes of practices and processes of resource access/use/control while shaping how resources-related interactions are actually experienced in everyday lives. While some research has shown how specific environments and landscapes produce varied emotional geographies (Dallman et al., 2013; Graybill, 2013), little attention is given to assessing how environmental degradation and resource crises can produce differentiated emotions that influence the very ways that resources are imagined, accessed, used and controlled on a daily basis.

In contrast, I explore precisely such issues as part of the elaboration of an emotional political ecology approach. To do so, I build the argument through a detailed case study drawn from my own extensive fieldwork over the years – namely about water and arsenic contamination in rural Bangladesh – while heeding the general warnings of scholars such as Bondi (2005), Pile (2010) and Sharp (2009) not to objectify emotions of the researched in this endeavor. I thus aim to advance understanding by using insights from emotional geography to enrich explanations of everyday resource struggles, politics and conflicts without being reductionist, ahistorical or 'feminizing' emotions. I relate this work to political ecology and resources management scholarship on access and conflict (Blaikie and Brookfield, 1987; Ostrom, 1990; Peluso and Watts, 2001; Ribot and Peluso, 2003; Sikor and Lund, 2009) and writings about meaning and understanding in resource struggles (Moore, 2005; Gururani, 2002). This combination of literatures helps me to think through the messiness of everyday politics and struggles over a critical resource such as water. While the processes of access, use and control of resources produce different kinds of emotional geographies, my concern is with the multifaceted aspects of 'sufferings' of people seeking safe water in my case study setting (detailed below). Attention to the emotional geographies of water here are important in explaining the ways that feeling subjects relate to water and how water mediates social relations of resource management. As this chapter argues, therefore, conflicts over resources are thus as much about embodied emotions, feelings and lived experiences as they are about property rights and entitlements, long the focus in political ecology. The framework developed here can be applied to other natural resources and thereby expand current theorizations in political ecology and nature–society studies.

WATER AND ARSENIC IN BANGLADESH

Elsewhere I explore gendered subjectivities surrounding Bangladesh's arsenic water-scapes, underscoring how these are reflected in daily practices encompassing bodies, places and spaces (e.g. inside/outside the homestead), intersectional social axes (e.g. class) and geological factors (e.g. locational variations in arsenic deposits and local hydrogeology that affect whether water wells are contaminated or not) (Sultana, 2009a). There are both subtle and conspicuous connections to water (of different types, locations, overground/underground, quantities, qualities, reliability and accessibility) that complicate how people make sense of water crises in their lives (see also Sultana, 2006, 2007, 2009a). In this chapter, I focus on the nuanced ways that gender–water relations inflect people's sense of suffering in tracing the emotional geographies of water in rural Bangladesh. To examine the ways that people cope with, respond to and relate to different types of water, I explore the ways that arsenic contamination of drinking water has resulted in new meanings and realities of access, use and conflict in the micro-practices of water in everyday life. In this regard, context, connections and circumstances are very important in the ways that emotions influence how people relate to one another as well as their relationship to water. Since women fetch water for their households in rural Bangladesh (as is common globally in household gendered divisions of labor, as feminist political ecology has long pointed out), it is the women who feel most directly the pain/struggle/tensions about being able to provide sufficient safe water for their families. The water crisis is thus highly gendered. Day-to-day living is not just about obtaining sufficient resources, as the circumstances and struggles to achieve those resources take a toll and impact the emotional as well as material lives of women and their families. This has direct bearing on the ways water is imagined, accessed, used and fought over in a locality.

Throughout rural Bangladesh, there is considerable disparity in water contamination levels within short distances, as geologic heterogeneity of arsenic in the aquifer resulted in variable concentrations of arsenic showing up in drinking water (Smith et al., 2000). Most drinking water is obtained from tube-wells, which are generally hand-pumped to draw groundwater from aquifers. But the discovery of carcinogenic, tasteless, odorless and colorless arsenic in drinking water in the late 1990s has resulted in millions of tube-wells becoming unsafe as the water was deemed poisonous. Approximately 35 million people are estimated to be exposed to mortality and morbidity from slow poisoning due to chronic exposure to arsenic (called arsenicosis), which can take years to manifest health complications (such as cancer, organ failure and ultimately death). Few viable alternative water sources exist as surface water sources are generally polluted. Indeed, this is why people switched to groundwater in the 1970s and 1980s, with massive promotion of tube-well technology by government and international donors, leading to over 10 million tube-wells being installed both privately and by public institutions. As a result, these wells came to dot the landscape as the main source of drinking water, and households would save up to install their own well (as anyone owning land can install one).

However, the relative ease of obtaining water with widespread introduction of tube-wells was short-lived, as official testing for arsenic proceeded and soon resulted in some of the wells being painted red (if contaminated) and others being painted green (if

safe to consume from). Since it is impossible for humans to detect the presence of trace amounts of arsenic in water without scientific testing, it is difficult to gauge immediately if one is drinking arsenic-contaminated water or not. Knowing the status of the water source is thus important (i.e. safe or unsafe, green or red, or even knowing the levels of arsenic in the water).

The implications have been severe. Most households have had to find other water sources when their tube-wells were labeled unsafe. Due to arsenic's random spatial heterogeneity and the uneven distribution of tube-wells and homesteads, some villages have high numbers of red wells, with few green ones or alternative options. Generally, deep tube-wells that access the deep aquifer are mostly safe as it is largely arsenic-free, whereas most shallow tube-wells (which are much cheaper and thus more prevalent) access the shallow aquifer where there are high amounts of arsenic in the sediments. This spatiality of safe water has resulted in a spatialization of power as well as hardship (Sultana, 2006). Where people live is vital to their water security, as proximity to safe sources is crucial in influencing whether or not people try to obtain safe water. Similarly, those who control a safe water source have additional powers over those who do not. While this tends to play out along class lines (e.g. wealthier households can afford deeper wells), it is not completely clear-cut, as the distribution of arsenic can disrupt precise correlations. Thus many poor neighborhoods have green tube-wells while some wealthier areas have red ones. As such, arsenic has helped create a situation where safe water control is both a status symbol and a source of power (Sultana, 2007). It is in such waterscapes that women and girls weave their way through labyrinths of red and green tube-wells to fetch water on a daily basis for their families, confronting new and old social realities, as well as embodied emotions of conflict, cooperation and control.

NEGOTIATING WATER ACCESS, USE AND CONTROL

As anyone with land and tube-well technology can secure access to groundwater, those without property or money to install wells must negotiate user rights through social relations (e.g. formal or informal kinship, patron–client relations). Control of water is thus different from access to water, as some people may enjoy rights to both and others only to the latter (Rangan, 1997). Furthermore, secure access is important for those not owning/controlling their own water source. Reliability of the tube-well in producing safe water of sufficient quantity and quality is also a factor that influences patterns of access, concentrating people at sites that produce safe water and have easier access/use rules. In understanding access here, it must be noted that decisions are not based on some 'rational' *a priori* mechanism, but rather reflect a fiercely negotiated reality involving multiple claims, identities, relations and emotions. The struggle over access is thus the product of individual needs and decisions, as well as many other factors such as institutions, relationships and emotions.

In theorizing access in relation to ownership or control of water, I draw on the notion of access articulated by Ribot and Peluso (2003: 153), where it is the ability to benefit from things (natural resources, material objects, institutions, people) rather than a right to things that matters (see also Sikor and Lund, 2009). Access rules are also often tied

to frequency and amount of water taken: they are not unconditional. How access is gained, maintained and changed varies over time and place, meaning that access patterns are not static. Access to safe water in rural Bangladesh is thus predicated on diverse factors such as ownership of land or a tube-well, socio-spatial location in relation to a well, membership in a water committee (for a communal well) or kinship and/or patron–client relations that enable access. In areas with many red tube-wells and few green ones, not everyone has guaranteed access to safe water even if a tube-well is next door due to formal or informal mechanisms constraining access (Sultana, 2009b). And yet, while access is often discussed in terms of proximity, distance, time needed and physical burdens, it is also linked to socio-cultural factors such as class barriers, power relations, gendered spaces and the sheer emotional labor needed to negotiate access. Most people interviewed in the course of my research noted that, to sustain access to a safe source, it was generally important to maintain a good relationship with the owners, often pay a fee, clean the area, give free labor in exchange for water, or pay hired labor to get water. Ensuring that existing patron–client relationships or kinship networks were sound was important to obtain water from sources that were not one’s own. True, some people obtain water from government or institutional sources where most people had rights of access, but these wells were often poorly maintained or broken. Hence it is the most-needy villagers who generally rely on public sites; but where they have to find water elsewhere, they seek to capitalize on religious ties or political affiliations. Overall, access for many people can be uncertain due to the presence of arsenic, the shifting distribution of safe/unsafe wells, and broader societal relations.

Precarious access to a necessary resource such as water poses logistical and material challenges as well as emotional ones, especially for women. The ability to gain and maintain access to safe sources is entangled with a host of issues that directly affect the water-fetchers and their everyday lives. Access is never fully secure, and has to be re-ensured and re-articulated over time and space. The tube-well may break down or be shut down, or the water may be found to be unsafe; physical access to the well may be muddy/slippery, broken or blockaded; owners may suddenly decide to not give any more water, ration how much can be taken and when, or request favors in return. Each household without a well must continuously navigate such uncertainties. Diverse factors come into play in producing everyday insecurity, here having a direct bearing on how people relate to each other in a household as well as between households competing for water. People often compromise on quality in order to ensure sufficient quantity, as water is an essential daily need. Quenching of thirst as well as cooking food were deemed to be needs that could not be avoided or substituted, even if it meant taking risks of consuming unhealthy water. Making such choices is emotionally difficult for many women as they are aware they are jeopardizing the health of family members to ensure that at least some water is available (Sultana, 2012).

EMBODIED EMOTIONS, WATER ACCESS AND SUFFERINGS

People spoke about resource access and conflicts through the emotions they provoke, most notably through the notion of ‘suffering’. Analyzing the various forms of

suffering that are invoked highlights the emotional geographies of water, where suffering is inter-subjective and produced through the realities of access, use and control of water discussed above. Scholars such as Klouzal (2003: 256) argue that focusing on suffering enriches development research: 'Attending to emotional pain can heighten awareness of women's agency. By looking at what women's experiences mean to them, scholars gain insight into under-represented perspectives.' Similarly, a notion of suffering is identified by Moore (2005) as a way that people make claims to entitlements and land rights in Africa, albeit more in relation to historical dispossession and struggles to reclaim land in colonial and post-colonial contexts. In medical anthropological studies, some scholars have looked at emotional distress and suffering caused by water scarcity (Das, 1997; Ennis-McMillan, 2001; Tapias, 2006; Wutch and Ragsdale, 2008). Without objectifying suffering, I believe paying attention to multiple forms of sufferings can explain resources access and conflict issues more deeply and broadly.

I found that people articulated their suffering [*'koshto'*] vis-à-vis water and arsenic to directly and indirectly claim access and user rights to safe water. This is conveyed in two main ways: first, *'panir koshto'* [*'water hardship'*] or *'panir jonno koshto'* [*'suffering for water'*], indicating lack of safe water access, use and control; and second, *'panir theke koshto'* [*'suffering from water'*], indicating the ways that arsenic contaminated water has affected their lives (e.g. ill health from arsenic poisoning) (Sultana, 2012). These phrases describe the ways that lack of safe water affects people as well as signaling how claims to safe water are made. Thus *'suffering for water'* as well as *'suffering from water'* are simultaneous claims made on water – that lack of safe water causes hardship, as well as that use of unsafe water causes hardship, both individually as well as collectively. In both cases, water affects lives through its quantity and quality, access and use, and the sufferings that are produced. Therefore, public and private expressions of the sufferings reflect the wide range of emotional and physical experiences that occur in relation to water and the claims that people often make to access safe water.

Since switching to safe tube-wells and sharing safe water has been a key official recommendation made to people, various invocations are made to access/use safe water when people do not have control or ownership of safe sources. People often invoke cultural and religious moral obligations to share water in order to secure access; others invoke sufferings and poverty to generate sympathy in order to obtain water. Overall, sharing water is deemed to be a religious and customary duty, and people seem more sensitized to water hardship arising from awareness about arsenic. In general, most are willing to share in moments of crisis as long as it does not impinge on their needs or those of their family. But this varies across people and places.

As a result, sufferings related to water often result from various manifestations of struggles and conflicts over water (both private and public). Further, moral arguments are often as important as material and discursive struggles over natural resources, highlighting that these struggles are often manifestations of broader non-material struggles (Turner, 2004). Political ecologists thus need to analyze here the different types of conflicts and their meanings, being careful in the process not to undertake reductionist research – for instance of a sort that simplifies complex village life and conflict to the point where it misses different types and tenors of conflict as well as

their relative importance. Indeed, the textures and nuances of conflicts must be accounted for in a manner that thereby ensures that overt and public struggles do not overshadow hidden and more subtle ones. Such analysis enables deeper understanding of how struggles, hardships and emotional resource geographies interconnect and are reflected in the everyday experience of resource management.

This is apparent in how women described different degrees of overt conflict over water. Thus they used terms such as '*jhogra/kaiija*' [argument], '*chillani*' [shouting], '*kotha katakati*' [exchange of words], '*dhakka-dhakki/thela-theli*' [pushing/shoving], '*gondogol*'/'*golmal*' [skirmish/conflict], '*jhamela/birokto*' [hassle], '*jontrona/betha*' [pain] and '*kotha shona*' [verbal insults]. The more subtle ways they related struggles over water were '*oshonmani/opoman*' [humiliation], '*ijjate lage*' [loss of pride], '*chhoto kora*' [feeling small], '*morjadahani*' [feeling belittled], '*bhoganti*' [stress], '*mone dukkho*' [being hurt], '*lajja laga*' [feeling ashamed], '*mone aghat paod*' [emotional distress], '*mon kharap/koshto*' [feeling sad], '*akangkha*' [anxiety] and '*bishonno*' [depressed]. People narrated these ranges of their '*abeg/onubhuti*' [emotions] and the contours of 'suffering' in individual interviews, group discussions and informal chats.

Contaminated water and subsequent strife over safe water access had affected the ways that people related to each other as well as influencing social power relations in everyday life. Various verbal expressions of relational emotions of distress, sorrow, rage, fear, frustration, worry and anxiety are often accompanied by physical expressions of silent tears, crying, sighing, keeping one's head down, and looking away. Emotional distress becomes part of the process of obtaining water each day, in terms of where to get water from and how to address social hierarchies and power relations in the practices of water fetching. The embodied emotions of water are experienced in different spaces and to varying degrees, depending on the situation on any given day. The sufferings are felt corporeally and viscerally, while being expressed and articulated in diverse ways in their everyday lives. Emotional geographies were thus made through places, spaces and water. The embodied pain of hauling water, the emotional pain from being told off while fetching water, the sense of belittlement felt when having to fetch water from a source not their own or sanctioned by the owners, and the fear linked to fetching water at night from distant places are common experiences informing everyday practice. Similarly, fear and worry when children are consuming unsafe water is accompanied by joy and relief at being able to provide arsenic-free and safe water. Such emotions are negotiated and experienced routinely in landscapes where there are few safe water sources. These daily journeys are thus infused with various emotions and experiences with regard to water.

Paying attention to emotions also shows how people devise complex strategies both to access existing water rights and to maneuver to gain new access to water in order to meet everyday needs. The narratives of experiences and sentiments that people bring to bear on the water crisis and their sufferings are also marshaled to enhance their resource claims and to invoke guilt/sympathy in order to get water. People actively maneuver and shift their positions while performing diverse identities in the process. While power hierarchies play into such emotional topographies, a common understanding about the suffering of children without water, for instance, can become an important means to shape the giving and taking of water among differently located people.

At the same time, the notion of suffering was linked to a sense of womanhood for most of the women – that is, a common bond that tied them together as mothers, daughters or daughters-in-law. Even if the degree or nature of suffering varied, women mostly shared their sentiments with each other. Indeed, such inter-subjective relations were a common bond that they felt tied them together as well as validating their gender roles in the household and community (see also Gururani, 2002). Such inter-subjective emotions are linked to gender norms and constructions of gender in many places.

In addition, sympathy and empathy were found to be important components in social narratives of suffering from/for water. The bonds formed here were influenced not just by water scarcity and poisoning issues, but also by commonalities of experiences and the sharing of narratives. Similarly, inequalities linked to the experience of suffering are emphasized by those who claim that many others do not face these problems or do not empathize or sympathize with households that do (both in relation to accessing safe water as well as suffering from water poisoning). Articulations about such inequalities in exposure and suffering is generally shared among people in similar positions, but is also brought up with others in order to renegotiate water access. These realities explain why people access certain water sources rather than others, and why they may even share a scarce resource with some people due to emotional bonds formed through similar experiences of having to deal with water crises.

Emotional geographies of water thus comprise not just sentiments brought to the fore due to the water crises, but also the various meanings that attach to the physical process of water-fetching and water-sharing. These include meanings that are attached to places where the wells are located, as well as the spaces traversed to get there (e.g. private or public, welcoming or uninviting), the quality and safety of the water, the ease of access to the water and being able to take as much as needed, the difficulty or ease of carrying the amount of water needed, encounters with others in the daily foray in searching for water and the outcome of those encounters, and the events that take place at the water well itself. A range of emotional sentiments comes into play here. Thus, and beyond commonly felt sufferings and pain, there are also such elements as the recounting of previous pleasure in fetching and/or controlling safer/closer water resources, of feeling relief in being able to obtain safe water with ease, of talking about the joy of having one's own uncontaminated well or of the pleasure in going far to get water as an escape out of the house. Emotions of '*shanti*' [peace] and '*shukh*' [happiness] of drinking safe water, especially from one's own well, contrast with the sufferings the majority of villagers now face. However, it is also important to highlight the '*anondo/khushi*' [delight/joy], '*shachchondo*' [relief] and '*poritripto*' [contentment] felt by those few with some stable access to safe water or who benefit from occasional access to sufficient amounts of safe water (in a situation in which they generally do not do so). While such emotions were less common, they are nonetheless not insignificant. In the midst of a habitually dire situation, the small pleasures of having safe and healthy water (and not suffering from arsenicosis linked to the drinking of unsafe water) are meaningful.

Being mindful of the language of emotions and speech acts, and not objectifying the individualized expression of emotions but viewing them as inter-subjective and co-produced, allows us to understand the multidimensionality and importance of emotions in everyday life vis-à-vis water and arsenic. The relational nature of emotions

explains the interactions and connections that people have to each other and to water. The intimate and necessary relationships that people have to life-giving water as well as the social relationships that people have with each other simultaneously constitute the emotional landscapes of water. These speech acts, expressions and physical actions become part of everyday relationships. The feelings, thoughts and actions related to water-fetching and well-sharing (both as an owner or as one who has to share from someone else) are entangled in larger resource geographies in arsenic-affected areas.

Paying attention to these emotional geographies forces scholars to consider processes and relations that are central to (feminist) political ecology research yet that have often been neglected. It helps to build a better understanding of how people respond to environmental change, and to what end. Analyzing these narratives and invocations encourages us to understand more fully the hidden ways that resource geographies affect everyday lives. It also allows us to understand how emotions are part-and-parcel of the ways that people access and use a resource, one that is viscerally important to their very survival.

CONFLICTING EMOTIONS AND EMOTIONS OF CONFLICT

How much emotions really matter in situations of struggle for access and control of resources is brought into the open in everyday encounters where the manipulation of self and of others is significant in the access to water in a given area. Hierarchies of power and social differences are felt particularly acutely by those seeking safe water that is not from their own well; often, various forms of conflict were the result. Some of the reasons people mentioned that were thought to have provoked or aggravated conflicts related to differences of class, power (between individuals and households), religion and political affiliation. Meanwhile, arguments, noise and crowding at safe tube-wells angered well-owners who often then restricted access to the water.

As many women face rejections and restrictions on accessing and using a safe well, they often resort to using unsafe water in order to minimize confrontation and strife. Indeed, public emotions such as shame, embarrassment and guilt often regulate social behavior, influencing conformity or norm-following. These come to play important roles in water–society relations, where public emotions influence who obtains water from where, when, how much and to what end. Some women (and their household members) will carefully regulate their behavior and emotions around those they are dependent on for safe water so as to not upset tenuous but vital relations. Uncertainty is here common. Thus any social infractions such as disagreements, perceived lack of respect (i.e. as seen by well owners towards themselves), insufficient expressions of gratitude or provision of free labor (in return for safe water) can jeopardize the right to access a safe well. As a result, fetching water comes to involve not only physical labor but also emotional labor in the guise of maintaining appearances of deference, subservience and conviviality (cf. Scott, 1990).

Having to ‘keep quiet’ or overlook any insults or humiliation were common strategies women employed in order to keep their water access somewhat secure. Social relationships and encounters thus affected daily experiences of water, with public emotions often tightly controlled. In contrast, private expressions of emotions that

result from such public experiences involved complaints to family members and/or the sharing of experiences with other women who face similar challenges and distress. Sometimes, though, it was simply most prudent to keep these emotions to oneself. This is particularly the situation for young daughters-in-law, who are generally burdened with the task of fetching water throughout the day for their in-laws, but who fear rebuke and punishment if they do not provide sufficient amounts of water in a timely manner. Their emotional realities are compounded not only by the challenges of access outside the home but also by negotiating relationships and being the 'dutiful' daughter-in-law inside the home. As a result, managing one's emotions as a result of the difficulties of accessing water or using a water source thus becomes wrapped up in the everyday practices of household water management. Conversely, social relationships and friendships formed and maintained as part of the labor of gathering water with other vulnerable women, or through sharing common sorrows and hardships with both men and women who also suffer badly from the water crisis, become ways that people cope with the daily struggles in their lives. Similar experiences can thus forge bonds or splinter people apart.

Private and public displays of emotion are brought to the fore in everyday encounters, as women must navigate not only their own experiences with water access and control, but also with each other in a context of differential powers and rights. The emotional labor involved in maintaining water access (as well as conversations about it) is thus palpable here. Such realities influenced the waterscapes that women could and could not access, and how that spilled over into other aspects of their lives – such as arguments at wells that went on to sour relations between entire families, or the joy of being able to pull funds together to invest in a well that bonded families more closely, or the respite felt when safe water was closer to one's home and enabled women to spend more time doing other tasks. Such varied emotions thus affected the ways that women came to relate to water management practices in their locality, and how they sought to deal with the overall water contamination situation.

That conflict or struggle over water can be publicly manifested (e.g. heated conversations or exchanges of words) as well as being expressed in a less public fashion demonstrates the spatiality of emotional geographies and the ways it is gendered. Yet public displays of conflict that involve 'small' skirmishes between women at the tube-well location usually do not garner much wider sympathy or attention. While women may be willing to share their troubles with close confidants, many other women often keep it to themselves. This feminization of the experience of conflict, as well as an associated chronic undervaluation of women's physical and emotional labor involved in doing this work, may explain the lack of attention given to water-access issues in many households and by policymakers: it is simply expected that the womenfolk will stoically fetch water each day in order to fulfill their gendered duties without resistance or challenge. Overall, while women are facing increasing hardship to fetch water, many feel that it is their duty to bear the sufferings and continue at whatever cost. In this manner, therefore, water conflicts and experiences are devalued by household members (often but not always the males), as these apparently only impinge on women's labor time, relations and emotions.

And yet, since difficulties of obtaining safe water affect the water consumption habits and exposure to arsenic of all family members, conflicts and experiences at the

water source have a direct bearing on the health and wellbeing of others beyond the person fetching the water. When obtaining water from a safe source is physically, socially or emotionally too difficult, women often resort to using unsafe wells (their own or nearby ones). Moreover, in many instances the struggles that women face in fetching safe water do become broader conflicts, especially between households. The latter thus involves more people than those facing day-to-day water-fetching chores, and can take a variety of forms and tenors.

While the arsenic contamination situation has created an environment where social tensions can easily erupt at water sources, the nature of conflicts is also mediated by the trade-offs people are willing to make at any given moment. If it is worth battling it out to obtain water, some people will take the risk. Others would rather safeguard existing patron–client relationships in order to gain on other fronts (e.g. sharecropping agreements, political patronage). The gendered and classed nature and scale of the conflict is thus important, as women may argue at water points but then resolve the situation in whatever ways they deem fit, rather than escalating the matter to the household scale. In other instances, households become deeply involved in conflicts over water and its management. As such, the tenor of the conflict, and the scale at which it occurs, are important aspects in understanding the ways that arsenic and water have come to play a role in influencing everyday life. Conflicts at water sources have the potential to spillover and ruin social relations among groups of people. Hence arsenic can poison not just individual bodies and families but the entire social fabric in a locality as well as the emotional ties that bind people together.

CONCLUSION

My goal in this chapter was to push the boundaries of theorizing in political ecology broadly, and feminist political ecology specifically, to engage with literature on emotional geographies in order to develop an emotional political ecology approach. Nuanced, rich and productive analyses are then possible that can greatly expand current debates to better explain why and how specific nature–society relations play out the way they do. Through the case of arsenic-related water crises in rural Bangladesh, I demonstrated that the emotional geographies of water access, use, control and conflict mediate the ways that water comes to affect everyday life in places of water scarcity. In this instance, the joys and relief of having safe potable water coexist with the pain, fear, despair, conflicts and overall sufferings *for* and *from* water, where emotions saturate everyday water–society relations. Experiences and conflicts over water are lived, felt and embodied by variously situated subjects in their daily struggles for safe water. Thus broader social relations of power and gendered subjectivities are re/negotiated and re/produced in water–society relations in which emotions come to play a key role.

Analyzing the emotional geographies of resource access, use and control thereby allows us to better understand the lived experiences of such realities, and to demonstrate how emotions and embodied subjectivities play a role in the ways that natural resources come to influence everyday life. The messiness and entanglements in nature–society relations are better explained through closer analysis of complexities that exist, thus enabling us more clearly to understand how and why people relate to,

use and find meaning in resources in the ways they do. Such an emotional political ecology approach encourages scholars to explain resource politics, struggles and access/conflict – themes that are central to (feminist) political ecology scholarship – as being about more than the resource itself (and its ‘rational’ use) or the socio-political power relations involved, but also about the diverse emotions set in motion as these influence the practices and decisions people make in everyday resource use, control and conflict.

How might this emotional political ecology approach be further elaborated? One area would be to explore the role of other types (or combinations) of emotions than those featured in this chapter. Thus scholars might advance complex aspects of emotions such as hope, fear and anger as they inform nature–society relations. A second area could meanwhile assess emotional topographies as they relate to other types of resources – timber and non-timber forest products or fish and other marine products, for example. Here, the ‘unruly materiality’ of the resource world (Bakker and Bridge, 2006) becomes entwined with the vicissitudes and complexities of the emotional world in a manner yet to be seriously explored in political ecology. A third area might unpack in greater detail the ‘public–private’ continuum of emotional expression to understand how, where and with what effects such expression assumes a more or less public and private form (and indeed how ‘public’ and ‘private’ perhaps come to be defined differently across places and times). A final area could investigate the sorts of emotional trade-offs that occur among people as different resource management issues occur simultaneously, and hence require simultaneous emotional and political negotiations. In aggregate, these sorts of topics underscore the great promise of an emotional political ecology approach that is likely to conceptually and empirically enhance research in (feminist) political ecology significantly in the years to come.

NOTE

- * This chapter is adapted and thoroughly revised from the following and is used with permission: Sultana, F. (2011), ‘Suffering for water, suffering from water: emotional geographies of resource access, control and conflict’, *Geoforum*, **42**, 163–72.

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46. Thermodynamics revisited: the political ecology of energy systems in historical perspective

Gustav Cederlöf

Energy systems have rarely been on the lips of political ecologists. The silence is striking in leading texts (e.g. Blaikie and Brookfield, 1987; Bryant and Bailey, 1997; Robbins, 2012). Yet access to centralized energy infrastructures (or the lack thereof) strongly reflects who can take part in ‘development’ and ‘progress’. Today many centralized energy systems appear in the contradictory position of too much carbon causing climate change and too little carbon causing ‘peak oil’ (Bridge, 2010). But the infrastructures rarely take centre stage: instead discussions are about fuels and emissions, the energy mix and carbon offsets (Bumpus and Liverman, 2008). Still, Bridge (2010; also Mitchell, 2011; Zimmerer, 2011) addresses the social and technological networks through which energy resources are produced; and Bennett (2010) reconceptualizes the electricity grid as a socio-physical event with great potential to better understand links between politics, infrastructure and hydrocarbons. Here, I build on such promising work by addressing the historical nature of electricity infrastructure as part of a wider effort to encourage a historically informed political ecology of energy systems.

This task is all the more important given widespread but misguided thinking on the possibility of simply substituting ‘clean’ for ‘dirty’ energy. To survive peak oil and changing climate crises, it is often assumed that the energy potential of fossil fuels must be substituted for an equal amount of renewable energy (York, 2012). Hence a huge amount of biomass, wind farms or solar panels are needed to replace an oil barrel kilowatt for kilowatt. Such a low-carbon transformation would have severe consequences in that it would devour large land areas, prompting a dramatic expansion in the size of ‘violent environments’ linked to energy production (Peluso and Watts, 2001).

But in this chapter I wish to emphasize a different point, namely that the very assumption about ‘easy’ technological substitution underpinning such thinking is wrong. Electricity systems – configurations of metal wires, hydrocarbons, turbines and electron movements – are fundamentally historical products reflecting quite specific political and economic interests. Today’s electricity grids demand high energy input to satiate those interests. Yet the energy demand of an energy system is not inherently about the technology; infrastructure is not just ‘out there’ requiring a new energy source. Rather, political and economic interests are manifest in the technology. This point has momentous political, economic and ecological implications: historically specific and usually unjust interests that energy systems embody can and must be challenged through scholarly and activist means rather than devoting effort to blindly go down the path of a false technological substitution – substitution that not only

avoids challenging powerful political and economic interests but actually facilitates further large-scale land grabbing on their behalf – this time in the name of alternative energy.

My aim in this chapter is to develop a historically based kind of understanding that ought to guide political ecologists as they engage more systematically than hitherto in critical analysis of energy systems. To do so, I focus on electricity infrastructure, beginning with a brief introduction to key concepts from thermodynamics and systems ecology. While energy systems are profoundly political, these social relations are also contingent on how energy physically behaves in relation to a given infrastructure. I then draw on work on the history of electrification in the USA, the Soviet Union and the former Third World to show how energy systems are socially produced across time, space and political ideology. I conclude by suggesting avenues for future research into the political ecology of energy systems.

POLITICIZING THERMODYNAMICS

Let me first reacquaint the reader with the washing machine. As Hans Rosling (2010) recounts, this is a spectacular machine that frees up much time, often for women, when manual scrubbing and pounding are replaced by its centrifugal powers. To operate, the washing machine needs mechanical energy. This could be supplied from the motion of wind through a turbine to the drum with one single energy conversion. Yet this kind of mechanical low-tech system is often regarded as ‘traditional’. Most ‘modern’ washing machines run on electricity generated from fossil fuels.

Fossil fuels originate in the sun. Through photosynthesis, sunshine is converted into green plants and algae. Algae go through their life cycles before they decompose and end up on the sea floor. Over hundreds of millions of years other biomass covers the algae; pressure builds up, the temperature rises and they slowly become petroleum. Millions of years of solar energy are thereby stored in the molecular bonds of hydrocarbons. Fossil fuels can thus be conceptualized as a historical accumulation of land (or sea) area on which the sun once shone. If such fuels were substituted for contemporary land area it would immediately become a political question of how land is managed and distributed – with ensuing conflict pitting humans against each other as well as against the non-human world (Dukes, 2003; Hermele, 2012; Howard et al., 2009).

The petroleum is next pumped from the subsoil by a multinational oil company (Ferguson, 2005; Watts, 2004), is refined, and then, still in some countries, transported to a thermoelectric power plant. There it is set on fire. This releases energy stored in the hydrocarbon bonds and converts it into heat. The heat is used to evaporate water, which is set in motion. The moving steam is directed into a turbine, where it is transformed into mechanical energy. This energy is used to spin a magnet in a generator, which transforms the mechanical energy into electricity. The current is then prepared for transmission. The voltage is stepped up to reduce the amount of electricity dissipating as heat. When the current has travelled to a location where there is a concentrated consumer demand, the voltage is stepped down to a level that can be used by a washing machine. It is distributed to its consumer, comes out of a socket and

enters the washing machine, where the energy is transformed anew into mechanical energy to spin the drum.

Across the millions of years that have passed since the energy was first generated by the sun, none has been destroyed. It has only been transformed. This is known as the First Law of Thermodynamics (Smil, 2008). In each transformation, however, energy has not only been converted into the form required to finally spin the washing machine drum. It has also transformed into heat. This heat is rarely of use as it dissipates into the atmosphere. Therefore, as soon as energy is set to work, the quantity of useful energy diminishes: its 'entropy' increases. This phenomenon defines the Second Law of Thermodynamics. The efficiency with which energy is transformed from one form into another is (with a bit of simplification) the 'conversion efficiency' (Lovins, 2004). The aggregate conversion efficiency of using wind to spin a washing machine drum is much higher than the efficiency of using electricity.

The Second Law states that entropy increases spontaneously in all energy processes. This means that energy always is a one-way flow; energy use can never be reversed. Consequently, new high-quality energy must enter the system continuously to sustain a process like a spinning washing machine drum. The amount of energy available to do work in a system is called 'exergy'. The low aggregate efficiency of the electrical energy system means that much more exergy must be imported to sustain the washing machine than is necessary in a system powered by the wind. On earth, a wind-powered washing machine drum can be spun as long as the wind, blowing due to the sun's uneven heating of the atmosphere, provides exergy. Fossil fuels, in contrast, form over the extreme *longue durée*. In a process dependent on fossilized exergy sources, exergy is therefore consumed at a much faster pace than new energy potential can enter the system.

In the 1970s thermodynamics (or 'energetics') became a concern for social scientists. Most notably, Nicholas Georgescu-Roegen (1971) argued that all economic processes increase entropy. The economy is therefore in constant need of exergy and raw material input, which, Georgescu-Roegen argued, inevitably puts limits on growth. Daly (1974) elaborated this idea by outlining a steady-state economy that would be environmentally and economically sustainable. These perspectives today thrive in the field of ecological economics and in the 'de-growth' movement (Healy et al., ch. 41 this volume).

Occasionally, political ecologists have engaged with the issue of thermodynamics. In the 1980s, Stephen Bunker (1985) infused Georgescu-Roegen's thesis with neo-Marxist dependency theory by arguing that production in the world industrial core was enabled by a transfer of energy and matter from peripheral extractive economies. He also drew on work on energy in ecological anthropology (White, 1959; Adams, 1975) to argue that the core's ability to harness great amounts of energy enabled it to develop more complex social organization. Meanwhile, the social organization of the periphery, drained of energy and matter, became simplified and underdeveloped. Later, Alf Hornborg (2001) strengthened Bunker's analysis by freeing it of its functionalism through incorporation into the world-systems perspective. Hence industrial technology is not an index of cultural 'progress', but rather an index of accumulation whereby a population's technological capacity (i.e. amount of energy harnessed) above all defines its position in the world system.

Many historians of technology, in contrast, are sceptical about this sort of grand explanation. Nye (1998), for example, frames his analysis in terms of specific energy systems and associated cultures. In the following, I draw on such historical literature, linking it to concepts of energy, entropy and exergy. By doing this, I affirm the value of historically grounded political ecologies. This has long been a mainstay in work on natural resource struggles (Guha, 1989; Peluso, 1992), but has not yet been sufficiently explored in relation to science and technology themes, which are gaining currency in the field today. Moreover, my analysis will enable me to argue that the question of how society can substitute renewable energy sources for existing fossil fuels on a one-to-one basis is a treacherous one that conceals the political-ecological dynamics of energy systems in a way ultimately injurious to many people and environments.

EXTENDING THE GRID: THE US EXPERIENCE

The USA is the world's largest energy consumer per capita. It is also where the world's first electricity system was developed, in the Wall Street district of New York City, by Thomas Edison and his team of engineers. Thomas Hughes is a leading chronicler of Edison and his electricity grid. Hughes argues that an electricity system in general is a network of interrelated parts that are usually under central control. The extent of this control delimits the extent of the system (Hughes, 1983). When Hughes (1983: 41–2) analyses Edison's creation, the emphasis on centrality is clear: 'Edison's ultimate objective was to introduce central-station supply ... A central station would distribute electric light to the public, in contrast to generating plants, or isolated stations, which would be used only by their owners.' This design would enable customers to receive 'an unusually effective light without hazardous and noxious fumes. In the Wall Street district the station would also catch the attention of financiers and the investing public, persons who were needed to fund Edison stations elsewhere' (ibid.). Thus the centralized technological design was clearly a product of Edison's own making. Central control even turns out to be not only a design but an argument for a cleaner city and a business strategy. However, Hughes, somewhat against the grain of his overall argument, turns this historical product into a general definition of the electrical grid. The definition he uses to analyse electrification thus derives from the very materiality he seeks to explain. Hence the strength of the idea that electricity systems extending over space like a spider spinning its web are controlled by and from the centre. That other definitions are possible here is evident, for instance, from Bennett's (2010) Deleuzian engagement with the electricity grid as an assemblage of the human and non-human.

Edison's system was based on a central station to which coal was transported and from which a direct current (DC) was distributed throughout the district. Edison's design can be seen as an alliance forged between the social and economic aspirations he wanted to serve and the behaviour of electricity in the wires that extended around Wall Street. Soon, however, Edison exported his central station system and the wish to transport electricity over longer distances arose. For instance, this was a precondition to incorporate hydropower into the system. As a source with huge energy potential (high exergy content), great economic interests were involved. The demand for long-distance

transmission changed the circumstances in relation to which the Wall Street system had been designed. It strained Edison's alliance with the current.

The problem was that as soon as an electric current passes through a metal wire, it causes it to heat up. It is the resistance of the wire that bothers the current. Engineers know this phenomenon as Joule's first law. According to Joule, the heat generated (Q) is proportional to the resistance of the wire (R) multiplied by the square of the current (I). Or, for short, $Q \propto I^2R$. What this expression captures had dramatic consequences for the politicians and engineers who wanted to extend the grid geographically to boost the economy. As the power line gets longer, its resistance to the current increases. This means that more electric energy is transformed into heat, dissipating into the atmosphere, when it has to travel over longer distances. But this also stands in proportion to the current that runs through the line. A low current generates less heat, while a high current generates more. In Edison's Wall Street system this was not a problem since the direct current only had to travel a short way to reach its consumers.

With a last twist of electromagnetic theory, the trick to make long-distance transmission feasible is that a low current requires a high voltage. In fact, to minimize the increase of entropy during transport, the voltage must be so high that it can hardly be used in domestic or industrial appliances. In today's transmission networks, transmission generally takes place at between 115 000 and 800 000 volts, whereas the electricity that comes out of the socket usually rates 110 or 230 volts. In Edison's day, there were no transformers available that could reduce a high DC transmission voltage to a low voltage for use. Thus the cost of transmitting DC over long distances prohibited the extension of the grid that seemed so economically lucrative.

To fulfil their economic and social dreams, politicians and engineers had to seek new alliances with the current. What resulted became known as the 'Battle of the Currents' (Hughes, 1983: ch. 5). With alternating current (AC), as opposed to DC, it is an easy task to transform voltages. But Edison ferociously favoured DC. One reason was that he had patents only for a DC design. The argument he voiced, however, was the danger of AC, which could be used for electrocution by accident or on purpose. In his campaign for a DC standard, Edison publicly electrocuted cats and dogs to prove the danger of AC; he finally electrocuted a circus elephant named Topsy with 6600 volts in 1903. AC, on the other hand, was favoured among others by George Westinghouse as it enabled cheap long-distance transmission. AC ultimately won the battle, which is evident from the national and intercontinental grids that span the world today. Electricity is also 'lost' as heat in these power lines; the World Bank (2014) estimates that 6 per cent of total energy output was 'lost' in US grids in 2011. The estimate was 11 per cent for Egypt, 16 per cent for Cuba, 21 per cent for India, with Haiti topping the list at 55 per cent. It should be noted that these numbers, which in a deceptively exact way indicate a difficult thing to measure, also include pilferage – itself an interesting act of resistance to the political ecology of electricity systems.

These losses can be endured by supplying the grid with energy sources that have enormous energy potential: hundreds of millions of years of sunshine fossilized in hydrocarbon bonds; water gushing through monumental dam gates; and the subatomic energy of enriched uranium. Yet these energy sources all have adverse effects on the socio-environmental systems they interact with. Coal, gas, oil and peat partly transform into carbon dioxide as they are burned, while dam reservoirs are one of the world's

greatest emitters of methane (Bates et al., 2008) – both highly active greenhouse gases. Nuclear fission meanwhile produces radioactive waste and thermal pollution.

In the 1930s, where Hughes's book ends, the energy intensity of the US economy increased sharply (Nye, 1998). In particular, the Tennessee Valley Authority (TVA) became emblematic of American 'progress'. The TVA is among other installations a series of almost 30 hydroelectric dams – a project described as 'Democracy on the March' by David Lilienthal, the TVA's first leader. TVA was part of Roosevelt's New Deal and was seen as a technological intervention that at once would make the Tennessee River navigable, electrify the 'backward' southern states, improve flood control and industrialize agriculture in the Tennessee Valley (Klingensmith, 2007). Lilienthal explained how construction of the dams – large nodes of electricity production supplying a central transmission line – had followed a rational, technocratic plan of progressive engineering. Daniel Klingensmith (2007; also Ekbladh, 2002) shows how this narrative rapidly gained currency. But while the dams became entwined with a narrative of modernizing America, the TVA was decidedly not the result of a pre-existing technician's plan. Klingensmith (2007) argues instead that it was the product of an intervention in the debate on public versus private ownership; of a vision of dominating nature for social benefit; of a solution of what to do with a First World War fertilizer plant and hydroelectric dam in Alabama; of a drive to make a river usable for transport; and more. The TVA also led to forced resettlement to make way for the reservoirs as well as subsequent displacement of 'uncompetitive' small farmers in an era of industrializing agriculture (the latter being a process enabled by the building of dams). So strong was the belief, however, that the engineering and design of the energy system were apolitical, scientifically objective practices, that 'political considerations' could not 'influence the selection of particular dam sites or technologies' (Klingensmith, 2007: 60). And so it became an apolitical issue that 125 480 people, by an official count, were forcefully resettled to make space for the reservoirs.

With the TVA, electrification became a symbol of national progress in the USA. At the same time, electrification took an equally central position in the nascent Soviet Union.

POWERING UP THE SOVIET UNION

Russia's electrification had been a low priority for the tsar. The future of the empire was believed to be linked to the railway. But after the First World War and subsequent Russian Civil War (1918–21) the railroads lay in ruins. When the Bolsheviks seized power, priorities changed and electrification superseded railway-building as the dominant government concern. 'The century of steam was the century of the bourgeoisie', Lenin proclaimed (1920, cited in Cummins, 1988: 105), 'and the century of electricity is the century of socialism'.

Just as in America, the technological structure of the Soviet grid was not the result of the inexorable advance of national productive forces. In 1920 a grand plan was compiled by the State Commission for the Electrification of Russia (GOELRO) at the behest of Lenin. While the plan framed electrification as a technological imperative, it

nonetheless strongly reflected political and economic calculations. It specified construction of a large network of 27 regional thermoelectric power plants. Yet, as Coopersmith (1992: 153) argues, '[t]he challenges to GOELRO may have been phrased technically, but they concerned the very nature and direction of the Soviet state. Would it be directed from the center or guided from below? The choice of electrification embodied in GOELRO strengthened the first direction.'

Electricity loomed large in Lenin's rhetoric, epitomized in his motto that 'Communism is Soviet power plus electrification of the whole country'. Electricity would both figuratively and literally bring the masses into the light, while bridging the gap between city and country as the 'backward' peasantry was modernized. 'Of course', Lenin (1966: 517) declared in presenting the plan to the Eighth All-Russian Congress of Soviets in 1920,

to the non-Party peasant masses electric light is an 'unnatural' light; but what we consider unnatural is that the peasants and workers should have lived for hundreds and thousands of years in such backwardness, poverty and oppression under the yoke of the landowners and capitalists ... What we must now try is to convert every electric power station we build into a stronghold of enlightenment to be used to make the masses electricity-conscious, so to speak.

Lenin (1966: 516) argued that only by introducing 'a new technical base' could 'the internal enemy' (i.e. a potential capitalist class taking a grip in the countryside) be undermined and the socialist state prevail. Somehow, a long-distance transmission network featuring 27 central nodes of fossil-fuel-based electricity generation responded to this belief. Cummins (1988: 28) remarks with reference to the 1934 Moscow edition of the *Tekhnicheskaiia Entsiklopediia [Technical Encyclopaedia]* that 'In the Soviet technical lexicon, electrification is the transfer of a nation's economy to a technical base of contemporary large-scale machine-building industry through the concentration of generating capabilities primarily in large regional power stations.' And so, Lenin's vision had seemingly become 'objective' knowledge by the 1930s. In light of Stalin's brutal collectivization buttressed by this new technical base, however, it is debatable how far the GOELRO grid actually lit the peasant's hitherto 'dark' world. Rather, the capacity to dramatically (re)organize energy flows was above all a strong source of political-ecological power – power to organize certain kinds of environments for human interaction.

Yet the GOELRO plan for a centralized grid had been hotly contested. Lenin's support for it met stiff opposition, notably among political leaders such as Alexei Rykov and Leon Trotsky (Cummins, 1988). The plan was also opposed by urban and municipal utilities, who favoured a decentralized grid (Coopersmith, 1992). At the time, only Petrograd (Saint Petersburg) and Moscow had a limited electricity supply underpinned by the tsar's railways, which transported peat and coal to their central stations. Opposition to Lenin's plan amounted to a struggle over the physical layout of the grid – that is, whether electrification should be controlled by central or local government. This political conflict stalled implementation of the GOELRO plan in the early 1920s, compromising in turn the New Economic Policy announced in 1921. And yet, such political turmoil masked an underlying process that eventually came to define the Soviet state and, later on, other communist states around the world: a combination

of central planning and heavy technological construction that became almost synonymous with state socialist practice and Marxist–Leninist theory (Cummins, 1988).

After Lenin's death in 1924 and Stalin's subsequent seizure of political power, GOELRO became part of the State General Planning Commission (Gosplan), which would lead the Soviet Union's five-year planning until its dissolution in 1991. When the first five-year plan was completed in 1932, GOELRO's goals had been fulfilled as they were part-and-parcel of Stalin's accelerated industrialization campaign (Coopersmith, 1992). During this plan the budget for electrification was quadrupled, but with generation capacity concentrated in a few key industrialized areas only: 'This realization of the GOELRO plan reinforced the centralized nature of industrial development and control' (Coopersmith, 1992: 258). Hence the physical form of the energy system closely meshed with the interests of the Stalin-directed central government and GOELRO engineers. The physical and human geography of this energy system – where it reached, who could (or could not) access it, the purposes it served and the interests it embodied – was thus deeply embedded in a new set of (revolutionary) social relations. These relations were in turn maintained by the exergy content of the peat, coal and oil that fuelled the system.

However, after the Second World War something peculiar happens. The turbulent histories of US and Soviet electrification are forgotten. Electrification becomes an abstraction, an 'objective' technological intervention that other countries must replicate in order to 'develop'.

THE CURRENT MOVES SOUTH

In 1944, William Voorduin travelled to wartime India. A former TVA engineer, he was dispatched there by the TVA leader David Lilienthal to advise the British-Indian government on the building of a series of dams on the Damodar River west of Kolkata. The presence of TVA engineers in India, though, would continue long past independence from Britain in 1947:

From the 1940s to the 1960s there were plans for new 'TVAs' in India, China, Palestine, Peru, Iran, Colombia and several other countries. Or more precisely, there were plans for river development in these lands that to varying degrees invoked TVA as their inspiration and called for TVA personnel to help implement them. (Klingensmith, 2007: 68; see also Ekbladh, 2002)

This was the image of TVA that had solidified in the USA, becoming a symbol of American 'progress' that subsequently travelled the world. Engineers like Voorduin 'looked at the Damodar and saw in it the Tennessee as it had been before 1933, and looked at Bihar and Bengal and saw in them the American South' (Klingensmith, 2007: 73). In 1948, the DVC (Damodar Valley Corporation), a thermal and hydropower generating authority, was created on the TVA model to manage the Damodar.

For political leaders in what was becoming the 'Third World' (Escobar, 1995), electrification was a core priority. 'Modern' electric energy was replacing 'traditional' energy forms such as motion to propel pumps and spin drums. As in the USA, a strong narrative was developed around the idea that electrification was a purely technical and

therefore apolitical matter. Once again, electrification was a necessity in the pursuit of progress – a view that crossed ideological lines. Hence it was pursued with alacrity by both pro-Western countries (e.g. Thailand, the Philippines) and pro-communist nations (e.g. China, Cuba). Indeed, much of what international financial institutions have done in the post-1945 era has been linked directly or indirectly to electrification. In fact, the World Bank was still lending money for electrification projects and the formation of national utilities into the 1990s (Collier, 1984; Goldman, 2005). During that decade, though, the policy was changed as the World Bank promoted a neo-liberalization agenda. Thus power grids were ‘unbundled’ into generation, transmission, distribution and retail segments so as to allow competition to flourish throughout (Xu, 2006). The World Bank’s interest in large-scale development projects like electrification and dam-building was not coincidental, but is at the heart of this organization: ‘TVA, as Lilienthal represented it, was a key point in the articulation of the world view on which the World Bank was based’ (Klingensmith, 2007: 62).

For Third World leaders, meanwhile, no primary energy source shared the symbolic power of hydropower. ‘The TVA idea’ joined hands with notions of development, nation, independence, modernization, industry and progress – ‘so important were dams in the mid-1950s, Jawaharlal Nehru spoke of them as the “temples” of a new, progressive India’ (Klingensmith, 2007: 5). Not having access to electricity was also integral to modernization narratives whereby ‘poor’ people were defined as such for ‘lacking’ electricity and development (Chakrabarty, 2000).

Even grander plans were afoot in Communist China, where Chairman Mao in one of his poems from 1956 envisioned the damming of the Yangtze River. By 2008, the vision of the Three Gorges Dam stood completed: 181 metres high and with 32 turbines to generate hydroelectric energy (Shapiro, 2001; Smil, 2004). Yet the ever-more expensive pursuit of high exergy sources to fuel ever-more extensive electricity networks, underpinning development, has had severe social and environmental impacts throughout the Third World or the global South (Goldman, 2005). By redistributing physical power across space, dams unevenly distribute the costs and benefits of ‘progress’ in modernizing states across people and ecosystems. With Jamal Abd al-Nasser’s Aswan dam in Egypt in mind, Mitchell (2002: 21) argues that ‘[f]or many postcolonial governments, this ability to rearrange the natural and social environment became a means to demonstrate the strength of the modern state as a techno-economic power’. Hence, resonating with the experiences of the USA and the Soviet Union, the technological infrastructures and transformed environments these policies leave behind cannot be separated from the political-economic interests and imaginaries within which their foundations were cast. And those embedded interests and imaginaries now have global ecological implications: for instance, the dams that supply the vast amounts of exergy fuelling Indian development contribute a massive 18.5 per cent of India’s total greenhouse gas emissions from the methane that their reservoirs release (Dharmadhikary, 2008: 29).

But electrical dreams were not only the preserve of countries aided by the USA. The Soviet idea of a socialist technical base also travelled the world, reaching China, as noted, by the 1950s and Cuba by the 1960s. Thus, as Cuban economist Santiago Rodríguez Castellón (1988: 150, my translation) argued, ‘[a] country like Cuba, in full progress of development, that works to build the socialist techno-material base and that

pays constant attention to the objective of trying to meet the most elementary necessities and aspirations of our [sic] people, necessarily must increase its energy consumption'. Indeed, revolutionary success was interpreted in terms of per capita electricity consumption – up from 377 kilowatt-hours (kWh) per person pre-Revolution (i.e. 1958) to 1106 kWh per person in 1988 (ibid.: 154). This discourse is strikingly similar to Lenin's. But the similarities went further.

The Cuban National Electricity System (the SEN) was completed in 1973. It seems in many ways like a carbon copy of the GOELRO plan. The grid stretches across the island from Pinar del Río in the west via Havana to Santiago de Cuba and Guantánamo in the east. In the late 1970s, nine thermoelectric power plants were dispersed along this high-voltage AC line, most of them named after heroes of the Cuban anti-colonial struggle. By 1989, 95 per cent of the Cuban population had access to centralized electricity supply in comparison with 56 per cent before the Revolution (Bérriz and Madruga, 2000: 4). Here, a point made by Cummins (1988: 8–9; cf. Lenin, 1966: 518) about Soviet electrification rings (partly) true: '[it] created the myth that a backward country with plentiful energy resources can become a modern, industrial state within a short period of time by developing its economy on the basis of one technology, namely electrification'.

And yet Cuba, unlike the Soviet Union, lacked 'plentiful energy resources'. The nine power plants all relied on crude oil imported from the Soviet Union. The Cuban socialist project therefore developed its new technical base and economic growth on West Siberian and Caspian exergy reserves. That such an import-reliant energy system represented a good thing for Cubans was always debatable. After the Soviet Union's collapse in 1991, however, the debate was over as Cuban oil imports rapidly plummeted by 87 per cent and with them national electricity output (ONE, 2012). What remained of the once-mighty SEN was a local joke, as one ethnographic account records:

Here we do not have *apagones* [cuts in electricity], we have *lumbrones* [a longer period of light] ... There was no water for hours on end in buildings that depended on electric pumps. After dark, no house work could be done, no books or papers read, no television watched and no meetings held. People often just stood or sat around in their yards smoking and chatting with their neighbors. (Rosendahl, 1997: 169)

In this country of the South, electrification was no longer a heady abstraction – a prediction of development long foretold by political and economic elites. The material loss of current has had decidedly tangible consequences for large parts of society.

CONCLUSION

This chapter has explored the political ecology of energy systems via the example of electrification. It shows how such systems are inevitably historical products that are deeply shaped by political and economic interests and rationales. As the case studies from the USA, the Soviet Union and the former Third World also illustrate, dreams of electricity have fundamentally shaped notions of 'development' and 'progress' across time, space and even political ideology – albeit in location-specific ways. However

articulated and justified, these energy systems do not necessarily represent 'better' or more 'progressive' technologies than 'old', less 'modern' ones. Rather, they represent specific political and economic interests and rationales that are fulfilled or not and contested or not.

At the same time, as seen with electricity networks, the existence of energy systems is equally dependent on specific alliances forged with exergy reserves, metal wires and thermodynamic properties. To recall the starting point: a particular energy system demands a particular quantity of energy input. If the task is to spin a washing machine drum, it could be spun with mechanical energy generated through one single conversion from the motion of the wind. But to do the same thing with electricity supplied through a long-distance AC transmission grid, a significantly longer sequence of energy transformations occurs and hence a much larger supply of exergy is required. The combination of peak oil and climate change is condemning this current system based on fossil-fuel exergy. But simply making a wholesale switch to renewable energy sources, as some argue, is a recipe for disaster as land grabbing for the latter will only mean the proliferation of 'violent environments' (Peluso and Watts, 2001). Indeed, calls for such a switch reflect a basic lack of understanding of the political and ecological dynamics that are associated with every type of energy system.

To ever make genuine progress in tackling global energy and carbon crises that bedevil humans and non-humans today, it is absolutely imperative to begin by understanding those political and ecological dynamics. Here, a challenging and multifaceted research agenda awaits political ecologists. Clearly, and building on some of the research selectively noted in the introduction, the political and economic interests and rationales that are tenaciously bound up with fossil-fuel-dependent infrastructure must be critically examined. These include connections between infrastructure and processes of nation-state formation (Swyngedouw, 2007), encompassing the sorts of historically based formative events and processes emphasized in this chapter. This work requires systematic elaboration, particularly in the South, where the challenges are today most acute and relatively little attention has as yet been given to the political ecology of energy systems.

Another research area concerns the question of how energy systems resonate with notions of everyday modern life in relation to political dynamics influenced by gender, ethnic and other social factors (Arnold, 2013). How poor women and ethnic minorities, for example, may be involved in conflicts over access to electricity and other energy systems taps into a long-standing political-ecology theme (albeit usually discussed in relation to agrarian and other natural resources), but requires more attention than it has been given to date. And yet scholars need to be somewhat sceptical about concepts such as energy poverty (Buzar, 2007; Harrison and Popke, 2011) and energy justice (Bickerstaff et al., 2013) that sometimes reflect a wider development discourse in which some people are seen as 'lacking' development – hence requiring 'expert' intervention. Instead, research needs to examine one key but often overlooked question: why are certain forms of energy use that often demand little exergy input often seen as 'lacking' in terms of development in contrast to more energy-intensive uses for the same purpose that are propelling humanity into global crises? The point here, of course, is not to romanticize all 'traditional' knowledge but rather to assess how far such knowledge can be a basis for alternatives to current development pathways. This quest

can also draw on thinking in ecological economics on new models of energy use embedded in de-growth or steady-state societies that reject notions of modernity and the nation-state manifest in currently hegemonic energy systems.

Detailed ethnographic work on how low-carbon energy use is socially negotiated in different contexts in the contemporary period is vital here (Strauss et al., 2013). This would also play to existing political-ecology methodological strengths. Such studies would help to 'de-familiarize' Western norms of high-exergy energy use by juxtaposing it with existing alternatives (Boyer, 2011; Bridge et al., 2013). In parallel, more research is needed on how socially and ecologically marginalized people negotiate and resist dominant energy systems, for example by pilfering on power lines, tapping into pipelines or inventing their own local-level schemes (Mitchell, 2011). These processes may include counter-narratives that re-frame how specific energy systems are seen as positive or negative.

These sorts of research issues and questions bespeak an important topic area that has yet to receive the systematic attention it requires. The role of history is often central here too, as unequal power relations shape the introduction of energy systems with far-reaching and long-lasting consequences, as this chapter has shown. For political ecology to persist as a vibrant research field in the face of current crises such as climate change and peak oil, such historically informed analysis of energy systems is nothing less than essential.

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47. Political ecology of the body: a visceral approach

*Allison and Jessica Hayes-Conroy**

In recent social scientific and theoretical work across disciplines, the matter of matter has come to the fore. When one claims that something matters (often in *italics*), the mattering is typically indicated in both figurative and physical terms. Moreover, the recent attention paid to physical matter moves beyond the more traditional focus on material conditions and needs (e.g. as in historical materialism) to embrace the physical and biochemical properties of matter itself (e.g. a metal's strength, or a food crop's capacity for adaptation to local conditions). Within this scholarly backdrop, bodies too – both human and non-human – have come to *matter* in all senses of the term. In this chapter we seek to demonstrate how and why bodies matter to political ecology and what this research field lends to the study of bodily matter. We do so by exploring in detail a model that we call political ecology of the body (see also Hayes-Conroy and Hayes-Conroy, 2013).

As scholars, we have regularly joined our work through our common interest in body–food relationships. In doing so, we have attempted to understand the role of what we have called the visceral realm – that relational place in which bodies feel (i.e. sensations, moods, states of being) in interrelation with environments/space. Through this work we have recognized that political ecology lends key tools for analysing the body that can help scholars to meaningfully operationalize current interest in matter. In particular, recent scholarship in the field on health issues (King, 2010), material theories of affect (Bennett, 2009), and relational theorizing in 'second-generation' political ecology (Rocheleau, 2008) all provide strong evidence of how it is uniquely prepared to address concerns of the visceral, material body. Yet the visceral here is not to be viewed apart from traditional interests in exposing structural inequities and uneven power relations. Echoing wider feminist interventions, we use political ecology to insist that individual visceral feelings are never detached from wider economic structures and systems of meaning making. At the same time, we insist that the visceral, material body must also be central to theorizing in the field; to examine without concern for the visceral is to curtail explanation without full appreciation of the power of feeling in all our political and ecological realities.

BODIES, HEALTH AND AFFECT IN POLITICAL ECOLOGY

This chapter discusses the importance to political ecology of what we call the 'visceral' realm. The latter is neither an isolated phenomenon nor a specific approach, but rather an umbrella term used to encompass the domain of experience in which bodies live, feel, sense, exert, rest, emit, ingest, relate and change. In this sense, scholars working on the visceral may include both those writers working on affect, feeling or emotion

(Anderson, 2006, clearly delineates these terms), and those working on health, well-being and human medicine. In this section we discuss recent literature that relates to both of these sub-areas. The point here is not to comprehensively review all relevant literature, but to instead highlight some patterns that have recently shaped political ecology, and that in turn enable us to outline a framework for including the living body in that research field.

The so-called affective turn that has spread through much of social and cultural analysis has also markedly influenced political ecology. One of many influential examples is Jane Bennett's (2009) book *Vibrant Matter*, which, using theories of affect, encourages a broadening of political conceptions of agency beyond human actors. Many political ecologists have drawn on the related ideas of 'relational ontology' and the 'more-than-human' to examine everything from conservation and restoration, to animal rights and relations, to environmental and political security (e.g. Barua, 2014; Hinchliffe, 2008; Instone, 2014; Staddon, 2009; Sundberg, 2011; also see Chagani, 2014). Such work, while not always explicitly visceral, or pertaining to the bodied experience of life, often provides openings for thinking about the role of bodily materiality through its insistence on the agency and political relevance of biological matter. Relational and more-than-human theories, for example, encourage an understanding of the human body as always related to or interconnected with other 'bodies', be they animal, technological, cultural or ideological.

Another powerful example of the influence of the affective turn on the field comes with the ecological work of J.K. Gibson-Graham (e.g. Gibson-Graham and Roelvink, 2010; Gibson-Graham, 2011). This work has pulled from theories of affect (e.g. Latour, 2004) to think through the human response – the ethical, visceral, political work – that is needed to deal with the current state of the earth. In other words, this scholarship attends to questions of bodily motivation and mobilization in order to understand the social and material conditions that are required to promote widespread ecological healing. Political ecologists like Noor Johnson (2014) have then used the example that Gibson-Graham provides to explicitly draw the affective body into political ecology (see also the special section in *Journal of Political Ecology* on non-capitalist political ecologies; Burke and Shear, 2014). This work is especially important because it demonstrates the political salience of the body's ability to be 'affected' (that is, to be moved, care, feel, sense etc.) and consequently to respond in meaningful ways to current ecological and economic conditions.

Meanwhile, during the last decade, a growing call for health-oriented research has also influenced the field. Becky Mansfield (2008a, 2008b), Brian King (2010) and Julie Guthman (2011, 2012) have been at the forefront of this call, as their work has urged scholars to understand bodily health as a 'nature–society question' (Mansfield, 2008a). Developing relational notions of the 'bio-social' and 'social-nature', these scholars have provided clear models for thinking about bodily ecologies as also always political. For example, Guthman and Mansfield's (2013) work on environmental epigenetics seeks to expand geographic understandings of health by breaking open the 'black box' of the body, which is typically seen as a medically predictable biochemical space. Their discussion of the health effects of xenobiotic chemicals (i.e. foreign chemical substances found within a body) provides tools for thinking through how the social becomes biological as the material body continually develops within our socio-material

world. Other political ecologists have drawn on such work to further advance connections between the visceral, material body and the research field. In particular, Paul Jackson and Abigail Neely (2014) use Mansfield's (2008a, 2008b) expression of the bio-social reality of childbirth to elaborate a more vibrant political ecology of health. For these authors, the notion of more-than-human also stands out, among other theoretical tools, as a means to 'blur the boundaries between people and their environments ... [and force] us to take seriously both the materiality of health and how health materializes "otherwise"' (Jackson and Neely, 2014: 13).

As food scholars, we do not see it as a coincidence that a number of the path-breaking works on body-centred political ecologies have come from scholars also interested in food. Truly the 'body–consumption nexus' (Galt, 2013) seems to be a ripe node for re-thinking and re-practising the significance of the body in this field. In particular, questions of food preference (DuPuis, 2000), nutrition (Huff, 2014) and body size (Guthman and DuPuis, 2006), among others, have provided key openings to recognizing the political importance of the body's living materialities. Galt's (2013) review explains that many food scholars working at the intersection of bodies and food consumption have employed tools from, and expanded the purview of, political ecology, while noting that there remains much possibility for further expansion. With this suggestion in mind, we turn to a discussion of our political-ecology-of-the-body framework, which we argue helps to structure research and make sense of the body in scholarship (Hayes-Conroy and Hayes-Conroy, 2013).

POLITICAL ECOLOGY OF THE BODY: A FRAMEWORK FOR ANALYSIS

In our own career trajectories, in common with those of many authors mentioned above, we first came to see the importance of the material body to political ecology (and vice versa) while conducting research on the alternative food movement. One of us has conducted in-depth research on Slow Food – an international organization dedicated to 'good, clean and fair' food (Hayes-Conroy, 2010: 739; Hayes-Conroy and Martin, 2010). The other has engaged in ethnographic research on school garden and cooking programmes as instruments of alternative and healthy eating campaigns (Hayes-Conroy, 2014). Through these projects, we discovered that the research field provides important grounding for how we approach food–body relationships. Specifically, it asks that we contextualize these relationships, as we would any human–environment relationship, within a broader and deeper analysis of power at a variety of scales. This contextualization allows us to see that food–body relationships are always about much more than individual behaviour – a fact frequently overlooked in the oft-repeated rhetoric of personal responsibility, fat shaming and consumer-driven social change. At the same time, a focus on the material body – that is, the eating, tasting, craving body – allows new questions to enter the realm of political-ecology analysis, for instance, questions about how and why the physical, visceral body comes to desire, revolt or remain apathetic in the production of specific food–body connections. In short, by bringing together questions of the body with questions of political ecology, we are able to maintain a focus on structures of power and inequity in the agrifood

system while also allowing for the possibility (or perhaps certainty) that real, living, sensing bodies actively produce a reality that is far more haphazard than those structures alone can predict.

In bringing together these two research foci, we have sought to develop a simple framework for analysis that could help us organize and operationalize political-ecological research on the body. For better or worse, the field has sometimes been called ‘the everything pill’ (Robbins and Bishop, 2008: 748); we wanted to develop a way to make sense of that ‘everything’ while focusing selected attention on the health and well-being of human bodies. Our framework offers a three-wheeled model of inquiry (see Figure 47.1) that combines traditional emphases with interests of ‘second-generation political ecology’ (Rocheleau, 2008). The former often focuses on questions of structural inequality – for example, issues of uneven access to natural resources (such as food, water or cooking fuel). The latter includes additional foci – for example, conflicts over shifting meanings and identities (such as the definition of healthy eating or the social-coding of food along lines of race and gender). In addition, as we discuss above, some second-generation political ecologists have also paid increasing attention to the agency of the material world itself, including especially the material body (e.g. the role of bodily affects, the biosocial mechanisms of taste, the complexities of visceral reaction and the realities of more-than-human life).

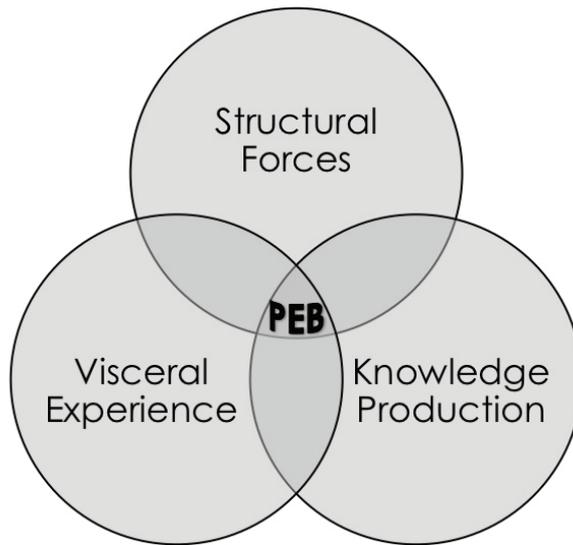


Figure 47.1 The political-ecology-of-the-body model

Our model depicts these three ‘wheels’ through a Venn diagram that calls our attention to the impact of structural forces, knowledge production and visceral experience on the health and well-being of human (and more-than-human) bodies. As a model of both inquiry and analysis, it offers researchers an opportunity to systematically interrogate the production and reproduction of the material body through sets of directed questions. For example, in regard to healthy food we might ask structural questions about the

geographic, economic and temporal constraints of access for different social groups; we might ask knowledge-based questions about conflicting definitions of healthy food and body size; and we might ask visceral questions about people's motivation to eat certain foods and not others. Importantly, in asking such questions, we need to pay attention not just to their distinctness but also to the ways that they and their answers fold in on each other. Indeed, we chose a Venn diagram because we wanted to draw attention not just to the significance of the three wheels themselves but also to the ways that these realms interact with each other. For example, differing definitions of what is 'healthy' can affect the significance of food access issues for different social groups, while structural inequalities such as class status or racial privilege can dictate whose versions of 'healthy' are considered legitimate. At the same time, visceral reactions to both food and food ideas can influence people's motivation to change their food behaviours in ways that can solidify or shift their material and discursive connections to 'healthy' food.

Although we developed this model initially to help us make sense of food–body connections, its utility extends well beyond food. In fact, other political ecologists have made similar calls for a three-part analysis. For example, in discussing the future of health-related scholarship, Brian King (2010: 40) has called for research that attends simultaneously to (a) the political economy of disease, (b) health discourses produced by actors and institutions, and (c) the interrelation of social and environmental systems in the production of bodily health. Similarly, a recent *Geoforum* special issue on feminist political ecology (Elmhirst, 2011) attends to three parallel realms: traditional questions of structural access to healthy and productive environments; questions about the production of meaning and identity within human–environment conflict; and questions regarding the influence of corporeality, emotion and bodily experience on the reproduction of human–environment relationships (Nightingale, 2011; Sultana, 2011; Truelove, 2011). Finally, scholar Megan Carney (2014) has directly applied our model, coupling embodied experience of food insecurity with attentiveness to structural and discursive dynamics in order to express the disparities in health and material resources experienced by transnational migrant women. Carney's work is remarkable for its fluid discussion of the domains of overlap in the model where the structural and discursive merge with the experience of bodily life. In summary, then, the need to attend simultaneously to structural forces, knowledge production and visceral experience is increasingly recognized, especially by those focused on issues of bodily health and well-being. We suggest, therefore, that our model has broad utility for the research field. Below, we offer three examples of how it can be deployed as a methodological and analytical tool.

Before turning to those examples, however, we want to emphasize our hope that the model is functional not just as a tool for investigation and critique, but also for facilitating broader political and policy change. In keeping with well-known calls in the field for 'policy relevance', for instance, the model is designed to be both simple and flexible, with the goal of maintaining functionality in diverse applied settings, including not only formal policy-making but also and especially decision-making among political activists. The three intersecting wheels of the model can help political activists and policy-makers to think systematically and holistically about questions of bodily experience, health and well-being, and about how these relate to the discursive and

structural implications of a wide variety of political processes and policies, which almost inevitably affect bodies in their practice, sometimes in ways that go unnoticed. The political-ecology-of-the-body (PEB) model is also therefore *not* apolitical; as a model, it is perhaps radical. It provokes a comprehensiveness that demands critical attention to issues of power and inequity at all scales of material interaction. And it calls for a particular attention to bodies and specificities that works against the individualist ideology of neoliberal capitalism; that is, it requires attention to the material body as always relationally and contextually produced, never as purely individual. As it does so, it carries the critique of neoliberal individualism into the body itself. In this sense, the PEB model may be particularly helpful for crafting and refining policy that works against the grain of mainstream, neoliberal capitalism, and for articulating and instigating types of political activism that seek to enrol the body in similar counter-actions.

APPLYING THE POLITICAL-ECOLOGY-OF-THE-BODY MODEL IN THE FIELD

We now briefly explore three examples of how the model can be employed in various ‘field’ settings as a means to structure inquiry and engagement. In these examples, we demonstrate how we use it to inform the kinds of research questions that we seek to ask, the kinds of methods that we utilize to ask them, as well as, in places, the kinds of on-the-ground explanation we aim to inspire. In all the examples below, we enter the ‘field’ as outside researchers, seeking to learn from our (always bodied) field experiences, and seeking to help facilitate change wherever progressive change is possible. These examples are meant to highlight that, while the PEB model has utility as a method of analysis and critique, it can also be helpful in organizing and rendering operational field research inquiry. It is thus useful as a framework in a number of settings where critical researchers desire organization and structure. Yet the three-wheeled model should not be used to eschew complexity. Indeed, the overlapping sections of the Venn diagram (Figure 47.1) prompt us that it is the intersections and contradictions that can be the most telling of all.

Alternative Food

Predictably, our first example emerges from studying alternative food. Here we draw heavily from our past experiences with alternative food activism and ‘healthy’ eating as we consider a budding new project for which the model has been a formative influence. The project centres on the emerging field of critical nutrition, an approach to nourishment that takes issue with the standardization and de-contextualized nature of much current nutrition practice (Hayes-Conroy, 2013; also see the *Gastronomica* special issue on critical nutrition, Guthman, 2014). Specifically, it reaches out to residents of the Norris Square section of Philadelphia, PA, USA, to begin a community-centred process of documenting and assessing community needs, strengths and desires for healthy food–body relating. As the project develops, the three-part model –

highlighting structural forces, knowledge production and visceral experience – helps us to form our modes of inquiry.

The project initially enlisted undergraduates from Temple University to engage in one-on-one conversations with Norris Square residents and parents who were associated with the local Head Start programme. Having read much background literature on food deserts, and the economic, transportation-based and time constraints of accessing ‘healthy’ food, students were perhaps most eager to ask questions about structural forces that might hinder residents’ abilities to get the food that they desire. Norris Square is an economically depressed area with mostly minority residents. Students have thus hypothesized that – similar to other non-wealthy, non-white regions they have read about – Norris Square residents would struggle with access to healthy food because it was too expensive and far away.

Yet, through the model, students have also begun to complicate their understandings of what food access itself means, and who gets to decide about it. Their attentiveness to matters of knowledge production has urged them to approach critical nutrition in Norris Square somewhat differently: not only do they listen to residents about their daily constraints in getting food, but they also seek to create transformational conversations that can introduce and explore different versions of healthy food and bodies. In other words, the very definition of ‘healthy’ is not fixed in this project, despite nutritional guidelines that tell us so. Towards this end, the project has envisioned group dialogues that work to transgress embedded logics around what constitutes good food and allow for alternative visions of nourishment, especially emphasizing those assets and knowledges already existing in the community (e.g. older residents recall healing herbs and spices from Puerto Rico). In preparation for participation in this work, students have read scholarship on ‘de-colonial diets’ (Esquibel and Calvo, 2013), which similarly press back against dominant (colonialist) nutrition standards, as well as work that discusses the salience of competing nutrition knowledge (Biltekoff, 2013) and that problematizes the missionary-style approach of ‘bringing good food to others’ (Guthman, 2008).

From there, the third wheel of the model urges students to inquire into the visceral experiences that shape participants’ current and desired food–body relationships. Importantly, these experiences often go beyond the immediate occasion of ingesting food, including, for example, embodied sensations like anxiety, guilt or pride that go along with the exigent task of feeding one’s family. The project has begun to envision a cooperatively inspired prototype for collective cooking in order to allow participants and researchers to share sensory experiences of food. Inspired by feminist nutrition (Hayes-Conroy, 2013), the rationale for such an activity is not to try to isolate some unbiased ‘truth’ about residents’ embodied realities, but rather to connect with people through food simply to see what can be learned during this process. In this kind of shared sensory experience, verbal communications often occur simultaneously with non-verbal communications (Longhurst et al., 2009; Hayes-Conroy, 2010) and may provide clues to a wide variety of questions: what taste preferences exist; what do residents desire for nourishment; what do they fear or hope for health-wise? Importantly, these visceral elements are not somehow apart from the structural constraints and knowledge negotiations that the participants face on a daily basis; rather, the visceral represents the embodiment of these other elements. In this sense the model recognizes

and highlights the ways that the social becomes biological through the interaction and development of the visceral body within the structures, discourses and material realities of the world around it.

The Fukushima Disaster

Our second example comes from ethnographic research that one of us conducted with our colleague, Sasha Davis, over the summer of 2013 in Fukushima, Japan. In the aftermath of the nuclear disaster that took place on 11 March 2011, residents of Fukushima City and Prefecture have struggled to adapt to life within a contaminated landscape. Although many people evacuated the prefecture entirely, many more have stayed behind out of choice or necessity. For these residents, life in Fukushima involves weighing risks and navigating uncertainties as they make choices about what foods to eat, what places to inhabit or avoid, and what activities to perform. Fallout from the Fukushima Daiichi nuclear plant is scattered unevenly across the prefecture, with many localized ‘hotspots’ where radiation readings are much higher than in surrounding air monitoring stations. In conducting this research, we wanted to understand how concerns for the material body – primarily in the form of perceived radiation risks – serve to reify and/or restructure human–environment relationships. We were also interested in understanding how these concerns are distributed unevenly across the social-material landscape.

For us, investigating these questions with an eye towards the structural meant first learning about the rules and constraints that different residents face when evacuating and relocating, and when pursuing help for decontamination or monitoring work. It also meant working to understand the barriers and inequities that people encounter when seeking trustworthy food or safe places to be outside. Why and when did different people decide to relocate? What sort of compensation was available? How did economic status, transportation costs and type of employment factor into the ability of people to act on their desire to evacuate, relocate and/or decontaminate? How did these factors affect residents’ abilities to obtain adequate food or monitor and secure safe places to occupy? For our research goals, answering these structurally focused questions required talking in depth to different residents about their varied, lived experiences within a contaminated landscape – what they have done differently since the disaster, what they continue to worry about, and what they wish they had more control over. It also meant paying attention to how larger, social patterns like gender-based division of labour or class status have impacts on individual decision-making. And it meant seeking to understand how government regulations have delimited the numbers of evacuees and the type of decontamination work that are supported by government funds.

These structural elements, however, cannot be fully understood without also asking questions about how the production of knowledge in post-disaster Fukushima has affected how and why people differentially navigate risk. For example, it is important to understand that government regulations regarding evacuation are dependent on a very specific understanding of what constitutes radiation risk – one that not everyone in Fukushima agrees with. While the Japanese government raised the acceptable yearly levels of radiation exposure to 20 times those of internationally recommended standards,

many residents in Fukushima distrust this number and do not consider it accurate. Food safety measures are also not accepted equally across the population. What constitutes safety, then, is contested among many different stakeholders, leading to different perceived needs regarding evacuation, decontamination and food procurement. To investigate these contestations, it was therefore important to dialogue with different types of residents about how they define safety itself, in addition to the barriers they face in procuring it. Moreover, decisions regarding radiation risk and safety also need to be understood in light of changing categories of identity. For example, social understandings of what it means to be ‘elderly’ in Fukushima have shifted since the disaster; elderly now carries particular significance as less-at-risk in the context of radiation. More specifically, because older people are presumed to be likely to die of *something else* before radiation-related illness would take hold, to be elderly now connotes someone who can be less fearful of radiation. This positioning, in turn, can have impacts on the way that older generations relate to younger residents, especially regarding meal sharing and family decisions to evacuate. Coming to these understandings, again, required in-depth dialogue with residents about how they make sense of self and other in the context of such variously defined (and felt) radiation risks. Importantly, these dialogues often took place during everyday, lived activities in which safety concerns could be encountered and identities unrolled – for example, over a shared meal, during a monitoring expedition or while driving to tour an evacuated area.

Dotted throughout this description so far is a variety of what we might call viscerally relevant terms: (dis)trust, worry and fear, for example. Getting at the visceral in Fukushima demands much listening and dialogue, but it requires more. For us, understanding visceral experiences of radiation required living the uncertainties ourselves; it meant grappling with our own sense of worry about what foods were safe to eat, what landscapes were safe to explore, and what activities were safe enough for our participation. It also meant coming to terms with the embodied realities of not-knowing-the-answers – both our inability to reassure our research participants of their own safety and our powerlessness in ensuring the safety of many of our own decisions. Of course, we did not and do not presume that our own visceral experiences as researchers mirror those of our research participants; but we did recognize that having these experiences allowed us to polish our questions and deepen our conversations with participants regarding their own visceral journeys. As we explored and discussed our own fears and uncertainties, we also learned about how others managed their own emotions – how they utilized their worries to redirect patterns of food consumption or landscape interaction, how they relied on neighbours and family to cope with deep and long-standing sadness, or how they developed new projects and organizations in an effort to maintain bodily sensations of hope. In combination and interaction with the structural and knowledge-based inquiries above, this visceral inquiry allowed us to think comprehensively about the political ecology of bodies in Fukushima.

La Legion del Afecto

La Legion del Afecto [the Legion of Affect/Affection] is a youth-based non-violence (peace) movement originating in Medellin, Colombia. Having participated ethnographically with the Legion for three years, we have found that our model offers the

foundation for a wide and comprehensive examination of the movement's objectives and impacts. This is not only because the Legion works actively in the realm of the visceral (shaping bodies' abilities to be affected), but also because for the Legion it is crucial to demonstrate how their embodied work expands beyond the epithelial (skin) boundaries of any one individual body. Thus again, the three-part model – highlighting structural forces, knowledge production and visceral experience – has helped us to form our modes of inquiry in our ongoing research with the Legion.

For instance, one of the central tenets we have followed in ethnographic participation with the Legion is the need for community visits; that is, as researchers we cannot stay hidden in the relative safety of the centre of the city (of Medellín), where we often conduct interviews, dialogues and group events. We must also enter into the violence-impacted neighbourhoods on the mountain slopes above the city centre where we can witness and discuss how Legion members [*legionarios*] work both with and against the structural forces that have marginalized these spaces. In many distinct *barrios* across the city and beyond, the Legion is changing the microeconomics of how people get what they need to survive. Here it works as an underground network of youth, encouraging young men and women to exit gang life – typically the only opportunity for monetary survival in these areas – and to instead become community leaders. The Legion offers youth a small stipend to 'do what they like' in a way that is respectful and helpful to their broader community. Some have created schools of breakdance or hip-hop, others organize sporting events, and many work on a day-to-day basis to identify and accompany/assist whomever in their neighbourhood is most in need (of food, water, security, affection etc.). Only by entering into these neighbourhoods can one see how this movement has created microeconomies that exceed the capitalist system; in these informal settlements where the exchange value of land is all but useless, it has grown gardens, upgraded houses, built playgrounds on land reclaimed from gang warfare and unblocked ancient streams used for washing. Thus examination of the structural forces at play here entails not only asking questions, but also seeing, touching and tasting the structural inequities movement members confront and the multiple projects they have created to defeat them.

For the Legion, questions of structural inequity always rub up against questions of competing ideologies. Thus, in research, the use of the Legion's own method of *diologos* [dialogues] has generated rich debates about the state of knowledge production in the movement. In these dialogues, *legionarios* often credit shifted mindsets with their collective ability to enter locations where Colombian police and military have not succeeded in entering. The bulk of our conversations with *legionarios* have focused on how the movement works on the level of meaning-making to change youth mindsets, away from individualism and rivalry and towards collectivity and collaboration. Interestingly, the resonance of this shift seems to come directly from the experience of the structural constraints discussed above. The 'system' is not working for them. More than a handful conceded that 'neoliberalism doesn't reach up [the mountain] this far', meaning the supposed benefits that come from opening the Colombian economy to 'freer' trade and foreign investment have not materialized. Instead of using this hardship to inspire competition (as a number of activist 'grant' programs do), the Legion has built clear ideological foundations in humanism, ecology and liberation

theology to inspire youth to care for and be proud of the other living beings around them, and the Colombian territories they share.

So, a major point of mobilization for the movement has been its ability to inspire alternative forms of knowing from the very early stages of a youth's involvement in the Legion. As we followed this recognition in the field, we began to generate an interest among some of its members in how the movement supports alternative forms of masculinity. Most young men who join the Legion are former gang affiliates, guerrillas, military or paramilitary soldiers, or have otherwise lived violent lives. The dominant masculinity they were sold is the one we see in thrilling films and heroic tales: men are brave and gruff. They do not show emotion. The 'best' men are tougher than the rest. On entering the Legion, young men encounter a different version of masculinity. This one is soft. It knows how to hug, how to touch another man's skin with concern and affection, how to cry and laugh together, and how to respect and appreciate the protective work that women often do. Such masculinity is exciting for what it inspires in others, not for what it provides in status or prestige. Importantly, this kind of shift – from a stoic masculinity to an emotive one – is not just about shifting meanings and knowledges. It is also fundamentally visceral. And while fieldwork dialogues have been important to uncover this shift, they alone have not been enough.

How the Legion behaves in the visceral realm is multifaceted and can only be touched on here. As one of our participants said – jumping up from his seat multiple times in excitement – 'the Legion is not something you can talk about, you have to *feel* it'. One example from fieldwork should suffice to illustrate how the model's third wheel has at once shaped our methods of inquiry and been formative in how we understand and analyse the movement. One originating and central tool of the movement is something called '*viaje a pie*' [literally 'travel by foot']. The concept comes from the book of the same name by Antioquian (a region of Colombia) philosopher Fernando González and colleague Alberto Arango Uribe (1929), and seeks to stimulate visceral sensations in the body of the traveller. *Legionarios* travel together often, sometimes to far-away rural locations in other parts of Colombia, and sometimes to previously inaccessible urban neighbourhoods right next door. In the summer of 2014, one of us accompanied a group of about 30 *legionarios* as they made a half-day *viaje a pie* across several urban neighbourhoods and informal settlements in the northwest of Medellín. Little was said on the journey; words were not the point. Our legs burned as we climbed up and down steep concrete steps. Our ears perked with the delicate trickle of an urban stream, and later throbbed with the beckoning sound of trumpets and drums. We felt the burning sensation of torches as fire blowers theatrically circled the group. We felt the wind on our faces as we tried to show children how to catch the wind with the handmade pinwheels we had brought. The point was not only that we felt all of these things, but that we felt them together.

The collective feeling of embodied sensations along the journey was meant not only for *legionarios* but also for the communities that they serve and lead. As we continued along our path – emphatically not a well-worn one – little boys and girls ran to follow us. Mothers showed up at their windows, holding babies, family pets or both. Men watched from the street. We stopped by the house of an elderly woman who could not get out of her chair and serenaded her. We may have looked like parade clowns or festival musicians, but collectively we were more. The very fact that we were able to

make this walk was testament to the guiding presence of the Legion in these communities. Without *legionarios* in each of the five *barrios* we traversed, the threat of violence would have prevented our presence. Thus the journey and all its accompanying sensations formed a moment of visceral reclaiming. It physically demonstrated to the residents of those neighbourhoods that common sensations like fear, worry, sorrow and vigilance are not the only sensations possible. It is possible to feel joy and human connection, to sense the challenge of dance and the support of a fellow traveller. Recognizing these visceral shifts was only possible through physically participating in this kind of activity in the context of a long-term ethnographic encounter with the movement. And, of course, as our model has urged us to recognize throughout our engagement with the movement, the kind of shifts in sensation that we have witnessed are only possible with the other two wheels in motion – that is, through the Legion’s intricate play with theory and knowledge, and through their active integration into the microeconomics of the urban spaces they inhabit.

CONCLUSION

This chapter has broadly outlined the relevance of the material body to political ecology (and vice versa), exploring the utility and influence of the PEB model in various field settings. While previously the authors conceived of this framework purely in order to address food–body relationships, the argument here is that it is usefully adapted so as to encompass broader processes and relationships that key into ongoing shifts in the research field as a whole. In fact, though the model focuses specifically on bodily materiality, its three-wheeled design also depicts in one sense a wider academic transition in political ecology from structural to discursive to material interests. Yet, rather than moving away from the structural and the discursive, our model reminds political ecologists to retain these earlier interests while also integrating new, innovative techniques for studying bodily materiality – and, indeed, matter more broadly. The model is therefore purposefully modest, not only to retain the flexibility that is needed for application in a wide variety of settings, but also to remind researchers that the study of affect, emotion and material agency need not be overly complicated or convoluted. As we hope to have shown in this chapter, such research primarily requires a desire to attend to how the material world, like social structure and knowledge production, plays an interactive role in the production of political and ecological life.

NOTE

* The authors choose to use this authorship format to indicate equal effort.

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