Technologies of Government and the Making of Subjects

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Environmentality

Technologies of Government and the Making of Subjects

by

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1. Environmentality: The Politics of Nature and the Making of Environmental Subjects

To reflect upon history is also, inextricably, to reflect upon power.

- Guy Debord, [1967] 1994.

I

In the first quarter of the twentieth century, massive forest fires raged throughout Kumaon in the western Indian Himalaya. Only some of these fires were the usual summer fires. Between 1911 and 1916, the colonial state had reclassified nearly 80 percent of Kumaon's forests into reserves. Villagers found that they had limited or no rights left in the reserves. In response they set fires in the newly classified reserves in a vivid spectacle of challenge to new forms of government over nature. Official reports and surviving accounts of villagers' actions suggest that many fires were deliberate protests against state interventions.[1]

Fires were especially widespread in 1916. Nearly 200,000 acres were burnt in hundreds of separate incidents of protest. "An exceptionally dry state of the forests... and an outburst of incendiarism combined to create the worst record since fire protection was introduced" (Champion 1919:353). Incendiarism was the term officials used to denote fires set on purpose. Note how it fails to signify villagers' own interpretations of why they were setting fires.

Villagers set fire again and again in some places. In Airadeo, for example, fires continued for three days and two nights, and "new fires were started time after time, directly a counter-firing line was successfully completed" (Champion 1919: 354). In 1921, villagers set fire to even larger areas of forests, protesting collectively against new regulations.[2] Forest and revenue department officials complained-uni-emittingly about the difficulty of apprehending those who set fires. Burning beyond the power of the colonial state to control or extinguish, these fires would force a reconsideration of existing policy.

Official policy at the beginning of the twentieth century aimed to bring forests under centralized control. The colonial state in Kumaon Himalaya had insinuated itself deep into processes of forest making. that is, it had created and instituted entirely new procedures to control, manage and exploit landscapes it deemed valuable.[3] As in other provinces of India, the forest department in the United Provinces had carried Out surveys, demarcated different categories of forests, made working plans for planting, management, and rotational harvesting of trees, limited grazing by domestic animals, restricted collection of fodder and firewood, and introduced fire protection.[4] These measures constituted a new technology of government over forests that had proved successful in increasing state revenues substantially in many parts of south Asia: among them, Bengal, Bombay, Burma, and Madras. In Kumaon it pushed villagers into violent protests, most strikingly fires, that the colonial state had not anticipated (Agrawal 2001).

The fires described above are indicative of something remarkable if for a moment we suspend "our compulsive concerns with causes and consequences to empathize properly with the phenomenon under consideration" (Zolberg 1972:186). They suggest that at least in Kumaon, the appropriation of ever more . land and ever more strict enforcement of regulations had overstepped tolerable bounds.[5] In the initial years of its existence between 1860 and 1900, the forest department had implemented new regulations but had also tolerated a certain level of illegality. The department had been unable to enforce precisely, and villagers had stubbornly continued with their existing practices. Reclassification, further new regulations, and stricter implementation in the 1910s meant an unprecedented intrusion into a domain of marginalized livelihood that villagers were simply unable and unwilling to give up.[6]

Resentment against the stricter control and enforcement of regulations between 1911-16 did not just manifest itself as collective protest. In collusion that was largely implicit, even those villagers who did not actively participate in protests would not reveal the identity of violators of the law. Collusion went beyond the common hill residents. Village headmen, appointees of the government, also refused to cooperate with foresters.[7] What is more, the instances of planned incendiarism were just the proverbial tip

of a vast iceberg of illegality. In direct violation of the new rules, villagers grazed their animals, chopped

and collected firewood, felled timber, and harvested fodder. They had always done so. But the new

restrictions and enforcement had criminalized everyday behavior by making illegal a range of what might

be called customary uses of forests.[8] By simply continuing to do what they had always done, villagers were

committing acts that had become illegal.[9]

Cognizant of the potentially prohibitive costs of continuing with the existing forest policy, the

colonial state in Kumaon appointed a three-member committee to investigate villager protests. The Kumaon

Forest Grievances Committee toured the entire region to interview nearly 5,000 villagers. On the basis of

its discussions, it recommended that the government of United Provinces should permit villagers to take

formal control over most of the forests that the forest department had reclassified between 1911 and 1916.

It also suggested that villagers should be permitted to govern their forests themselves, if under a general set

of framing guidelines. The colonial state followed its recommendations. They have had a long-lasting

effect.[10]

Figure 1.1 graphically depicts the information on forest-related criminality for some of the early

years of the previous century.[11]

[Figure 1.1 here]

It shows the conspicuous increase in forest-related convictions, and then their dramatic and equally rapid

fall.[12] This decline in cases and convictions signals the beginnings of a profound transformation in the

character of forest control in Kumaon. the institutionalization of regulation, and relatedly, in environment-

related subjectivities.[13] The reduction in forest-related "criminality" was accomplished through a new

technology of government. The transformation continues today, fueled (literally) by transfers of thousands of

square kilometers of forested land to villagers. Kumaonis have formed more than 3000 forest councils *(van*

panchayats) to govern their forests. Spread throughout the length and breadth of Kumaon, these

organizations have now become the source of protection for nearly a quarter of Kumaon's forests. The

legal basis for their existence lies in the Forest Council Rules of 1931 which the colonial state created following the recommendations of the Kumaon Forest Grievances Committee.[14]

This book about environmental politics describes and analyzes how the government of environment has changed over the past 150 years in Kumaon and the relationship between changing technologies of government and the production of environmental subjects. It examines the strategies of knowledge and power that created forested environments as a domain fit for modern government, focusing especially upon the role of statistics and numbers in characterizing and reconfiguring forests (chapters two and three). But technologies of government are not just about the formation of a new sphere - forested environments - in which power can be exercised. They are also about three other sets of relationships.[15]

Shifts in the relationship between states and localities produced what I call *governmentalized localities.* New centers of environmental decisionmaking within localities emerged in Kumaon starting from the 1920s. Their interactions with the state have a considerably different tenor from the mainly antagonistic ones earlier between the state and localities (chapter four). Two, new loci of regulations to shape social environmental interactions within localities came into being as well. I call them *regulatory communities.* Their birth meant new alliances and divisions among local residents and their representatives. Some local residents favored the institutionalized protection of forests that was being enacted in village communities. Others continue to be recalcitrant in the face of efforts to make the government of forests more efficient (chapter five). Finally, new technologies to govern forests are also linked with the constitution of *environmental subjects* - people who have come to think and act in new ways in relation to the domain being governed - forests. Of course, not all Kumaoni's have become environmental subjects. I examine the reasons that account for the variable relationships between different Kumaonis and their environment, as they see it (chapter six). Over the period considered (1850-2000), the joint changes in these three sets of relationships have constituted the new technologies of government that I seek to explore and explain.

The major concerns of this book are thus located on the shifting grounds of politics, institutions and subjectivities that together characterize government in the sense of "conduct of conduct" (Foucault [1979] 1991). Conduct of conduct can be inspired by many sources, among them agencies of the state, decision makers who are located closer at hand as within a community or family and whose decisions often affect actions in a far more invasive manner, amorphous regulatory norms and institutions that affect the very thoughts and experiences of persons, and as importantly of course, one's own self. To illustrate and elaborate how these different sources of government come together, I build upon a number of writings in the field of environmental politics, especially by scholars writing about common property, political ecology, and feminist environmentalism (chapter seven).

My focus is on changes that have transpired in the environmental government of Kumaon over the past century and a half. But the developments I analyze, especially those that occurred after the passage of the Forest Councils Rules in 1931, resonate with processes that are beginning to shape the politics of environmental policy in almost every developing country (Agrawal 2001, FAO 1999). New policies for the environment aim to decentralize government and secure the participation of local populations. Admittedly, they often do so only in rather surface ways. But ultimately, decentralization policies are about new technologies to govern the environment. They aim to redefine political relations, reconfigure institutional arrangements, and transform environmental subjectivities. In some cases they succeed in their aims, even if not precisely in the manner intended. So although the arguments in this book are advanced mainly as a way to understand developments in Kumaon, the discussion is relevant to think about changes in technologies of environmental government in other parts of the world as well.

I propose environmentality as a useful name for the conceptual framework I use.[16] A union of environment and Foucaultian. governmentality, the term stands for an approach to studying environmental politics that takes seriously the conceptual building blocks of power/knowledges, institutions, and subjectivities.[17] The variable combinations of these concepts and their referents illuminate the shifts in

technologies of environmental government in Kumaon. Environmentality, as I use it, builds upon existing analyses of environmental politics in political ecology, common property, and environmental feminism. These important writings on the environment often tend to take power/knowledge, institutions, and subjectivities, respectively, as their primary focus of analysis and explanation. The arguments in this book suggest that many productive possibilities emerge when these three concepts are examined in their emergent interrelationships (see chapter seven). Indeed, the book can also be viewed as an assertion that any careful consideration of environmental politics requires a joint treatment of questions about power/knowledge, institutions, and subjectivities.

The Forest Council Rules of 1931 have undergone several revisions as part of an effort to fine tune regulation. They continue to shape how forest councils protect forests.[18] They are the formal ground on which different agencies of the state relate to village forest councils. They also guide Kumaon's villagers in creating organizations to protect forests, designing rules to regulate actions, policing compliance with rules, apprehending those who do not comply, and meting out punishments to recalcitrant rule breakers. In all these ways they prompt the councils to do the work that the forest department had done earlier. Forest councils also maintain written records of their meetings and actions, incomes and expenses. They thereby greatly expand the realm of visibility for officials in the revenue and forest departments. In guarding their forests, Kumaonis control themselves today in a manner that is far more systematic and careful than what the forest department has ever been able to accomplish or impose directly.[19]

I began to formulate the above conclusions more than half a century after the passage of the Forest Council Rules of 1931. For four years between 1989 and 1993, I conducted field research on localized regulatory regimes around forests in Kumaon. In the very first year, I organized a meeting in the district capital of Almora to discuss the problems council members faced. The many differences among villagers and how these differences affected actions and views about forests began to emerge during this meeting:

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among headmen and ordinary residents., upper and lower caste members, men and women. Others differences proved even more significant *in* shaping environmental subjectivities - between different types of participation in regulation, different forms of involvement in councils, and different levels of benefits from forests. It took me longer to appreciate these latter categories of practice and their relationship to subject formation. But it is by attending to practices of regulation more closely that I suggest it is possible to trace a more lived and living connection between subjects and power, environment and practice, institutions and identities. Reading the politics of subject formation off the social categories of gender, class, occupation, and caste is precisely to ignore how power works to create the subjects who presumably fill these categories.

More than 40 council headmen, together with many forest users, attended the meeting in 1989.[20] Many of the headmen complained about village residents who illegally harvested fodder and fuelwood from council-managed forests. Equally pervasive were their complaints about officials in the forest and the revenue departments. But these latter complaints were very different from what I expected. Instead of denouncing strict enforcement of forest laws, council headmen were censuring officials for the lack of enforcement. They said that government officials were too busy to help apprehend and punish villagers who had failed to follow forest protection rules.[21]

Villagers attending the meeting were subject to the rules that the forest councils had crafted. But rather than question the legitimacy of enforcement rights vested in the councils, most agreed with the problems of monitoring and enforcement faced by the councils. They remarked on the scarcity of firewood and the need for alternative sources of fuel for cooking. They talked about the difficulties women faced in gathering adequate amounts of fodder from the forest. They described how onerous it would be to graze animals were they not to nave access to fodder in the forest. And in what quite surprised me. many also mentioned how the environment was becoming more fragile and needed greater protection. The carping of the forest council headmen and the arguments from villagers were borne out in Kumaon-wide surveys and

more detailed fieldwork I conducted later in 1992 and 1993.[22] I would begin to separate out the reasons behind the seeming conflicts in these testimonies only with a better appreciation of the relationship between regulatory environmental practices and subject formation (see chapter six).

Between 1990 and 1993, I studied 38 villages where forest councils had emerged and started regulating local forests over the last half century.[23] New information underlined the earlier vocal testimony from council headmen. It showed that the statements of villagers about the need to protect the environment as expressed in the meeting in Almora were shared widely. Certainly, some village residents complained about the existing forest management regime and many admitted to breaking rules. But as I analyzed information in council records, several patterns began to emerge. I could begin to answer questions about who broke rules and how frequently, who was apprehended by councils and guards, and which groups bore the burden of seemingly equitable enforcement of equal rules. It also became obvious that even as most villagers grumbled about the enforcement of rules,[24] they also accepted the need to protect forests.

Many councils have created systems of monitoring that involve all village households. In other instances, resident families contribute to the salary of guards appointed by councils. In most villages, even where the councils pay guards out of funds from sales of forest products, villagers can agree that their forest is in a precarious position. Their levels of infractions seem to vary in proportion to their expressed beliefs about environmental scarcities and the need to protect forests. The tenor of villagers' statements, in turn, seems to vary in relation to their involvement in environmental enforcement. Villagers who have come to be involved more in different forms of enforcement of environmental protection seem also to care more about the environment. Contrary to my expectations, categories based on gender, wealth, income, and caste turn out to be less relevant as indicators of whether a particular person is likely to be interested in . protecting village forests.

It is necessary therefore to exercise care when interpreting differences between council officials and ordinary village users. It is certainly true that villagers complained. There are also some obvious

distinctions between rule-makers/rule-enforcers *vs. r*esource-users/rule-breakers. But these differences do not mean that villagers generally consider locally enforced rules unfair or the efforts of the councils illegitimate. Nor do they necessarily show the frustration of villagers with the council or with the government for trying to protect forests. If anything, conversations with villagers and forest council officials reveals an ambivalence about enforcement efforts and an agreement that protection is necessary. Many, among them men and women, upper and lower caste members, and richer and poorer households, emphasize existing limits on availability of products from forests. They agree that forests today are not in as good a condition as they used to be.[25] Attempts to protect the forest, institutionalized in the form of the forest councils and various enforcement mechanisms devised locally, are therefore valid, necessary, and legitimate.

These views present a stark contrast in comparison to the beginning of the century when Kumaon's residents were setting fires in forests and refusing to inform on those whom the state considered criminals. They show that many residents of Kumaon have traveled an enormous distance in their actions and views about forests. The colonial state had initially tried to subject them to a centralized government over forested environments. Today, many of them have been transformed into members of a decentralized government-in-community inscribed upon modem forests.[26] From fire-wielding, state-defying rural residents, the conversion into villagers who defend the need to regulate even minute actions in forests can hardly be more striking. Following such shifts in sentiments about government requires careful investigation of knowledges and institutions, practices and politics, regulations and subject locations. After all, not all the hillmen who had been "impatient of control," as the Committee to investigate their actions remarked (KFGC 1922), have come to participate in regulation or become environmental subjects. And although it would be . analytically convenient if the variable practices and subjectivities of Kumaon's villagers would line up with their gender, caste, class, or benefits from forests, the available evidence does not oblige such an interpretation (chapter six).

II

The two environment-related stories I have narrated - forest fires, and a survey of Kumaon's residents - span a century. They are convenient bookends to think about efforts by the Indian state to create new forms of environmental government. The very first attempts to establish a forest bureaucracy can be dated back to 1805 when the British East India Company established the first conservancy in Malabar (Stebbing 1922, see also the introduction to part one). This early "forest conservancy" had little to do with desires to conserve forests; rather, it was squarely implicated in the militaristic designs of an imperial power that needed timber in a transnational political economy.[27] Nonetheless, the 1805 conservancy was the forerunner of a mighty bureaucratic machine whose actions in Kumaon were directly responsible for an inferno of resentment. The fires set by Kumaonis are a remarkable example of protests against the elaboration and development of forest conservancy regulations. The fiery protests of the Kumaonis against forest conservancy destroyed property that the forest department had created in land, but they also prompted a new regime of regulation that ultimately penetrated far more intimately and precisely into daily acts of rural survival.

My survey of villagers' participation in and perceptions of forest regulations suggests that this infiltration of regulation into the intimate unfolding of daily life was initiated as state policy, but it is not the coercive imposition that state actions are often taken to be. Nor are villager responses, when they violate existing local rules today, appropriately described by the term resistance. Indeed, analyses of villager interactions with procedures of rule over the long period under consideration are also only inadequately served by terms such as "negotiation" or "engagement" instead of resistance.[28] Such descriptions of interactions of villagers with regulatory measures hinge upon prior conceptions about sovereign autonomous subjects that are simply impossible to identify in Kumaon. They are also implausible in light of expressed statements from villagers about environment and government. Instead, regulations, and

villagers' practices and words seem part of a process that has reshaped people's understandings of forests, and the basis of forest control itself.

The two stories are signposts in the trajectory of changing technologies of government They show that the critical questions in trying to understand and explain technologies of government in relation to the environment have to do with politics, institutions, and subjectivities as these are implicated in relationships between states and communities, between communities and their members, and between humans and their environments. To understand social relations around the environment, it is necessary not just to take politics, institutions, and subjectivities as foundational analytical concepts; it is also important to investigate how they themselves are constituted.

The processes that reshaped forests, and related institutions, practices, and subjectivities in Kumaon are examples of what might be called "governmentalization of the environment." In my use, government equally well denotes the conduct of conduct that affects social relations within communities and efforts by subjects to shape their own actions. In all these cases, the effort is to govern; to shape conduct. It would be fair to say that scholarship on government, with Foucault as the inspiration, has exploded since the 1990s (Baistow 1995, Barron 1996, Cruikshank 1994, Dean 1994, Miller 1994, Miller and O'Leary 1987, O'Malley 1992, Procacci 1991). But only a few key interventions in the fields of environment and development have attempted to examine subject formation and its relationship with government (Li 2000, Moore 1998, Sivaramakrishnan 1999, Worby 2000). More generally, even in Foucault, and in much of the scholarship based on his suggestive arguments, there is only an indication of *what* the term implies. There is little or no exploration of *how* it is accomplished, *how* changes in technologies of government combine with changes in subjectivities, and *how* one is to explain variations in transformations of subjects.[29]

In the nineteenth century, governmentalization of environment was accomplished in India by the creation, activation, and execution of new procedures of surveying, demarcating, consolidating, protecting,

planting, managing, harvesting, and marketing forests. New forest departments in different provinces of

India were the agents that created and instituted these procedures. For the most part, it was foresters and

state officials whose basis of knowledge for viewing forests changed. Together with new ways to know

forests, their subjective relationships with forests also underwent a significant shift. It would be a

remarkable and possibly unprecedented triumph of cynicism were foresters in the nineteenth century

advocating exclusion from landscapes for economic gains, but at the same time were completely aware that

exclusion did not lead to better forests. During this period, although communities and their members were

directly affected by many of the regulations that the colonial state implemented, they were seldom

participants in the processes of governmentalization that came to make forests.[30] That would begin to happen

only in the early part of the twentieth century in some parts of India, and since the late 1980s, under the Joint

Forest Management Program that is being implemented throughout India.

Many of the individual mechanisms of regulation that ultimately became a part of the vast system

of production and conservation of forests in India had already been devised during the first half of the 19th

century: in Malabar and Burma, in Madras and Sind, and in many other parts of precolonial and early

colonial India (see Brandis [1897] 1994, Grove 1995,1998, Sivaramakrishnan 2000). But under the

leadership of Dietrich Brandis, India's first Inspector-General of Forests, they were combined in the 1850s

into an internally coherent system that was first implemented in British Burma (Rajan 1998). Very similar

ways of viewing forests continue to be the basis of current efforts at conservation whether one considers the

centralized government of forests, or more recent variants of governmentalization that depend on

decentralization of power and authority. The Indian Forestry Acts of 1868 and 1878 thus did not launch

much that was new in conception or design, and they did not mean that regional variations were abolished

(of Guha [1989] (2000: 38-39,50-61).[31] Their passage, together with the creation of organizational homes in

the shape of provincial forest departments mainly ensured that new laws and regulations would apply to far

larger territories and numbers of people.

At one level, new ways to govern forests were the result of changing perceptions about their potential uses: among them naval manufacture, sleeper ties for the railways, the production of turpentine, and of course revenue generation. Emerging demands because of greater commercialization, strategic imperial needs, and the consolidation of empire were crucial in shaping how state officials regarded forests. The exploration of potential teak supplies was bora out of scarcities of timber for naval construction in England. The progressive appropriation of ever larger territories by the forest department could not have been accomplished if its revenues had not outstripped expenses consistently and ubiquitously in almost all Indian provinces. Incorporation of new procedures to govern forests was born out of beliefs that private use of forests could not be efficient owing to externalities that the public good nature of forests made inevitable.[32] The proven utility of forests helped changed beliefs about how they should be managed: governed as a resource rather than cleared to make way for agriculture.[33]

But at another level, new procedures and regulations based on statistical representations and numericized relationships also defined forests (chapter two) and succeeded in redefining legitimate ways to act in them. They made some types of uses inappropriate and wasteful, illegal and ill-considered. They valorized other types of uses, making efficiency in operations a watchword of new efforts at management. They excluded some existing users, and privileged others. They were, thus, mediating organizational forms in the widespread extension of a new construction of forests.

The application of new procedures to govern vegetation and land generated obstacles and resistances, but also led to innovative ways of spreading official views of forests and their uses. Focusing on Kumaon, I show how starting from the early 20th century, much of what foresters had wanted to accomplish as conservation initially faced immense opposition from local residents. This opposition. signified that the government of forests required new partners in regulation.

The birth of more than 3,000 forest councils in Kumaon since the 1920s, one to govern almost every scattered plot of forest, was a process that had been debated from almost the very establishment of

the forest department Forestry officials in Kumaon often talked about the possibility of incorporating local populations in efforts to create forests (Shrivastava 1996). Such discussions had also taken place in other parts of India. Consider Dietrich Brandis. Working as the Conservator of Forests in British Burma, he tried to persuade taungya cultivators - those who practiced "shifting agriculture" - to plant teak in the fields they cleared. In defense of his efforts to get villagers to sow teak, Brandis said as early as 1856, "if the people can be brought to do it, [it] is likely to become the. most efficient mode of planting teak in this country" (quoted in Stebbing: 1922: 378).[34] The forest councils of Kumaon constitute one of the earliest surviving attempts to give form to this vision of securing the participation of people in the making of forests. For that very reason, they are a crucial window on the longer-term processes that emerge with decentralization of environmental government (chapter three).

The Kumaon councils are analogous to the type of environmental government that more than 50 countries are trying today to create (FAO 1999). From Zimbabwe to the United States, from Philippines to Cameroon, and from Mexico to Indonesia, national and state governments are striving to make rural populations accomplices in environmental and their own control.[33] The mechanism through which they seek to effect this transformation is the decentralization of environmental regulation to the locality, often through "community-based conservation." The success of decentralized efforts to govern the environment depends upon the simultaneous installation of three strategies: the creation of governmentalized localities that can undertake regulation in specified domains, the cpening of territorial and administrative spaces in which new regulatory communities can function, and the production of environmental subjects whose thoughts and actions would bear some reference to the environment as they imagine it.

The most visible of these three strategies is that which changes the relations of localities to central governments. It affects how localities or communities come into being, and constitutes a redefinition of state-locality relations. This redefinition undermines the separation of localities from an administrative

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center and occurs in the context of contemporary forms of economic relations and political power. It leads

to significant powers being vested in local officials, but in a manner that allows superior officials to

supervise more easily. In the Kumaoni context, thus, local communities can no longer be viewed as the

autonomous village republics[36] that Robert Wade (1994) describes in his fascinating account of regulation

of irrigation in South India. Nor can they be seen as the forms of social organization, predating capitalist

transformations, about which Chatterjee (1983) talks in his analysis of the communal mode of power. As

agents who are acting in the service of environmental regulation, the new communities are assuredly

different from the vehicles of administration that the colonial state tried to craft by appointing paid headmen

and revenue officials in Kumaon after the middle of the nineteenth century.[37] And ultimately, these

communities cannot be seen as instruments of despotic control. Governmentalized local communities, or

more briefly, "governmentalized localities" are part of a new regime of control that seeks to create fresh

political-economic relationships between centers, localities, and subjects. They are knit together by the

thread of state power. They are shaped anew by the soft hammer of self-regulation. They come to conform

as a result of interventions that rely upon knowledge about their internal dynamics (chapter four).

The second aspect of transformed relationship concerns how identifiable loci of power,

decisionmaking, and representation redefine the relationship between decisionmakers and common residents

in communities. If governmentalization of localities denotes the emergence of tighter relationships between

the state and the periphery, the development of closer links between local decision makers and residents is

embodied in the dispersed "regulatory community." The dispersed loci of decisionmaking emerge at the

same time as communities get incorporated more thoroughly into wider circuits of political relationships.

But the local actions of new decision makers is also an indication of the greater latitude that communities

come to have in crafting and extending formal regulatory rule over those who are resident within the

territorially defined limits of the community. The power that decision-makers such as general assemblies,

forest councils, and forest guards exercise in territorialized communities is highly dependent upon the

people who are subject to their decisions. It is exercised in a circular manner. It depends for its

effectiveness upon a whole range of social, economic, and structural relationships between newly powerful

decision-makers and those affected by decisions. Formal processes shaping internal collective decisions help

make communities agents in new regimes of regulation. Innovative regulations, often bora within

communities, extend the reach of power into the finest spaces of the social body. Social and institutional

relationships within communities and between communities and their members come to be founded upon

the goal of a more strict and sustainable government of communal resources.[38] Thus, on the one hand there

is the creation of new relations of regulations between the locality and the state; on the other hand occurs

the transformation of relationships between dedsionmakers in localized communities and ordinary members

of communities. What is being formed and refined is a legal mechanism of regulation through which actions

in the forest can be calculated and manipulated, and their legibility and visibility increased for outside

observers. The counterpart of the governmentalized localities is thus the "regulatory community."

But there is a third face as well to the process that is given the singular name of decentralization:

the making of environmental subjects. This third facet is perhaps the most critical, ambiguous, and

unpredictable, and perhaps for these reasons, the least well understood and investigated. It concerns how

human understandings of and relations to forests change historically with the extension of centralized rule

over forests, and later with the emergence of the governmentalized localities and regulatory communities. As

Rose (1999:41) puts it, "There is a history to be written of the subjects of government." That many in

Kumaoo today think about their forests quite differently than they did in the early part of the century seems

obvious. Evidence from early twentieth century, it is true, is fragmentary and can be gleaned only through

archival materials produced by state officials. Nonetheless, any reasonable reading of the available .

evidence, coupled with contemporary ethnographic and survey results makes it clear that people's

relationship to forests has undergone (and is undergoing) momentous changes.[39] These changes have

occurred together with the creation of forest councils, more localized forms of power, and the implication

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of people into these forms of power.[40] Power as it is practiced in the governmentalized locality and the regulatory community also environmentalizes subjects by changing how they view the environment and their place in it, Paul Veyne (1997) has argued that there is no universal subject over whom government acts. The emergence of environmental subjects in Kumaon is similarly about a process whereby local residents come to think and define their actions, positively or negatively, in relation to forests and the environment. As later analysis will show, variations in the environmental subject positions of Kumaonis are closely tied to their practices and involvement in new regimes of monitoring, enforcement, and regulation.[41]

Although this book suggests that effective decentralization processes are a combination of three different, connected changes, much analysis of indirect strategies of decentralized government focuses only on the first two of these relationships: governmentalization of subnational units of rule so as to extend state power, and the granting of limited autonomy to these units so that they can regulate the lives and practices of their members in specified domains.[42] Both these relationships, for example, are the subject of Mamdani's (1996) examination of decentralized despotism in Africa.[43] The vast array of decentralized institutional structures around the environment that have come into being in the past two decades are also analyzed using a similar optic: what are the powers and responsibilities that the central state devolves to localized bodies, and what are the powers that these institutions in turn are able to deploy to regulate the lives of their members and the use of environmental resources.[*4]

However, the ultimate success and effectiveness of these two strategies of decentralized regulatory rule depends as well on concominant shifts in the subjectivities of those who are undergoing regulation. Attempts to change how people act, when such attempts are based solely on coercive threats in hierarchical organizations, are either formidably expensive or evidently impractical (Holmstrom 1982, Miller 1992). Indeed, analyses that depend only on materialist, exclusively rationalist causal arguments remain vulnerable to the charges Hegel leveled against Kant's moral philosophy, "excessive formalism, abstract universalism, impotence of the mere ought, and the terrorism of pure conviction" (see Calhoun 1993:61). It is not

surprising therefore that concerns about the relationship between changes in subjectivities and emerging

social and political forms have elicited vast amounts of investigative energies from social theorists, right

from the late nineteenth century.[45] It is about the relationship between subjects and their contexts that

Charles Taylor is talking when he asserts, "it took a long development of certain institutions and practices,

of the rule of law... of habits of common deliberation, of common association... to produce the modern

individual" (1955:200).

In the case of the forest councils in Kumaon, historical and contemporary evidence suggests a

significant link between changes in regulations, practices, and subjectivities. People now speak about

environment and regulatory institutions in terms far different from those at the beginning of the century.

And it is not just people benefiting from forest councils that do so. Indeed, access to material benefits from

council-managed forests is at best a poor predictor of people's concerns about the environment or their

willingness to protect it. Not surprisingly, the rational calculus of costs and benefits travels only a short

distance in explaining the constitution of the subject itself.

The success of the forest councils in Kumaon, one might claim, has depended in significant

measure on the production of environmental subjects: individuals who see the generalized need for

environmental protection in some form, and whose practices and words bear the mark of this acceptance

even if not of personal conversion. To understand regulatory rule, therefore, it is necessary to examine how

rule is experienced by those subjected to it. As decentralization of rule and local regulation become

increasingly common in domains of political and social life such as the pursuit of development,

infrastructure reform, welfare provision, healthcare, and education,[46] it becomes equally important to

investigate the extent to which processes of subject formation, in addition to institutional change, may be

the hinge upon which the success of these reforms depends.[47]

It is not necessary of course that all who are subject to regulations accept them as their own.

Variations always mark the extent and pervasiveness of shifts in people's subjectivities. But the effective

government of forests by the Kumaon forest councils depends in substantial measure on the willingness of at least a significant number of people to accept them, to conform to the rales that shape practices in the forests, and to make into their own the processes of monitoring and enforcement that the forest councils create. As more distant and scattered areas become influenced by the governmentalization of the environment, regulation of forests comes to depend on specific variations in rule making, monitoring, and enforcement strategies. Participation in these same institutional mechanisms is also at play in the redefinition of people's interests in forests and their subjectivities (see chapters five and six).

<p align="center">III</p>

Three important causes may be at play in the efforts of nation states to involve communities and local populations in the management of environmental resources.[48] Three important causes may be at play. Many countries in the developing world face a fiscal crunch: they need to reduce costs and become more efficient. At the same time, international donors have begun to make funds available to design new mechanisms of cooperation and new technologies of government that would make partners out of local actors. Finally, states have also come to recognize that the protection of environmental resources does not necessarily require exchange or coercion-based solutions. Indeed, coercion is often ineffective, and attempts at crafting new modalities of exchange often defeated by the public goods nature of environmental resources. New programs of environmental governance in which communities play a prominent role, in consequence, have become widespread (Agrawal 1997). And yet, it is unclear how effective they are or what larger social processes they entail.

The ensuing chapters of this book attempt precisely to address this gap. The 200-year history of changing forms of forests in India and the history of forest councils of Kumaon since the 1920s are a critical case to understand changes in environmental politics. To examine this case effectively, I have divided the book into two parts. The two chapters in the first part focus on the strategies of

power/knowledge through which forests came into being in India and Kumaon. The next chapter shows how throughout the nineteenth century and the early twentieth centuries, employees of the colonial state experimented with different procedures and mechanisms to gain greater and more efficient control over desired harvests from forests. New forms of representation of forests were based on the desire of colonial administrators for system, uniformity, and predictability in processes of control and exploitation (see Scott 1998). The nineteenth century saw the production of masses of numerical data on forests that formed the basis of administrative and political claims for greater territorial control. By the end of the century, the forest department had asserted its right to administer close to a quarter of India's territory: nearly 250,000 square miles of land. New administrative and representational innovations brought into being what we today understand as Indian forests.

But the department's efforts to implement uniform plans that would simplify and smooth the streams of revenue from forests confronted enormous practical difficulties. Local exigencies and administrative rivalries reshaped the nature of environmental interventions, and forced departmental officials to accommodate both human and non-human resistances. The development of new technologies, the emergence of new representations, and the specific uses to which forests could be put changed as did the procedures of making and managing them. State objectives always demanded some level of social exclusion, often undertaken in the name of systematic government. Chapter three provides a careful empirical examination of the initial processes through which colonial forest departments produced and governed landscapes, and helps situate the responses of excluded populations and the subsequent dispersal of processes of regulation.

Of the different regional efforts in India to incorporate forests into circuits of imperial rule, the ones in Kumaon were among the most important, especially in terms of contributions to state revenues.[49] A focus on how Kumaon's landscapes contributed to commerce and empire starting from the 1850s, serves as a convenient point of departure to focus on the evolution of a regionally specific effort to control and

regulate the use of forests. The forest history of Kuraaon throughout most of the 19th century is a history of increasing insistence by forestry officials that forests are state property, that their protection is necessary for environmental health, and that the forest department is the best agency to institute such protection. The creation of the forest department in different colonial possessions of Britain is itself a fascinating story of bureaucratic consolidation of environmental control What is even more fascinating are the new practices of forest management that the forest department systematically pursued after inception. These practices are based on ever greater usurpation of expert authority, claims to scientific knowledge, and the launching of what many scholars have termed "scientific forestry." They became central to appropriate forest management, indeed, to the production of forests themselves. In the process, they effectively promoted the interests of the forest department in its intra-state institutional rivalries with the revenue department. These rivalries still persist.[50]

The second part of the book takes a more deliberate view of environmental politics by examining changes in Kumaon more thoroughly. Its three chapters analyze the emergence of a new technology of government of the environment. They focus, in turn, upon the creation of governmentalized localities, institutional politics within regulatory communities, and the making of environmental subjects. In the process they illustrate how different aspects of environmental government - politics, institutions, and subjectivities -come together in the conceptual framework that I call environmentality.

The costs of centralized bureaucratic control usually fell upon shifting cultivators, graziers, villagers, and local merchants whose subsistence practices and efforts to make commercial gains from forests were sharply curtailed as the colonial state asserted the primacy of its own claims against existing patterns of access and use. Villager protests moved the rhetoric of forest management into a direction where forest department officials slowly categorized local residents as uninformed and junior but potentially useful partners in managing forests. The creation of village-level forest councils in Kumaon in

the 1920s and 1930 generated perhaps the oldest surviving example of formal efforts to manage forests through the joint authority of the state and community. Chapter four shows how the birth of forest councils transformed the character of the relationship between the state and the community. Instead of treating the community as the refuge of recalcitrant forest users, forest and revenue department officials found it more convenient to consider it as a locus of regulatory authority. Treated thus, the social body of the community could become the context for the construction of new channels for the flow of power.

The local exercise of power has also resulted in a different basis for the involvement of Kumaonis in the governing of their forests. From being situated primarily as victims and opponents of control, many of them, they have become active participants in processes of environmental management. Many also participate in the selection of representatives entrusted to exercise control. And yet others play an active role in the enforcement of state-sponsored as well as locally crafted rules to manage forests.

I use information from several sources to show the relative importance of regulation and enforcement in the conservation of forests in Kumaon. Chapter five contains detailed information on 38 villages and their efforts to monitor environmental practices. It documents how the relationships between communities and their members have changed since the creation of the Forest Council Rules in 1931. Community leaders now enforce regulations to conserve and govern the forest rather than leading local residents into protests against regulation. New rules and procedures govern environmental practices of villagers in forests. Fresh regulations change the calculus of interest on part of members, and lead many members of the community to become active participants in processes of regulatory control.

Just because villagers come to participate more intimately in environmental regulation, or become more environmentally concerned does not mean that the effects of regulation are equally felt by new environmental subjects. In fact, variations in how households are situated in multiple fields of power critically influences who bears the brunt of regulation. Allocation regimes of the forest councils and gender and caste-related variations in sanctions on community members combine to produce substantial

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differences in the experience of regulation (Agrawal 2001). The greatest adverse impact of enforcement is borne by the most marginal groups within villages.

The ubiquity of villager interactions in forests implies the necessity for a concomitant ubiquity of enforcement. An examination of the social basis of enforcement and regulation in chapter six shows that regulatory mechanisms that elicit widespread participation from a significant proportion of villagers are also effective means to transform subject positions. Participation in regulation is not only necessary to generate the surplus that underwrites the processes of control, it is also important in generating the concern for conservation that renders environmental protection into a moral act.

Processes around the regulation of forests are thus the links that join the political with the perceptual, the managerial with the mental. By delegating regulatory authority to a set of representatives, and by direct involvement in administering, managing, controlling, and restraining collective behavior, rural residents come to construct their own stories of environmental decline and human threats to continued resource use. Regimes of regulation and enforcement transmit information about the nature of incentives users face. But involvement in the creation of incentive structures, and social practices related to an institutionalized structure of incentives also transform how users think about and what they say about the environment. Regulation is not just about restraining a group of people who might break rules. Much more importantly in Kumaon, and for a much larger group of people, it is the source of the awareness and recognition of the fragile resources on which livelihoods depend and the context in which practices unfold (Bourdieu 1977, Calhoun 1993). Its varying forms and the practices through which people get involved in these forms are the basis for making environmental subjects.

The empirical study of the production of forests, communities, and subjects in Kumaon prepares the ground for a more general analysis of environmental politics, especially as it has evolved since the 1970s, and elaborating the framework of analysis that I call environmentality. Chapter seven, the final chapter of the book begins by drawing on the strengths, and exploring some of the weaknesses, of three

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important literatures on the environment: political ecology, common property, and feminist environmentalist!!. These interdisciplinary writings have been instrumental in exposing the many problems in centralized and exclusionist conservation strategies that were favored by most national governments until the 1970s. States considered central interventions necessary because of the public good nature of the environment and were often impelled by the presumption that poor, indigenous groups or communities could not act in their own long-term interest. The study of environmental politics prior to the 1970s similarly ignored local users, communities, indigenous peoples and other marginalized groups except in viewing them as obstacles to environmental conservation (perhaps despite themselves).[51] Environmental politics often meant a debate between advocates of privatization and the devotees of centralized control.[52]

With the shift in conservation policies toward communities, a different, but equally specific and limiting meaning of politics and environment has been consolidated. Recent analyses in the field of environmental studies, when they consider politics, treat the environment usually as yet another arena in which traditional conflicts such as those between elite and poor, state and community, indigenous and outsider, or men and women unfold. They fail to take the environment seriously. In arguing for a more serious consideration of the environment, I do not mean to suggest that it stands outside of its human understandings and social constructions. Rather, I am advocating for a position that takes as its concern the experiences of environmental changes and politics among those who are the subjects of scholarly investigations. I am suggesting that to ignore changes in environmental subjectivities is to miss an entire domain of how politics and practice are implicated in the making of environmental subjects, and how differences in subject positions affect environment-related outcomes.

The decentralization of regulation to communities creates new social alliances and divisions. When displaced from more centralized to more distributed locations, new mechanisms of rule making and regulation generate new perceptions of environmental scarcities and promote more widely pervasive understandings about the need for conservation. At its core, environmentality is about the simultaneous

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redefinition of the environment and the subject as such redefinition is accomplished through the means of political economy. In this sense, it refers to the concurrent processes of regulation and subject-making that underpin all efforts to institute new technologies of government.[53]

Figure 1.1: Convictions for Infractions of Forest Laws in Kumaon, India (1911-1935)

Year

Convictions: Infractions — Convictions: Persons
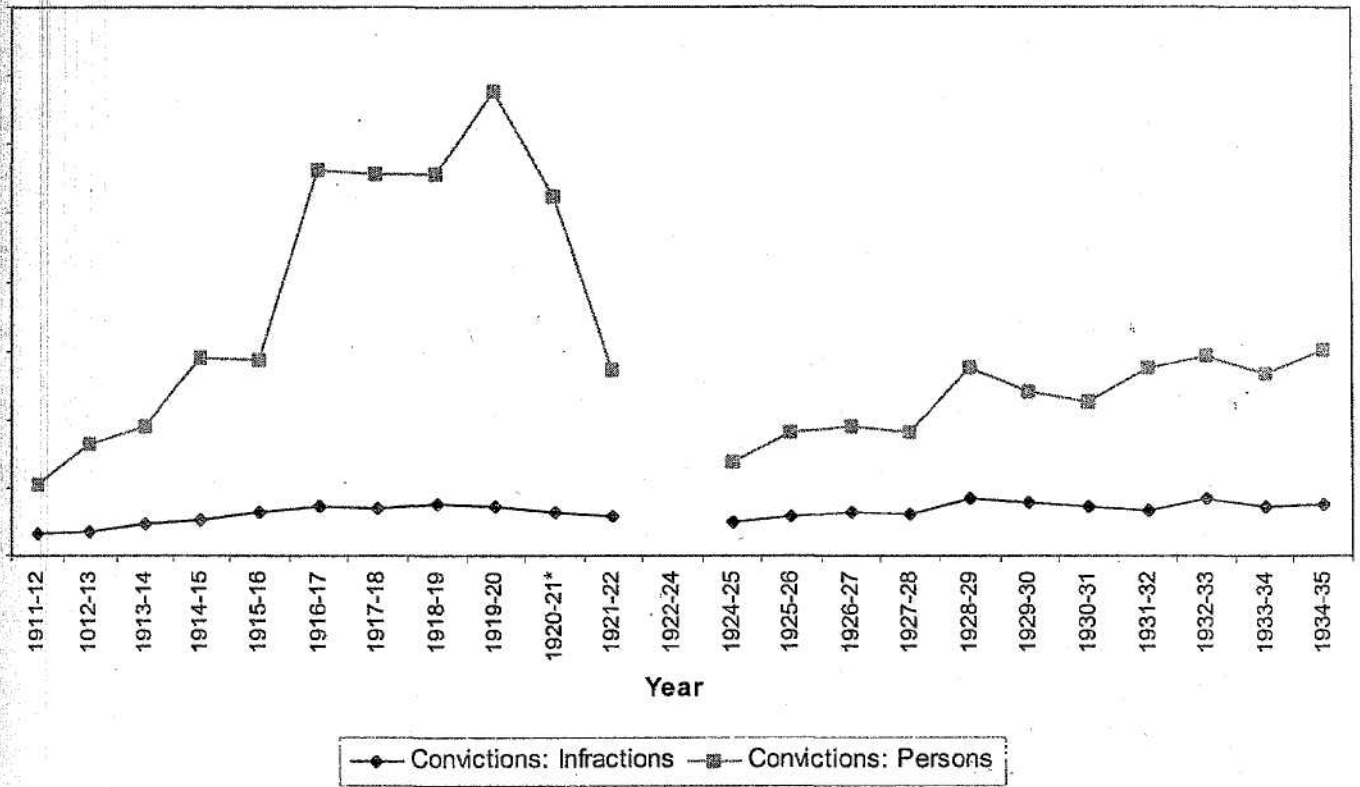
Endnotes

1.The most careful and detailed review of official forestry records from this period is likely Shrivastava (1996).

2.The area of forests that was fired rose to 272,000 acres. Of the 819 offences that were detected, 395 were classified as incendiary (Guha 1989: 52,107,116).

3.The increasing importance of timber in the hills, especially as the commercial and strategic value of pine for railway sleepers and turpentine was realized, led the forest department to adopt increasingly draconian measures to appropriate forests ever more comprehensively (Guha [1989] 2000).

4.The nature and history of these regulations is the subject of discussion in chapters two and three. See also Baumann 1995, Chaturvedi and Sahai 1988, Dangwal 1996,1997, Farooqui 1997, and Shrivastava 1996.

5. All through the colonial period and after, the presence of laws regulating actions in forests does not necessarily allow the inference that forest practices actually conformed with the laws, or even that government officials always expected strict conformity. Indeed, even within Kumaon, government officials often overlooked villagers' rule infractions in forests (KFGC 1921).

6. Villagers' protests lay somewhere between the vast organized collective mobilizations that are the hallmark of many social movements, and the ill-organized, ill-articulated expressions of collective sentiments that result from widespread resentment against seemingly unrestricted demands upon a precarious existence (See Fox and Starn 1997). That is to say, there was some sense of being wronged, some organization, and an identifiable target. They were similar in nature to many peasant movements that occurred throughout the subcontinent over the period of British rule (Dhanagare 1983, Hardiman 1992). The difference was that the threats to existence in many of these other peasant revolts was partly attributable to natural disasters compounded by the callousness of the government, whereas in Kumaon the causes of protests lay purely in the efforts of the state to separate villagers from their means of livelihood.

7.Officials from the forest department and the revenue department complained unremittingly about the

difficulty of apprehending arsonists and others who set fires. Villagers near the areas where fires broke out were unwilling to inform on who had set fires. Village headmen also proved their unreliability when it came to gathering information on who was committing forest offences (Shrivastava 1996).

8.1 use "custom" and "customary" loosely, but with some sense of their complex history, and the ambiguities involved in their use in the wake of arguments about "inventions of tradition" (See the essays in Hobsbawm and Ranger 1983). In my use, the terms simply suggest that the new laws paid little attention to how forests were connected to rural livelihoods. Their passage, motivated mainly by a concern to raise revenues for the state, created a legal framework that sought to restrict and restructure prevailing livelihood practices.

9.The rise of illegality was in part made possible by internal changes in the forest department. Between 1911 and 1921, the number of employees in the forest department rose dramatically: permanent employees increased from 35 to nearly 100 (KFGC 1922). The growth in the number of detected violations and the ensuing convictions between 1911 and 1933 can thus be seen as a result of both new regulations and a higher levels of enforcement. It is also true that reported violations were no more than a very small proportion of what the colonial state would have liked to prevent But the social, political, and economic costs of attempting to detect all violations of regulations would have been prohibitive. Not only is it likely that they would have continued to produce the fires and protests that occurred in Kumaon in 1916 and 1921, they would also likely have bankrupted the forest department.

1O.For a more detailed discussion of the Committee's recommendation, see KFGC 1922. See also Agrawal 2001.

1 l.The figure is based on data compiled from Annual Reports of the Forest Fepartment in United Provinces. Guha (1989, tables 5.1 and 5.3) reports some of these data but unfortunately incorrectly as is evident from a comparison with the actual figures in the Annual Reports.

12.Guha (1989: 123-25) also describes some of the means villagers used in the later years of the first half

of the 20th century to engage, resist, and struggle with the state, but many of these incidents were related more directly to the mainstream of the Indian National Movement in comparison to the early years of the century.

13.1f the modern state is to be seen as a "principle of *organization"(Lloyd* and Thomas 1998: 3) the means of implementing this principle was what registered a shift from the 1920s in Kumaon.

14. In the specific design of the rules, state officials also drew on already existing practices of local forest regulation in some Kumaoni villages (Shrivastava 1996). The reliance of colonial conservation on existing local practices is also noted by Grove 1995, and helps question the presumed watershed that colonial rule is often taken to mark. On the general question of whether colonial rale in South Asia can be viewed as constituting a complete break with the past, see the revisionist arguments in Bayly 1988, Stein 1985, and Washbrook 1988. Chatterjee, in contrast, sees colonial power as a distinctive "rule of colonial difference" where the colonized and their practices are represented as inferior (1993:19).

15. For Rose (1999: 52), technologies of government shape conduct and are dependent upon the assemblage of "lines of connection among a diversity of types of knowledge, forces, capacities, skills, dispositions, and types of judgment." He goes on to include "forms of practical knowledge, modes of perception, practices of calculation, vocabularies, types of authority, forms of judgment, architectural forms, human capacities, non-human objects and devices, inscription techniques and so forth." His idea of assemblage is a useful metaphor, but for my own analysis his comprehensive listing of the constituent features of such assemblages is both too comprehensive, and too specific. It is inadequately attentive to the relations among these aspects or to how they these assemblages might be used more broadly to study specific instances in which technologies of government are formulated and applied.

16.Environmentalty has been used by Luke (1995,1997) who views it as an attempt by transnational environmental organizations to control and dominate environmental policy and activities around the world. but especially in developing countries. See also the collection of essays in Darier (1999). My use of the

term is indebted to Luke for the coinage, but is different both in intent and meaning. I attempt to examine more insistently the shifts in subjectivities that accompany new forms of regulation rather than see regulation as an attempt mainly to control or dominate.

17. Sivai-0makrishnan's work on *Modern Forests* (2000) contributes significantly to environmental studies that take the idea of Foucauldian governmentality seriously. Indeed, he is one of the first scholars of environment in south Asia who examines the possibilities of the concept of governmentality, especially in relation to strategies of power that contribute to the idea and reality of the state.

18. Their influence, rippling out over the past seven decades, is now being undermined by the introduction of the joint forest management rules in Uttarakhand (Sarin 2002).

19. The manner of villagers[9] control over themselves is visible in the records many of the forest councils maintain. Their reports on their meetings, on the nature of local rule violations, on the identity of those who break rules, and on the magnitude of their financial transactions are remarkably informative. These records show that the protection villagers ensure, the policing tasks they undertake, and the monitoring mechanisms they have created have led to an imperfect, but ultimately far more comprehensive mechanism of regulation in comparison to that exercised by the forest department.

20. Also present were a few lower-level officers from the district revenue administration and the forest department, and representatives from some local non-government organizations.

21. These rules were created by the forest council officials, in conformity with the guidelines laid down in the Rules of 1931. Village residents often exceeded locally defined limits on extraction, and some had become increasingly bold. Forest and revenue department officials did not have enough time or energy to come to the help of the council headmen. The headmen were highly articulate when remarking on the injustice and ineffectiveness of a government that gave them the rights to govern forests, but did not provide the capacity to translate these rights into effective controls.

22. See chapter six. Responses from nearly 300 council headmen, from all over Almora and Pithoragarh

districts, indicate the extent to which the forest councils had come to rely on support from government officials, especially those in the revenue department. An overwhelming majority talked about the difficulties they faced in carrying out their tasks related to forest protection. Many of the responses were especially poignant because of the awareness that perhaps all the efforts to protect forests only earned the headmen the logistical headaches of enforcement and nothing by way of material remuneration. 23.I also met and talked with residents in eight other villages that did not have forest councils (chapter six). 24. A perceptual split between ordinary village residents who depended on forests for the conduct of then-daily lives and forest councils who sought to regulate forest use was present in the responses of most villagers. Although the members of the council themselves also relied on forest products, they were also seen as the agency trying to translate the will of the state as expressed more than fifty years ago in the Forest Council Rules of 1931. 25.In some cases it is likely that their agreement can be interpreted as nostalgia for "the good old days." 26.See Sivaramakrishnan (2000). Although his use of "modern forests" is primarily a reference to colonial Bengal, forms of modernity are always under flux, and the term is evocative of the emerging regimes of regulation in Kumaon as well.

27. I use transnational in Mann's (1988: viii) sense, who contrasts "international" (characterizing relations between national economies and classes) to "transnational" (relations proceeding right through the boundaries of states).

28.The obvious popularity of idioms of resistance in the wake of Scott's landmark study (1990), and in critical response to his analysis, of ideas of negotiation and engagement, would be an ail too easy trap into which one might place the history of forested environments in Kumaon. For some studies that elaborate on these idioms, see Colburn 1989 and Haynes and Prakashl992. The two volume study by Comaroff and Comaroff (1991,1997) also discusses metaphors of resistance, but examines changes in subjectivities under the Marxist-inspired term, "consciousness." Mitchell 1990 constructs a careful critique of Scott's

arguments about weapons of the weak and resistance.

29. But see Rose (1990, 1996) for a discussion of psychological procedures and their impact on how subject positions change. Rose provides a careful treatment of how human conduct in general is shaped through mechanisms of power. See also Butler (1997) who points out the absence in Foucault's writings of any mechanisms through which power produces subjects.

30. Two groups of people who were affected most directly by British efforts to assume control of vast territories that contained trees were timber merchants/contractors, and indigenous tribal groups who practiced some form of shifting cultivation. These latter were also the groups for whom British foresters reserved their greatest opprobrium (Baden-Powell 1893, Ribbentrop 1899, Stebbing 1922-26).

31. Significant research following Ramachandra Guha's [1989 (2000)] pathbreaking work has made evident some of the gaps in his analysis, especially in his treatment of the Forestry Acts in the middle of the 19th century as the significant events launching "scientific forestry" in India, and his suggestion that the Act flattened regional variations. For careful historical treatments that examine these themes, see Rangarajan (1996), Saberwal (1999), Sivaramakrishnan (2000) and Skaria (1999). Even Stebbing (1922), whom Guha cites as an important source for his work describes in detail the regulatory measures that came to be combined rather than innovated through the Forestry Act of 1868, and the variations in forestry practices that persisted after the Act. See also Sumit Guha's (1999) research on forest politics in central and western India between 1200 and 1991. It contains suggestive remarks about forest use prior to the arrival of the British, but provides clear evidence of governmental strategies only during the colonial period.

32. Contemporary discussions in the 19th and early 20th centuries that defended the need for forestry regulations and state control over forests consistently remarked on the shortsightedness of policies that judged private working of forests to be adequate for conservation and regeneration. Stebbing's influential account of early forest history repeatedly underscores how private interests could never be harnessed to public objectives where forests were concerned because of the cupidity of timber merchants and contractors

(1922: 75, 141, 249). See also Ribbentrop (1900: 74-75). Nor were such discussions particularly Indian. For similar arguments about west African forests, see Unwin (1920) and Stebbing (1937), for European forests, see Fernow (1907), and for forests in China and east Asia, see Shaw (1914).

33.The clearing of forests and expansion of agriculture was for long seen as synonymous with the spread of civilization. Harrison cites Vico, "This was the order of human institutions: first the forests, after that the huts, then the villages, next the cities, and finally the academies" (Vico 1968). Harrison goes on to suggest that "forests mark the provincial edge of western civilization" (1992:247). In Kumaon itself, for the first fifty years of British occupation forests were seen as inexhaustible and their clearing was considered desirable and necessary for agricultural pursuits (see chapter three).

34.Ribbentrop, the third Inspector General of forests, cites Brandis's initiative approvingly. "He [Brandis] correctly foresaw that if the people of the country could ever be brought to plant Teak in their shifting cultivation, this would be likely to become the most efficient mode of artificially reproducing the tree... the prophecy has become true" (1900: 73).

35.The sheer scale and spread of government efforts to make a regulatory partner out of communities makes enumeration repetitive at best. But it is worthwhile to point to a few cases (the information below is drawn from FAO 1999): In Bolivia, after the enactment of legislation on decentralization and peoples' participation, provincial plans were developed and 144 local institutions were involved in protectionist agreements. In Brazil, 412 projects have been launched to support traditional communities. Among African countries, in Guinea a service to coordinate NGO interventions was established in 1994. Forest user groups came to be recognized in 1997. In Senegal, people's participation and involvement of local communities in the government of forests is widespread. In Sierra Leone, Village Forestry Associations have been encouraged, and in Sudan, the government has made agreements with many local communities and local councils. In Asia, Nepal has developed mechanism for leasehold forestry and community forestry. The state envisages transfers of almost all forests in the Middle Himalaya to community organizations. In Indonesia,

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a Village Forests Development Programme is under way. In Papua New Guinea, joint implementation

agreements with local governments and communities have been established. In Thailand, community

forestry is being widely implemented. In Vanuatu, most of the forest lands belong to community groups.

And the above are only a sample of the large variety of agreements and initiatives under way in different

countries.

36.1nden (1990:131-42) provides a careful analysis of several important historical writings on Indian

communities, among them those by Marx and Maine. His examination of these writings is aimed mainly to

elucidate the construction of the "Indian Village."

37. As paid, direct appointees of the state, village headmen and other revenue officials, had little leeway in

interpreting the responsibilities they were supposed to discharge.

38.The vast literature on the common pool resources and local governance provides many guidelines, not

always the same ones, to shape the use of resources. See Ostrom 1990 for a rigorous introduction to

writings on the commons, and Crook and Manor 1998 for a comparative analysis of programs of

decentralized development.

39. Writings by members of the Subaltern Studies Collective provide fine lessons in reading official archival

evidence against the grain. Guha and Spivak 1988 constitute a useful introduction.

4O.Mamdani 2001 offers a strong argument relating political institutional changes with those in the

identities of the colonial and the postcolonial subjects.

41.Before proceeding to investigate the features of these transformations in greater detail, it is worth

pointing out that although new procedures of rule represent remarkably new ways of governing forests and

human subjects, they were based on ingredients that at any given point were drawn from what had existed.

There are no airtight divisions separating the kind of forests that existed prior to the arrival of the British

from the kind they created, and the kind that decentralized forms of government are now generating. Each

new technology of government depends upon raw materials inherited from the past and written over in the

present.

42.Fisher (1991) examines the British residency system in India to elaborate the chief features of colonial indirect rule, and its evolution, from the mid 18th to the mid 19th century. Although indirect rule as a practice of government developed in India, the term was not used explicitly until the 20th century, and is better known through its practice in sub-Saharan Africa (Lugard 1926).

43.See also Ribot (1999) whose study of indirect strategies of environmental management in Africa build upon Mamdani's arguments. The specific logic of rule, decentralized or centralized, does not have to depend only on despotic force. It is arguable whether current efforts at decentralization are best interpreted as creating subordinated populations who resemble subjects in Mamdam's sense. The nature of rule depends on the mix of mgredients that come together to shape practices. Among these ingredients would be questions about mechanisms for selection of rulers, whether rulers are bound by laws, the relationship between force and autonomy in the production of conformity to rules, and the nature of recourse to procedures of mediation and adjudication.

44. It is worth pointing out that decentralization of specific responsibilities and powers is a feature of business organizations as well. Miller tells the story of the Volvo automobile plant in Kalmar Sweden, where teams of up to twenty workers complete major subassemblies, without monitoring, control, and incentives from higher management. These second-order tasks are delegated to the team as well. Hazards of team production are familiar to most economists and organization theorists, and Miller explains the high morale and similar assembly times in Kahnar as in other plants by referring to theories of repeated games and property rights. But the full explanation depends on *"mutually reinforcing psychological expectations"* (Miller 1992: 180, my emphasis).

45,For a discussion of these themes in the works of Marx, Durkheim, and Weber, see Rose (1999). 46.For reviews and research on decentralization in different arenas, see Crook and Manor 1998, Fox and Brown 1998, and Grindle 2000. Putnam's (1993) modern classic on decentralized institutions in Italy also

speaks to the importance of decentralization in development.

47.Since changes in subjectivities may be crucial also in other arenas of decentralization reforms, it might be fair to suggest that the forest councils of Kumaon illustrate the new distribution of power that decentralized regulatory communities inaugurate. They may be historically distinct from a larger contemporary political shift, but they are analytically tied.

48.This shift in the fortunes of marginal groups local communities is what Ribot (1998) is referring to when he uses the phrase, "from exclusion to participation." Others have similarly talked of the transformation that environmental politics has undergone over the last three decades (Poffenberger 1996, Western and Wright 1994).

49.For comparative Figures on revenue yields of forests under different provincial departments, see Stebbing (1922-26). For similar figures on post-first World War revenues, see Champion and Osmaston 1962).

5O.In many ways, decentralization processes connected with the Joint Forest Management Program (JFM) are today pushing the Indian forest department in directions that Kumaon's forestry officials had traveled in the 1920s. Village communities, through JFM committees, have come to gain some managerial powers in nearly a fifth of India's forests (Khare et al. 2000). However, many observers of JFM conclude that it is quite modest in its decentralizing thrust (Kumar 2000, Sundar 2000).

51.See for example, Eckholm 1976 and Wilson 1992.

52.For some representative views that defend state intervention in environmental conservation and management, see Hardin, 1978, Heilbroner 1974, and Ophuls 1973. Others portray privatization and markets as the preferable choice: de Alessi 1980. In particular, resource economists have advocated private property solutions to environmental degradation. For critiques of state policies to conserve resources, see Ascher 1999, Ascher and Healy 1990, and Repetto and Gillis 1988. See Baland and Platteau 1996 for a formal demonstration that there is no difference in the efficiency characteristics of private property, and

managed common property or community management of natural resources.

53.1n conjoining of govemmentality with the environment, I depart substantially from existing treatments that view environmentality as primarily a means of supervision by international networks of environmental organizations (Luke 1995). Where governmentality is concerned, scholars of development and environment often use it to signify new forms of domination and expansion of government (Ferguson 1994). Even such a careful work as Akhil Gupta's *Postcolonial Developments* (1998), which draws heavily on Foucault to talk about governmentality and transnational organizations, interprets the concept primarily as a technique of systematization, surveillance, and imposition of new orders instead of also attending to the positive aspects of power involved in government and the production of new subjects.

Part 1: Power/Knowledge and the Creation of Forests

In 1805, the Court of Directors of the British East India Company sent an urgent despatch from London to the Bombay Government in India. They wanted to know if teak from Malabar in western India could be supplied for the King's Navy. The growing deficiency of oak in England over the last three centuries had greatly increased the commercial and strategic value of timber in the colonies.[1] The inquiry by the Directors led the Bombay government, in a somewhat bureaucratic fashion, to appoint a Commission of Survey. The Commission was mandated to assess the state of forests and the nature of their ownership.[2] Forests in the Malabar region had played an important role in shipbuilding during the previous half century (Grove 1995: 390-92). The Commission reported that the capacity of the forests had been overestimated, more accessible forests had been almost cut out, and that costly road construction would be necessary to exploit more distant stretches of teak-bearing areas (Stebbing 1922:64).[3]

Alarmed by the Commission's report, the Company issued a general proclamation prohibiting all unauthorized felling of teak.[4] The Company also asserted its exclusive right to royalties that were earlier claimed by indigenous rulers (Ribbentrop 1899:62-64). With an eye on regular timber supplies for the navy, and under pressure from the home government, Captain Watson of the East India Company Police Service was appointed the first Conservator of Forests in India in 1806.[5] Watson took his duties seriously; the duty of supplying teak more seriously than of ascertaining whether it was harvested legitimately from unclaimed lands, or forcibly from private lands. He felled government requirements of timber in public forests, privately owned forests, and even trees growing on cultivated lands.[6] Watson's actions naturally alienated landowners. They even turned timber merchants against the government.[7] Stebbing, usually a staunch defender of imperial conservationist policies, is unequivocal in his censure. "The new regime was far too drastic to be continued as a method of permanent administration. [Even] the privilege of cutting fuel for private use... was invaded and prohibited, a short-sighted step of amazing folly... By 1823, the growing

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discontent of the forest proprietors and timber merchants chafing under the restrictions of the timber monopoly, and the outcry of the peasants indignant at the fuel-cutting restrictions, came to a head... [The] Conservatorship... was abolished" (1922: 71).[8] Systematic and widespread state efforts to intervene in how Indian forests were to be used, managed, regulated, governed, and viewed would begin again only in the 1850s.

This aborted conservatorship marks the first major effort by the British to initiate the government of forests in the Indian subcontinent. It foreshadows the unprecedented transformation of landscapes and subjectivities that was to occur as the British initiated and sought to consolidate regulatory control over Indian timber.[9] Initial colonial efforts to extend control can be seen as part of larger imperial rivalries. Access to secure timber supplies affected the outcomes of such rivalries in important ways (Albion 1926, Bamford 1956). This should not surprise because forests during this period were not only crucial to naval superiority, they were the cornerstone upon which depended "virtually all aspects of material culture" (Lindqvist, 1990:301).[10]

Although this first forest conservancy turned out to be different in many ways from more widespread efforts after the 1860s to assume control over India's forested lands, it prefigures them in four important ways. One, it points to the keen interest of the British in establishing control over vast areas of forests because of the commercial and strategic value of specific timber species. Two, it shows how burdensome such control would prove for many existing users and managers. Forests all over India had many and competing uses, and colonial control could not always be extended without exclusionary practices. Three, it hints at the debates over different forms of private vs. public control that framed the exploitation of forests for many decades to come, even as colonial rule was extended over increasing territories containing forests. Finally, it indicates the willingness of the colonial state to change, and sometimes abandon its preferred strategies of control when it confronted conflicts.

One difference between the first attempt at forest exploitation in the early 1800s, and the later attempts, through the establishment of forest departments lies obviously in the hasty imposition of the earlier conservancy. But what sets them apart most seriously perhaps is the deployment of a systematic justification and rationale, based in new forms of knowledge about trees and landscapes, in the latter half of the century. The first conservancy was focused on the extraction of teak, and treated trees as commodities to be mined for profit. In this, it mimicked many indigenous interventions that aimed to extract timber for shipbuilding or other specific purposes. In contrast, forest departments founded from the 1860s onward developed and brought together new technologies of government that had as their underlying assumption a view of Indian forests as exhaustible resources with competing uses. These competing uses, and the exhaustibility of forests, necessitated systematic procedures of protection, regulation, and improvement. These interventionist procedures assumed a more refined and sophisticated guise with emergent forms of statistical knowledge and the development of numericized relationships between land, trees, care, and profit.

Efforts to extend centralized controls after the 1860s enshrined widespread exclusionary measures and also generated resistances. But the means of exclusion were more carefully crafted. They depended upon new knowledges about variations in soils, climate, rainfall, vegetation mix, and tree density, and how these variations affected growth rates of different timber species. The forest department claimed that the government of forests was as much about conservation and improvement as about revenue and profit to justify its representation of forests as an entirely new and significant class of state assets. Statistical accounts of forest wealth became the means through which forests could be apprehended summarily and unambiguously.

The two chapters in this first part of the book examine the forms of rule that helped institutionalize new strategies of knowledge and power, and some of the difficulties that such strategies encountered. Chapter two focuses especially on the role of statistics and numbers. In existing writings on Indian forests

as a domain of government, questions of quantification and statistics have typically found little attention. With the maturing of research and writing on Indian environmental politics since the early 1980s, scholars have mainly considered two issues. The first concerns the nature of the rupture that colonial practices inaugurated in Indian environmental history, especially in relation to forests. Whether colonial interventions marked an unprecedented double exploitation- of forested landscapes, and peoples who depended on forests - is *the* key issue on which much of the debate turns. The debate has often tended toward acrimoniously argued polarized positions.[11] A second question concerns the relationship of the present to the past, and focuses attention on the significance of recent trends toward decentralization in Indian forestry. These trends are embodied most explicitly in what the Indian government has termed the Joint Forest Management (JFM) Program.[12] In this instance, the issue turns on the extent to which recent shifts represent a radical break with a century and a half of paternalistic, top-down control that the forest department exercised over India's forest resources.[13]

In an important sense, both these questions about historical understandings and contemporary status of forests are mainly concerned with the political-economy of forests and environmental changes. Current writings on these questions tend to ignore the representational aspects of Indian forests. As a result, they do not adequately explore what constitutes a major innovation in the government of forests that colonial rule signified: the use of statistics. In viewing colonial forestry as constituting a break between a harmonious golden past and a socially marginalized rural population,[14] many scholars use an analytical framework that sets aside questions of another kind - how did colonial rale come to consolidate a certain view of forests that became hegemonic among colonized subjects? By ignoring the continuities between the past and the present insofar as the role of statistics and numbers is concerned, analysis risks conflating political-economic with representational regimes. But even if current policy changes toward greater decentralization mark a break from technologies of government that centralized colonial rule was all about, the representational regimes around forests that emerged in the nineteenth century continue to this day. It is

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impossible today to talk about forests, for example, without reference to their area, functions, density, and ecosystemic characteristics. That we can talk about forests by referring to these features has become possible only after the representational innovations of the mid-nineteenth century (see also Sivaramakrishnan 1999).

These representational innovations included new procedures to measure, aggregate, differentiate and analyze. The specific features of vegetation that should receive the greatest attention and refinement in these new procedures were a matter of contestation, but were resolved by recourse to those great devices of commensurability: prices and profits. Conversion into monetary values ensured that the worth of different procedures could be objectively assigned. Numbers were obviously crucial both to measure and to commensurate. When applied to trees, the innovations of measurement, aggregation, differentiation, and analysis yielded relationships describing the effects of human interventions in the landscape. Thus, new forms of representation facilitated fresh strategies of intervention (without necessarily precluding earlier forms of exclusion). Among the new interventions we can count surveys and demarcation, thinning and clearing, plantations and working plans. There were wide regional variations in the intensity with which these different interventions were practiced; a result of perceived differences in the value, accessibility, and ease of exploitation of available timber. And these nineteenth century forms of representing forests - in terms of numbers and statistics - have been bequeathed to contemporary technologies of government that involve communities and local populations as partners of state officials.

The consolidation of a new representational regime and associated changes in how forests were to be governed should not be interpreted as a totalizing process. Chapter three focuses upon Kumaon to track the provocations that emerged in response to policies that coupled the rule of statistics with a new allocation regime. Whereas chapter two examines the spread of statistics and the colonization of forestry professionals by numbers throughout India - and hence tracks the continuities in this process, the subsequent chapter explores the divisions among different departments of the state that new technologies to

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govern forests prompted. Statistics-based claims rose to prominence and became the means through which to appropriate ever vaster areas of land in Kumaon. These claims made it possible for the forest department to craft new legal restraints on Kumaon's residents, reclassify a vast proportion of Kumaon's land as forests, and justify its actions using the idiom of long-term sustainability. The emergence of new technologies to process timber and produce turpentine assisted the forest department in gaining its objectives by increasing its revenues to far higher levels in comparison to those of the revenue department.

The ^classification and appropriation of vast areas of land in Kumaon generated intense tussles within the state. Many officials favored the continuation of existing policies, categorizing local users as uninformed and ignorant. Others supported decentralization of governmental authority and the deployment of a new technology of government for the environment. The proponents of the first view tended to hold important positions in the forest department, and those holding the latter perspective were mostly in the revenue department. But it is important to note that even those who supported decentralized government of forests did so on the grounds that it would yield a more complete regulation of the environment by enmeshing Kumaonis more closely in the process of government and by making them accomplices in the project of regulatory rule. The political weight of the latter perspective was reinforced by the open defiance of Kumaon's residents against new forest laws.

The conjunction of a policy position that advocated decentralization and widespread defiance to new forest laws was to bring about important changes in the institutional and political means of governing forests. These changes would also transform Kumaon's residents. The forces and actors that laid the foundations for a decentralized technology of government are the concern of chapter three.

Endnotes:

1. Where the French had intensified interventions on land and in forests within France in response to their naval need for timber, the British government displaced its resource shortages to the colonies (Albion 1926, Bamford 1956, Grove 1995:57-60). The competition between the two powers for naval superiority assumed significant proportions only on identifiable occasions rather than being a consistent phenomenon between the 16th to the 19th century, bet during the period of these rivalries the outcome depended in no small measure on who possessed better access to superior timber supplies (see chapter xxx). British military successes in the Indian subcontinent in the late 18th and early 19th century, especially after the defeat of Tipu Sultan in 1792, made the displacement of demand for timber to the colonies much easier. 2.Malabar forests had served as an important source of timber for shipbuilding by Indian merchants, local rulers, and the British for more than thirty years. For example, in 1799,10,000 mature teak trees were floated down from these forests. Demand had increased to such an extent that it had even become necessary to import teak from Rangoon (Stebbing 1922).

3.Similar effects of the voracious appetite of the imperial machine for timber were felt in New England when lumber trade helped colonize New England in the mid 18th century, and when trade in ports like Portsmouth and Falmouth depended almost entirely on a single item: timber (Albion 274-75). I am thankful to James Scott for leading me to this source.

4. According to Albion's remarkable study of the role of timber in British naval power, "the most successful attempt to relieve the [British] rimber shortage by foreign shipbuilding came from the use of teak in India... England armed dozens of ships built in India for her expeditions against Ceylon, Java, Manila, and the Moluccas, and into the Red Sea between 1795 and 1800... had it not been for the use of these improvised warships, her control of Indian waters would have been doubtful... The choicest timber lay in the southwestern part of India, in the region known as the Malabar Coast" (1926: 365-66). S.Watson's charge extended to all forests in Malabar and Travancore (Madras) that were not claimed as

private property. His main task was to ensure adequate supplies of teak to the government.

6. Watson imposed the Company's control over any forests that contained teak. He forced existing owners to resip their claims, and soon established a monopoly over teak throughout Malabar and Travancore. He was so zealous in the pursuit of his responsibilities that he prohibited cultivators from cutting trees without permission. Rural dwellers often wanted to harvest timber for personal use and construction; they felt the conservatorship to be especially onerous (Stebbing 1922:. 70).

7. Although merchants were allowed to fell timber with the permission of the conservator, they could not market it. In effect, this meant that they had to follow prices fixed by the conservator if they wanted to get any returns at all from the investment they might have made in harvesting timber (Ribbentrop 1899, Stebbing 1922).

8. Brandis, the first Inspector General of forests in India, said about the conservatorship, "The first attempt at forest management was a great mistake, an act of injustice which cannot be condemned too severely" ([1897] 1994: 97). No small role in the abolition of the conservatorship was played by Sir Thomas Munro, the Governor of Madras. Munro died in 1826, after a zealous career in which he assiduously applied the principle of eliminating intermediary authority between the company and its subjects; but not before taking strong exception to the activities of Watson (Stein 1989: 59-60). Richard Grove (1995: 397) attributes to Munro an idealized and highly inaccurate view of indigenous landholding, and suggests that he was unaware of the influx of timber traders and landgrabbers in the region who had little concern for conservation. To boot, Munro was a firm believer in laissez faire policies, and argued that a free market in timber, instead of government regulation, was necessary. "Restore the liberty of trade in private wood... and we shall get all the wood the country can yield more certainly than by any restriction measures. Private timber will be increased by good prices" (Munro, cited in Ribbentrop 1899: 65). 9. As Miller describes in his study of colonial conservation in Brazil, timber was a resource unmatched in the early 19th century by any other natural product. "Timber was not only the steel, aluminum, plastic, and

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fiberglass of past ages, but the oil, coal, and gas as well." Speaking of the uses to which It was put, he remarks, "structurally, timber had no competitor, as it is the only naturally occurring substance that exhibits tensile strength... By weight, most woods are stronger than steel... The wooden ship was the period's highest expression of material culture and the great tool of European expansion, domination, and commerce without which world history would be another story altogether" (2000: 4). 10. Although John Nef saw the sixteenth and seventeenth centuries as the "age of timber," (1966) Lindqvist argues for the importance of timber even until later. "Not only did mining consume large amounts of wood; so, too, did potash plants, tanneries, glassworks, saltpeter works, train-oil works, lime production, and other industries rely on the forests for fuel and raw materials. Domestic demands included fuel for heating houses and drying grain and malt, and timber for houses, fences, ships, carts, barrels, and agricultural implements (1990: 301).

11.Many scholars have tried to answer how colonial interventions changed the use of forests by calling colonial forestry policies "scientific forestry," "production forestry," or "rational forestry," as if what preceded colonial rule was unscientific, unconcerned with production, or irrational. Others have tried to argue that colonial practices did not introduce anything qualitatively or fundamentally different in the management and exploitation of Indian forests. Two of the figures associated with these polarized positions are Ramachandra Guha (1983,1989) and Richard Grove (1995). See also the introduction to Grove, Damodaran and Sangwan (1998) and tibte epilogue to the second edition of Guha's *The Unquiet Woods* (2000). See Rangarajan (1994) for an review of the significant points of debate between Guha's and Grove's earlier writings. Richard Tucker touched upon several of the more important themes in this debate early in bis work on Indian environmental history (1983,1988a, 1988b).

12.Khare et al. (2000) review the basic outlines of JFM and its most recent achievements, A vast literature already exists on this program. For a brief introduction to this literature and a comparison of JFM to some other decentralization policies, see Agrawal and Ostrom (2001).

13.Some scholars have called recent changes an innovative turnaround, in the process ignoring historical evidence on earlier efforts by the forest department to involve local populations in forest management and regulation (Guha 2000:201). Others have regarded the current policy shifts as not going far enough in redirecting greater power and benefits to local users. Advocacy of this second position can be found in several publications from the Center for Science and Environment in Delhi, especially in their fortnightly periodical, *Down to Earth.*

14.For an important exception, see Sivaramakrishnan (1996) and Pratap (2000). For two earlier studies from outside south Asia that place contemporary forest histories in a longer time frame, see Peluso (1992) and Bryant (1996).

2. Forests of Statistics:
Colonial Environmental Knowledges

APPENDIX G.

Contents of Half Acre in Plantation 1858, Elanjerry.

Number.	Length.	Quarter Girth.	Cubic Contents.	Number.	Length.	Quarter Girth.	Cubic Contents.	Number.	Length.	Quarter Girth.	Cubic Contents.
	FT.		C.FT. IN. P.		FT.		C.FT. IN. P.		FT.		C.FT. IN. P.
1	45	6	11 3 0	46	45	4	5 0 0	91	45	6¼	13 2 5
2	45	4½	5 7 8	47	45	4½	6 3 11	92	45	5	7 9 9
3	45	5½	10 3 11	48	45	7	15 3 9	93	45	6	11 3 0
4	45	5½	10 3 11	49	45	5½	10 3 11	94	45	6¼	12 2 5
5	45	4	8 7 4	50	45	3	2 9 9	95	45	6¼	13 2 5
6	45	7	15 3 9	51	45	4½	5 7 8	96	45	4½	5 7 8
7	45	3	3 9 11	52	45	7	7 0 7	97	45	4½	6 3 11
8	45	5	5 7 8	53	45	6¼	14 2 10	98	45	6	11 3 0
9	45	6½	12 2 5	54	45	6¼	14 2 10	99	45	4½	7 0 7
10	45	3½	3 9 11	55	45	5	6 3 11	100	45	6	11 3 0
11	45	5	7 9 9	56	45	5	7 9 9	101	45	4½	5 7 8
12	45	3	2 9 0	57	45	4	5 0 0	102	45	3½	4 4 8
13	45	3½	4 4 8	58	45	5½	8 7 4	103	45	3	3 0
14	45	6¼	13 2 5	59	45	6¼	12 2 5	104	45	5½	8 7 4
15	45	7	7 0 7	60	45	4	5 0 0	105	45	3½	4 4 8
16	45	6	5 11	61	45	5½	8 7 3	106	45	4½	6 3 11
17	45	4½	8 7 4	62	45	5	7 9 9	107	45	5	6 3 11
18	45	5½	8 7 4	63	45	5	11 3 0	108	45	5½	4 4 8
19	45	4½	3 11	64	45	5½	10 3 11	109	45	4	5 0 0
20	45	6	3 0	65	45	7½	5 0 0	110	45	3½	4 4 8
21	45	3½	3 2 5	66	45	4	5 0 0	111	45	6½	13 2 5
22	45	3½	3 2 5	67	45	6½	13 2 0	112	45	3½	4 4 8
23	45	4½	4 2 8	68	45	6	13 2 0	113	45	3½	4 4 8
24	45	5	5 8 11	69	45	3½	4 4 8	114	45	5	8 7 7
25	45	5½	9 5 5	70	45	5½	5 0 0	115	45	5½	7 0 7
26	45	4½	8 8 11	71	45	4	5 0 0	116	45	4½	11 3 0
27	45	4½	2 9 9	72	45	3½	3 3 7	117	45	6	8 7 4
28	45	3½	8 7 4	73	45	6½	12 2 5	118	45	5¼	7 9 9
29	45	5½	8 7 4	74	45	6½	12 2 5	119	45	5	5 7 8
30	45	5	7 9 9	75	45	3½	4 4 8	120	45	4½	5 7 8
31	45	7	15 3 9	76	45	4½	5 7 8	121	45	6	5 3 11
32	45	3½	3 9 11	77	45	4	15 3 9	122	45	6½	12 2 5
33	45	3	3 9 11	78	45	7	15 8 9	123	45	6	11 3 0
34	45	5½	9 5 5	79	45	3½	6 3 0	124	45	5	7 0 7
35	45	4½	8 8 11	80	45	6½	12 2 5	125	45	4½	7 0 7
36	45	5	7 9 9	81	45	6½	12 2 5	126	45	6	11 3 0
37	45	4½	7 9 9	82	45	3½	3 9 11	127	45	5	7 9 7
38	45	5	5 0 0	83	45	5	5 0 0	128	45	5	7 9 9
39	45	4	11 3 0	84	45	3½	8 7 4	129	45	5	7 9 8
40	45	6	13 2 6	85	45	3½	4 4 8	130	45	4½	5 7 8
41	45	6¼	3 3 7	86	45	4½	7 0 7	134	45	6	10 3 11
42	45	3½	3 3 7	87	45	4½	6 3 11	132	45	5½	6 3 11
43	45	7½	16 5 5	88	45	7½	4 5 0	133	45	4	7 4
44	45	6½	12 2 5	89	45	5	5 0 0	135	45		4 4 8
45	45	3½	4 4 8	90	45	4	5 0 0			Total ..	1,101 4 9

Average ¼ girth = 5'.¼. Average cubic contents = 8'.1.10.

APPENDIX H.

Contents of Half Acre in Plantation 1858, Wallashary.

Number.	Length.	Quarter Girth.	Cubic Contents.	Number.	Length.	Quarter Girth.	Cubic Contents.	Number.	Length.	Quarter Girth.	Cubic Contents.
	FT.		C.FT. IN. P.		FT.		C.FT. IN. P.		FT.		C.FT. IN. P.
1	40	5	6 11 4	65	40	2½	2 1 2	129	40	3½	3 10 10
2	40	3½	3 4 10	66	40	4½	5 7 6	130	40	2½	1 8 10
3	40	3½	3 10 10	67	40	3½	3 4 10	131	40	3½	3 10 10
4	40	2½	2 1 2	68	40	3	2 6 0	132	40	2½	1 8 10
5	40	3	3 10 10	69	40	4½	5 0 2	133	40	4½	5 0 2
6	40	3½	3 4 10	70	40	5	6 11 4	134	40	2½	1 8 10
7	40	5	6 11 4	71	40	3½	3 10 10	135	40	5	6 11 4
8	40	2½	2 1 2	72	40	2½	2 1 2	126	40	3½	1 8 10
9	40	2½	1 4 10	73	40	2½	1 8 10	137	40	2½	1 8 10
10	40	3	2 11 2	74	40	3	2 6 0	138	40	3	5 0 2
11	40	5½	1 8 10	75	40	3	1 8 10	139	40	3½	2 11 2
12	40	3	1 1 4	76	40	3½	3 10 10	140	40	3	1 8 10
13	40	3½	2 11 2	77	40	3	2 6 0	141	40	3	2 6 0
14	40	3½	3 4 10	78	40	3	2 6 0	142	40	3	1 8 10
15	40	4	4 5 4	79	40	3½	2 11 2	143	40	2½	3 4 10
16	40	3	2 6 0	80	40	4	4 5 4	144	40	3	2 6 0
17	40	3½	3 10 10	81	40	3½	3 4 10	145	40	4½	5 0 2
18	40	4	4 5 4	82	40	3½	3 4 10	146	40	2½	1 8 10
19	40	4	2 10 10	83	40	3½	1 8 10	147	40	2½	1 8 10
20	40	3	2 6 0	84	40	3	2 6 0	148	40	5	6 11 4
21	40	3½	3 4 10	85	40	2½	1 8 10	149	40	2½	1 8 10
22	40	3½	1 8 10	86	40	4	4 5 4	150	40	4½	5 0 2
23	40	3½	3 10 10	87	40	3½	1 8 10	151	40	3	2 6 0
24	40	3½	3 10 10	88	40	3	0 8 10	152	40	4½	6 3 2
25	40	3	2 6 0	89	40	4½	6 3 2	153	40	2½	1 8 10
26	40	2½	1 4 10	90	40	3½	3 10 10	154	40	2½	2 11 2
27	40	3	2 6 0	91	40	4½	5 0 2	155	40	3½	3 4 10
28	40	2½	2 6 0	92	40	4½	5 0 2	156	40	5½	8 4 10
29	40	2½	1 8 10	93	40	2½	1 8 10	157	40	5	6 11 4
30	40	3½	2 11 2	94	40	4½	6 3 2	158	40	2½	2 11 2
31	40	3½	1 8 10	95	40	3½	2 11 2	159	40	3	2 6 0
32	40	3	2 6 0	96	40	6½	10 10 2	160	40	3½	2 11 2
33	40	3	4 5 4	97	40	2½	1 8 10	161	40	5	6 11 4
34	40	3	2 6 0	98	40	4	4 5 4	162	40	3	2 6 0
35	40	2½	1 8 10	99	40	3	2 6 0	163	40	3½	2 11 2
36	40	2½	1 4 10	100	40	3½	3 10 10	164	40	3	2 6 0
37	40	3½	2 6 0	101	40	2½	1 8 10	155	40	4½	4 5 4
38	40	3½	2 11 2	102	40	4½	5 7 6	166	40	3	2 11 2
39	40	3½	3 4 10	103	40	3½	1 8 10	167	40	3	2 6 0
40	40	3	1 8 10	104	40	3½	3 10 10	168	40	4	4 5 4
41	40	3	2 6 0	105	40	3½	8 10 10	169	40	4	4 5 4
42	40	2½	1 1 4	106	40	3½	1 8 10	170	40	4½	4 5 4
43	40	2½	1 1 4	107	40	3½	6 10 10	171	40	2½	1 8 10
44	40	3½	6 3 2	108	40	5½	7 7 10	172	40	5	6 11 4
45	40	4½	2 11 2	109	40	4	4 5 4	173	40	3½	3 4 10
46	40	2½	1 8 10	110	40	2½	2 1 2	174	40	3½	1 8 10
47	40	2½	1 8 10	111	40	3½	2 11 2	175	40	2½	1 8 10
48	40	2	1 1 2	112	40	4½	5 0 2	176	40	5	6 11 4
49	40	2½	1 1 2	113	40	4½	1 8 10	177	40	3½	3 10 10
50	40	3½	3 4 10	114	40	5½	7 7 10	178	40	3	2 6 0
51	40	4½	5 0 2	115	40	2½	1 8 10	179	40	3	2 6 0
52	40	2½	1 8 10	116	40	2½	1 8 10	180	40	2½	1 8 10
53	40	2½	1 8 10	117	40	3	2 6 0	181	40	3½	2 11 2
54	40	2½	2 1 2	118	40	3	2 6 0	182	40	3½	1 8 10
55	40	3½	1 8 10	119	40	4½	5 0 2	183	40	2½	1 8 10
56	40	3	5 8 0	120	40	3½	1 8 10	184	40	3	2 11 2
57	40	4½	5 0 2	121	40	5	5 10	185	40	3	2 6 0
58	40	4½	2 11 2	122	40	4½	6 11 4	186	40	5	2 2
59	40	3	3 4 10	123	40	3½	1 8 10	187	40	4½	2 2
60	40	3	2 6 0	124	40	3½	1 8 10	188	40	2½	1 8 10
61	40	4			40						

2. Forests of Statistics: Colonial Environmental Knowledges

> The Indian Legislature, when preparing a forest law for India [in 1878], decided not to attempt a definition of forests, but merely to provide that the Government may declare certain lands to be forests and thus bring them under the operation of the Indian Forest Law.
>
> — W. Schlich, *Manual of Forestry,* 5.

Beginning from the middle of the nineteenth century, Indian foresters came to rely increasingly on numbers and statistics to represent the land and vegetation they controlled. Numbers became crucial to record and document forests. Calculations and mathematical relationships emerged as the basis of arguments about specific techniques to shape forests. Statistics came to occupy a privileged place in the advocacy of different institutional and legal structures to govern forests. Numbers, calculation, and statistics thus became a basic part of technologies of government over nearly a quarter of colonial India's territory by the end of the nineteenth century.[1] Not only did they help represent land and vegetation, they also helped constitute it. What Churchill said about lived space, "first we shape our buildings and then they shape us," (cited in Alonso and Starr 1987: 3} can be said to have become equally true of the relationship between forests and statistics.

This chapter examines how measurements, numbers, and statistics - a particular form of power/knowledge - helped make India's forests. The chapter's objective is twofold: to describe the relationship between statistics and forests and the implications of this relationship, and to challenge our regard of forests as self-evident, material entities. I do not address the question, "Did forests exist prior to British rule?" Rather, I examine how the idea of forests and their very materiality came to depend upon the use of statistics. Quantification became the preferred means to represent forests as well as to advance and defend claims over them. Instead of regarding forests as always-already constituted natural phenomena, I

want to explore the specific human interventions upon which forests have come to depend for their appearance, images, and referents.[2] Such a task, as Hacking insightfully argues (1999:63-92), raises important questions about contingency, nominalism, and stability in the relationship between representations and objects - issues I address at the end of this chapter.

My analysis takes as its point of departure much recent work on the early origins of environmental transformations in south Asia and the political-economic impact of colonial forestry policies.[3] Although new studies since the mid-1980s have ably debated political-economic changes in India's environmental regimes, they have been less concerned with tracing the equally elemental changes that colonial rule introduced in the representational economy of forests (cf. Sivaramakrishnan 1995).[4] The distinctive and enduring rote of statistics and numbers in the production of Indian forests has found only limited attention in general. Even less attention has been paid to how changes in making of forests during the colonial period continue to underpin the seemingly radical recent shifts in forestry policy toward Joint Forest Management in collaboration with local populations.

But the role of statistics has undoubtedly been crucial. Writing about its use to understand contemporary life, Raymond Williams observed that the society emerging out of the industrial revolution would literally have been unknowable in the absence of statistical theory and data (Cited in Asad, 1994: 67-68). One can draw a similar inference about forests in India. In fact, one might go further. Recent work on the history of statistics has convincingly argued about its role in constituting the very reality that statistics are supposed to describe.[5] We can say that Indian forests would not only have been unknowable without statistical representations, the very category of "Indian forests" could only be constituted with the help of statistics. Their extent, value, role, importance, and place in the national economy, demands for their protect and management, and concerns about the effects of human interventions would all remain unimaginable, or at least be vastly different, in the absence of numbers.

I begin by outlining some of the central themes In recent environmental writings on India and go on to describe the comprehensive measures that Dietrich Brandis introduced to shape Burmese forests when he was appointed their Conservator. His efforts are a window on a much larger set of transformations that began before his arrival in India, and which were diffused territorially and consolidated institutionally over the next fifty years. The chapter then examines how a whole series of practices related to naming, classification, counting, measuring, and valuing affected sense-making around forests. My general argument is that the new representational and political-economic regimes that emerged around roughly the same period in the mid-nineteenth century were distinct but part of a single "colonial project" (Thomas, 1994) of rule over the environment It is in the conjunction of statistical thinking and biocommercial concerns that the novelty of colonial interventions in the environmental domain needs to be situated.

To examine the special role of numbers and statistics in the making of forests, I draw particularly upon important arguments advanced by historians of statistical representation.[6] I use their arguments to prepare the ground for examining the crucial role of quantification, statistical abstraction, and numericized relationships in the making of forests. In talking about statistical representation, I have in mind the specific, commonsensical meaning of statistics as a set of methods for treating quantitative data and the data themselves. In addition, I also use the term in its nineteenth-century sense of a genre of writing that employs numbers to describe territorial entities and aggregates. In this sense, forests are an example par excellence of territorialized entities summarily and reductively represented by specific figures: area of land, number of species, volume of product, or density of vegetation cover; and relationships: between age and girth of trees, girth and volume, land area and yield, or soil quality and wood volume increment.

By "making of forests," a term I use equivalently with "construction of forests," I want to stress that like all representations, those relying on numbers do not merely reflect their social ground, but supplement it and contribute to it as a result of the politics involved in selecting and highlighting specific attributes of an entity (Alonso and Starr 1987, Scott 1998). As representations gain credence, they reshape

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the phenomena they purport only to describe. Direct human interventions are often responsible. The making of forests in India thus involved a double erasure - an erasure of certain ideas about forests, and also an erasure of the referents of those ideas.

There is yet another sense in which one might talk about the making of forests. Bernard Cohn emphasized this aspect of the transformation of objects into art by investigating the shifts in contexts within which objects can be located (1982: 301). Statistics accomplish such a shift of context for forests by highlighting particular features relevant to governance. Statistical representations abstract objects from their context by forcing selection of features that can be numerically stated. Other features of objects are lost in the translation. The specific features of forests that find attention in numerical representations are in part a result of what is desired: size, length of logs, volume of timber, and commercial value. But it is also a function of what is easy to represent. Even the commercial value of timber may be affected by the quality of logs, the grain of the wood, uses to which timber will be put, and so forth. Statistics made India's forests in the sense that they contributed to how forests could be imagined after colonial rule: by reshaping the policies affecting the form and characteristics of forests in national life, by changing the lens through which people viewed them, and by introducing a new language to imagine them.[7]

The ensuing argument can be briefly anticipated. Although the major legislation that asserted colonial control over Indian forests was not in place until the 1870s, administrators, natural historians, and botanists in different provinces had already begun to use the elements comprising a new political-economic regime for forests by the 1850s. Dietrich Brandis brought together most of these elements for the first time in Burma in the mid 1850s, and then played a crucial role in introducing them more widely throughout India after he was appointed India's first Inspector General of forests in 1862. Around the same time, the use of statistics, and an "avalanche of numbers" (Hacking 1991) regarding various aspects of forest growth and management came radically to reconstitute how forests were regarded. Although the new political-economic and representational regimes around forests came into being around the same time, we can

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consider them as distinct phenomena because they do not bear a necessary relationship with each other. Indeed, it is in their interactions that their effects unfold.

Their interactions are altogether a more complicated affair than suggested by readings that identify the use of statistics and numbers with domination and control (Miller and O'Leary, 1987, Pasquino 1991, cf. Rose, 1999). For example, recent transformations in the allocational policies surrounding forests in India bring communities and local populations into a partnership with the state, but they continue to depend upon very similar representational mechanisms as did the more extractive policies that British rule often authorized. My argument emphasizes the contingent nature of political change, and the multiple roles to which statistical facts can be yoked.

Debating the Environment

Recent scholarship has traced the environmental history of India to prehistoric times.[8] But the scholarly study of environmental history itself began only in the mid-1970s, bar the official teleological histories of progress in forest and water conservation.[9] In contrast to the current vigorous debates on , various aspects of environmental politics and history and the attention received by environment in the subaltern studies project, three decades ago even comprehensive reviews of south Asian history and politics did not refer to the environment.[10]

From almost the very birth of environmental writings, the major question confronting scholars has been about the degree to which colonial rule transformed how humans exploited natural resources. Guha refers to this question as leading to the birth of the "Great 'Ecology and Colonialism' Debate." He suggests that British rule introduced "rapid, widespread, and in some respects irreversible changes"(2000:215). Colonial policies formed an "ecological watershed" (Gadgil and Guha 1992) because they were "socially unjust, ecologically insensitive, and legally without basis in past practice" (Guha, 2000:216). Resistance to

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British forestry policies, in consequence, was widespread throughout the subcontinent, and even outside India.

The work of Richard Grove and some of his colleagues stands in contrast. Pushing further the arguments in Grove's (1995) authoritative history of colonial environmental ideas, Grove, Datnodaran, and Sangwan (1998) suggest that the major outlines of British conservationist arguments had already been fleshed out in the early 19th century, a period Guha ignores in his work. They argue as well that conservationist sentiments were embodied organizationally in the forestry departments founded by colonial rulers throughout the empire. Skeptical about the survival prospects of customary land and forest use regimes that Guha defends, they use evidence from other British colonies that did not have a forest department to argue that "without exclusionist forest reserve legislation, most surviving forms of 'common property management' would have faded away like snow on a summer day" (Grove, Damodaran, and Sangwan, 1998:14).

Echoing Theodore Porter's remarks about the history of quantification, it would not be far wrong to say that in these polarized positions one detects the arguments of partisans who for the moment have forgotten the value of nuance (1995:6). The adoption of strong stances has had some positive impact, of course. One salutary effect of painting in such bold strokes has been the explosion of work on the ecological legacy of colonialism. New scholarship has been careful in its assessments of the effects of colonial policies at the same time as it has deepened and broadened the field of environmental studies. Guha's (1989) engagement with resistance and social movements in the Uttarakhand has flowered into more sophisticated and historically careful accounts of colonial encounters." One can also witness a more nuanced attention to questions of gender, social movements, and the relationship between the agrarian world and the environment.[12] Similarly, Grove's pioneering research on the origins of environmentalism (1990,1993,1995) has been given farther expression in recent scholarship that emphasizes the value of

indigenous science and colonial origins,[13] and shows how a vital and original colonial science contributed to new developments in taxonomy, silviculture, and medicine.[14]

Despite being a bracing reminder of the potential vitality of research on the environment, almost none of the existing work on forests (or other resources) investigates how statistics affected the use, management, and production of forests in ways that could not even be imagined before colonial rule (Demeritt 2001). Indeed, numbers and statistics, and their role in transforming the management and production of vegetation for the needs of colonial rule, was a novel intervention upon which government depended to refine the role of timber and trees in the social landscape and the larger economy.

The use of numbers to represent social facts exploded around the mid-nineteenth century with the invention of statistics. Given that forestry departments were established in most imperial possessions in the next 50 to 75 years, it should not surprise us to discover an increasing reliance on numbers in official reports and documents dealing with forests. It would not be far wrong to say that the forms in which forestry administration developed in India after its initiation in the latter half of the nineteenth century would have been far different if administrators had not had statistical information, and had they not used it to buttress their case for an expanding forest estate.

In the eighteenth and early nineteenth centuries, many natural historians, medical professionals, and soldiers-administrators-travelers produced accounts of trees and forests in India. These writings were mostly detailed narrative descriptions. Typically, they were founded on individual experiences. They scarcely employed numbers or quantification. The establishment of forest departments all over India changed all this. By the end of the nineteenth century, forests in official writings and memoranda had a very different character. Numerical representations, purporting to describe what was happening to India's vegetation and timber wealth, had been important first in advancing the rationale for an independent forestry establishment But foresters began to use statistics as their preferred means to convey meaning after the 1860s and 1870s. An entire organizational apparatus began to collect data actively and constantly.

Standardized techniques of data collection increasingly became the basis to train all foresters. Numbers came to mold how the world of trees and vegetation would be regarded and understood.

Categories preceded numbers. Classifying the landscape into different zones of vegetation types, and within each zone identification of different species, was foundational to the assignment of different kinds of numbers to summarily represent each category. But it was the numericized form that helped foresters and other administrators grasp an entire region, indeed the entire imperial forested estate, without ambiguity: number of square miles of land, average number of trees per square mile, volume of wood in an acre or square mile, the revenue yield of that volume in rupees. Through the statistical estimation of how constituent units within this estate were related to each other, foresters advanced proposals about its management. The concreteness of numbers was far superior to the rough and ambiguous adjectives and superlatives that had earlier described India's vegetation and trees.

Starting from the last decades of the nineteenth century, foresters contested each other's views about the state of vegetation, trends in the health of the forested estate, and policies to shape the constitution of vegetation and its productivity using numbers. But the perceived concreteness of numbers was not just a faithful representation of an underlying uncontested reality. "The questions asked (and not asked), categories employed, statistical methods used, and tabulations published" depended on political choices about what to measure, how to measure it, how often to measure, and how to present and interpret the results (Alonso and Starr, 1987:2-3). Such political choices inevitably continue to shape how numbers represent, and how numerical representations recursively affect actions concerning that-which-is-represented.

New Classifications and the Production of Forested Landscapes

Stebbing's magisterial three-volume study of forests in British India[15] was written after more than a century of colonial explorations and annexations in some of the remotest regions of India. It begins with a

familiar, authoritative, and precise classification (1922: 41-67). Forests fall into six zones: evergreen, deciduous, dry, alpine, riparian, and tidal. These six zones are further subdivided into geographical regions: "The evergreen zone may be subdivided into four distinct geographical regions...," and so on (ibid: 41). For each region, Stebbing reports the boundaries that mark it off from other regions. For example, the Sub-Himalayan region "covers the belt of low country bordering on the spurs of the eastern Sub-Himalayan range, entering deep into their valleys and covering the slopes of the lower spurs" (ibid, 43). Within each region, he lists the names of major families of vegetation and commercially valuable or dominant trees. "The number of species composing the forest is very great and the trees individually attain a great size, of which the most important are the following: *Schima Wallichii, Terminalia tomentos* and *Myriocarpa; Artocarpus chaplasha; Cinnamomum glanduliferum, Echinocarpus sterculiaceus, Bombax malabaricum, Dillenia indica, Eugenia formosa* and *Pterospermum acerifolium"* (ibid, 43).[16] No later historian or administrator has produced such a remarkably systematic and synthesizing study of the first hundred years of British forestry in India.[17]

This taxonomy of forests, with its omniscient divisions and subdivisions, with its families, genera, and species, with its attention to geography and topography is an interlocking whole. It presents a set of nested, hierarchical relationships among constituent units. New forms of colonial knowledge made it possible to build this hierarchical classification from the ground up, even as it was presented in a seamless fashion, beginning with the topmost layers of the hierarchy. Different species and genera of vegetation come together with specific frequencies, and their distribution produces specific vegetal regions and natural zones.[18] Ultimately, this taxonomy facilitates, and is a part of, the application of statistics and numbers that were to make India's forests by constituting them within a new representational regime.

Specific operations of control brought into being the forests that Stebbing describes and classifies. The regulatory elements going into the making of forests depended upon a prior imagination of forests as territorial exhaustible resources that could be grasped in their entirety in the pursuit of three goals: revenue,

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conservation, and improvement. Once forests as an abstract entity became part of the imagination, government policies aimed at specific goals by prescribing the application of specific silvicultural procedures within a given Institutional structure. Statistical techniques and numerical representations were admirably useful in evaluating these new procedures and correcting deviations from desired ends.

Foresters brought together a large number of statistically convenient procedures to take care of forests from the beginning to the end of the life cycle of vegetation in a landscape. They named, counted, measured, and assessed existing vegetation. The need for revenue from timber dictated that they plant, sort and order, and produce new vegetation through rational methods of regeneration. To govern interactions between forests and those who relied on forests, they implemented a series of protective regulations in the name of conservation. They began to harvest, standardize, transport, value, and market timber in a far more systematic fashion as part of the strategy to improve the forest estate. They invented and incorporated into governmental practice a whole series of new official procedures so as to accomplish the tripartite goal of revenue, conservation, and improvement. In isolated cases, administrators and natural historians had begun to use some of the above practices by about the late eighteenth and early nineteenth centuries. But the earliest compilation of all these practices in the same region and as part of a systematic whole occurred in Burma under Dietrich Brandis during 1856-62. These procedures had a very specific underlying conception of forests: an ensemble of resources to be known, measured, understood, valued, used, improved, and sold by deploying numbers. Statistics and numbers facilitated the spread of standardized practices throughout British India because they allowed precise measurement of the effects of specific procedures.

Assess ing Burma's forests

Knighted for his work on Indian forests, Brandis was the first trained forester[19] to serve in any major position for managing forests in India. Trained in Germany, he was appointed inspector general of India's forests in 1863.[20] His work in Burma between 1856 and 1862 preceded his appointment as

Inspector General, and foreshadowed the lines along which the Indian forest operations would develop over the next several decades.[21]

Brandis's operations in Burma were preceded by at least three decades of efforts by people like Wallich, Tremenheere, Guthrie, and McClelland to harvest timber sustainably. To systematize forest exploitation, these administrators had made several proposals to their superiors: eliminate private contractors, strictly limit shifting cultivation, and protect forests from fire. Brandis's work took these proposals further and brought them together to establish a system along European lines for managing India's vegetation wealth. When he arrived in Pegu, Brandis (1897:108) began with three objectives: to protect and improve teak and arrange harvests so as to stay within regenerative constraints so as to ensure a permanent and sustainable yield; to control human interactions and make the inhabitants of forests his allies; and produce an annual surplus revenue as soon as possible.[22] These objectives, roughly related to the goals of improvement, conservation, and revenue, translated into a number of concrete procedures. Those related to the assessment of forests were basic. They generated the necessary information to satisfy all further objectives.

To assess the condition of the forest, Brandis adopted the "linear valuation survey" method. In this survey, Brandis and his assistants walked along pre-determined transects: a road, a ridge, a stream, or an imaginary line Said across the area of interest. They surveyed the vegetation, focusing mainly on teak since it was the only remunerative timber species at the time.[23] As they walked, they identified teak trees, classified them according to their girth, counted them by making notches on pieces of bamboo representing different size classes, and on the basis of this count, calculated the amount of timber in each tree class according to established formulae.[24] Initially, all trees that could be seen from the line were counted. But finally, a distance of fifty feet on each side of the line was established as providing greater reliability in measuring the number of trees and extrapolating from the linear sample to the entire population (Stebbing 1922).

Brandis divided the counted trees into four categories: 1) Trees of 6 feet and above in girth; 2) Trees whose girth was between 4 feet 6 inches and 6 feet; 3) Trees between 1 foot 6 inches and 4 feet 6 inches; and 4) Trees less than 1 foot 6 inches and seedlings (Stebbing 1922). The surveys led him to conclude that the number of tees in the first three categories was nearly equal in forests that had not recently been, worked. As a principle of extraction he proposed that only trees belonging to the first category should be felled. Further, only as many trees should be felled as would be replaced during a year by the growing stock of second class trees.

To ascertain how many trees from the second category would attain the dimensions of the first, he needed first to establish a relationship between age and girth. Using information from Bombay, Java, and Madras, he decided that one twenty-fourth of the first category of trees could be cut each year without endangering a sustained output. Indeed, since the number of trees in the fourth category exceeded that in other classes, it was likely that over time forests would become richer in teak than they were when the department commenced working them. Using the valuation survey, Brandis also established the total number of first class teak trees in all the forests under his jurisdiction. With better information from surveys in Burma he amended his initial figures, but the principle for harvesting remained the same: cut no more than the annual increment.

This principle of harvesting only the annual increment can be seen as an adaptation of the striking description of a "Model Forest" presented by McGregor in his *Organization and Valuation of Forests.*[25] It is worth citing at length:

> "Imagine a uniformly productive tract," he says, "divided into any number (n) compartments of equal value; the first stocked with trees one year old, the second with trees two years old, and so on in an ascending series up to the *nth* compartment stocked with trees *n* years old. And let the revolution or age at which the trees of any compartment are to be cut, be *n* years. The land will then be parceled out into a number of

compartments equal to the number of years in the revolution, and each one will be stocked

with trees one year older than those of a compartment immediately proceeding it in age, so

that there will be a complete series of groups of all ages from one to n years old. If now,

all trees n years old, that is those in the nth compartment, be cut and the land immediately

stocked with young growth, it is evident that, at the end of twelve months, the group of

trees next in order of age, or n minus one year at the time of first cutting, will have

advanced to maturity, while the plants in the first coupe will have taken the place of the

youngest crop in the series, and the plants of all intermediate compartments have advanced

one year in age... The yearly produce thus obtained is, in fact, the annual growth, or

interest, of the material standing on n compartments, and is called the sustained yield, and

a forest so organized is called a *model* or ideal forest, because it represents a state of

things which is theoretically perfect..." (Cited in Kirkwood 1893: 39).

No actually existing forest resembled this model[26] Tremendous variations marked different patches

of land classified as forest. Differences existed in trees on that land, growth of different trees, annual

growth rates of different species, composition of species, interactions among different species, influence of

insects and other animals, and climatic and edaphic factors. The ability of foresters to ascertain the number

of trees, the volume of biomass, and the value of timber in a given area of forest hinged on their being able

to account for multifarious influences by using statistical averages and standard deviations that depicted the

relationship between area, volume, annual increments, and commercial value with a tolerable degree of

fuzziness. Planning and improvement of plans, and therefore, systematic exploitation of useful trees

depended on numbers and improvements of statistical calculations.

Many of the techniques for acquiring relevant information about an area of vegetation, and the

relationship between numbers representing the forest had been developed and were being used and taught in

Europe.[27] Germany and France were especially vigilant in protecting their forests to facilitate commercial

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harvests of timber (Rajan 1998a). Although Colbert's Forestry Ordinance of 1669 is well known as one of the first centralized efforts to control forest harvests, its implementation was patchy in the extreme;[28] and French forestry began to use statistical methods systematically only in the nineteenth century. Early examples of sustained and thoroughgoing forest governance are to be found of course in other European states as well, Indeed, some of them began using forest protection and production methods by the fourteenth century (Heske, 1938). Whatever the answer about the colonial origins of environmentalism, it is evident that European management of vegetation with an underlying conception of forests as entities that could be shaped and used to serve human objectives predated colonial adventures of European states by at least a couple of centuries. Similarly, systematic management of vegetation using statistical techniques and mathematical relationships did not begin in India until it was imported and adapted from Europe, especially Germany. What we understand as forests today has depended significantly upon the spread and normalization of these statistical and numerical techniques, and their underlying conception of forests as model entities to be managed more efficiently for human consumption.

In significant measure as a result of the organizational and economic imperatives attached to the use of forests, the core conception of forests that came to prevail in India was based on European understandings and methods of governing forested landscapes. But there were significant impediments to importing, appropriating, and adapting specifically European techniques and knowledge base in the Indian context. For one, the number of species of trees in any tropical forest was immensely greater than that in European forests.[29] For a method of management that depended on extreme simplification of the landscape, this was a major hindrance. Second, even for the more important species in India forests, there was little or no available information about age, growth rates, and valuation. And, third, although British India had been fortunate all through the eighteenth and early nineteenth centuries in gaining from the knowledge of many noted natural historians, there were few trained foresters who could realize (in the sense of "make real") the new vision of forests.

But within the first fifty years of the establishment of forest departments, British administrators and conservators proved themselves equal to the task of addressing many of these difficulties in substantial measure. In Burma, Brandis had to draw on the silvicultural information on teak from south India. He refined initial data on the relationship between age, size, volume, and value increment over time, and encouraged those under him to develop their own numerical knowledge. Over the next three decades, Indian foresters began to publish information on the average rates of growth of different Indian trees,[30] and established definite relationships between age, directly observable variables such as diameter and girth, and indirectly calculated variables such as tensile strength or moisture content. Sylvicuitural information was critical to effective plans for long term management and rotation. Reports in *Indian Forester* and information from various Forest Manuals began to contribute useful data to assist foresters' management goals by the mid 1890s.[31] Training of Indian foresters began to take place in an Indian school in Dehradun as early as 1878.

Improvement: Consolidating and reducing diversity

The acquisition of knowledge about trees, their occurrence, and their distribution was a critical first step to make forests ready for government. This basic knowledge facilitated assessments of the volume of valuable timber, and models for exploiting it sustainably. But management became far easier when the diversity of tree species in any given patch of forest declined. In Germany, the desire to reduce diversity and produce timber that yielded the highest revenues had meant that foresters usually favored species that produced timber rather than firewood, and established monocultures of commercially valuable species.[32]

In Burmese forests, where species diversity was too high and growth rates of hardwoods too low to permit clear felling and fresh planting on a sustainable basis, other measures could still enhance efficiency. Foresters sought to encourage the growth of teak by protecting it against natural obstacles such as creepers, parasites, shade of other trees, and fires. To give teak more room to breathe and grow, Brandis initiated research into the qualities of other trees in Burmese forests so that they could be marketed. Even if their

sale only recouped the costs of harvesting and marketing, their removal would at least tree up more room for teak.

To improve the prospects for teak growth, Brandis initiated several other measures as well. These Included experimental plantations, the creation of nurseries, and scattering of teak seeds in the forest. Large areas with bamboo were cleared by fire, and seeds were scattered over the land to promote the cultivation of teak forests. To counter the high costs resulting from the scattered distribution of teak in Burmese forests - few forests contained more than 1 teak tree out of 300, and half a million marketable teak trees were scattered over 7,000 square miles - consolidation of teak patches was essential.[33] His procedure was to select areas that were suited to the growth of teak, and through protection, sowing, and planting increase the density of teak. Higher concentrations of teak justified the construction of roads, timber slides, sheds, and offices.[34]

Conservation: Protecting the forest and regulating human actions

In Burma, a complementary requirement was a set of twenty-two rules that Brandis introduced to spell out in detail how exactly the protection of forests was to be assured. The rules established government ownership over forests in the name of conservation and extension, and portrayed the Forest Department as the appropriate agency to implement the rules. They can be seen as encoding the right way to act in the forest. Of the twenty two rules, sixteen referred to direct operations in the forest and the remainder specified issues of ownership, personnel, and how disputes and conflicts were to be settled. Fourteen of the sixteen rales sought to regulate behavior with respect to teak. Girdling and felling, cutting or breaking off branches, injuries to seedlings and smaller trees in the process of removing felled timber, fires and clearing of vegetation for *toungya* (shifting cultivation), construction within designated boundaries of forests, methods of obtaining timber for private subsistence use, procedures for removal of stumps and branches - all of these activities were regulated most strictly where teak was concerned (Stebbing 1922: 373-76). For Brandis and his department, forests in Burma existed and were to be regulated to the extent they contained

teak: "Teak does not form pure forests, but is always mixed with a large number of other trees which are either valueless or of little value" (Brandis, 1881b: 1).[35] These other valueless trees were slowly to be eliminated from forests that were being governed for profit.

As early as 1876 Brandis was using statistical arguments to defend the demarcation of larger areas as forest reserves in Burma. Using figures on the yield of teak from government forests in Burma and the import and export of timber from Rangoon and Moulmein, he advocated the creation of forest reserves in which toungya cultivation would not occur. His initial figures were not ambitious. He suggested that 1,200 square miles of reserves would be sufficient (Brandis 1876:2,10). This limited ambition did not survive the erosive flow of large revenues. In 1928, the area of reserved forests in Burma was 29,000 square miles, nearly 25 times the initially estimated requirement. The forest department controlled more than 67 percent of Burma's land (GOI, 1930:17). The story was similar at an all India level, although with important regions! variations. Figure 2.1 provides information on the growth of area that the forest department controlled, and the extent of its reserved forests between 1898-1940.[36]

(Figure 2.1 here)

One of the more interesting innovations that Brandis introduced was to shape the practice of toungya. As part of toungya, rural dwellers residing near dense vegetation felled and fired the vegetation prior to cultivating the land for a few years. Brandis's objective was to tame this practice to the ends of forestry. As early as 1856, he encouraged toungya cutters to sow teak seeds and seedlings in regular rows together with the rice they planted. Over the next two decades, this practice grew into a regular system, with many of the toungya areas being stocked with teak at costs far lower than those incurred in regular plantations of teak. That Brandis realized the value of persuading local populations to become accomplices in governing forests is reflected in his remark, "This, if the people can be brought to do it, is likely to

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become the most efficient mode of planting teak in this country" (Stebbing 1922: 378). However, attempts to introduce the practice in other parts of India met with only indifferent success.

Revenue: Working the forest

The systematic procedures that went into calculations of teak's availability and protection were also evident in the methods adopted to work the forests and raise revenues. When Brandis arrived, the system in force in much of Burma was one in which duties were levied on each log that was felled. Felling was either free or restricted to grant- and permit-holders. Mature teak in a given forest could also be sold to the highest bidder. Under this system, the winning bidder would be responsible for felling and marketing the timber in the forest. An alternative for Brandis was to work the forests directly, transport the felled timber to timber depots, and sell the seasoned wood to the highest bidder. The existing system in which contractors exercised significant discretion in felling trees led often to clearfelling, conforming neither to the objective of forest conservation nor to the appropriation of significant revenues. Brandis devoted some energy and thought to choosing between the two alternatives. The first alternative would be preferable both because it meant less work for the forest department and because it would encourage private enterprise. But despite considerable reflection, it proved difficult to create a structure of enforceable rules that would make bidders in the forest harvest only mature trees, plant seedlings, protect trees that were not supposed to be harvested, and construct reliable roads and other infrastructure to facilitate future harvests. The enforcement of rules was equally difficult, or at least prohibitively expensive, given the levels of staffing in the forest department. As a result, Brandis advocated the adoption of the second alternative. Under this system, the forest department harvested timber either directly or with the assistance of contractors, had it transported to its depots, and then auctioned the seasoned timber to highest bidders (Stebbing 1922: 370-72). The role of middlemen, however, continued to be crucial in several ways. Although the forest department controlled lands demarcated as reserved forests, several different actors assisted it in harvesting timber all through the

latter half of the nineteenth and the first half of the twentieth century (See figure 2.2). Note how middlemen purchasers played an especially important role during the first World War and the Great Depression.

(Figure 2.2 here)

Brandis's preferred method to work the forest was the same as the one adopted in the Anaimalai teak forests earlier in the decade. There, Lieutenant Michael, appointed superintendent of forests in 1854, directly employed axemen and sawyers to shape felled teak logs into planks, season them partially in the forest itself, and transport them along a river after they had been slid down a slipway. But for the most part, forests in India were worked under far less restrictive conditions during this period. In Bengal, where Dr. T. Anderson was appointed the first conservator of forests in 1864, most forests had been leased to contractors who felled timber under few specified restrictions. Efforts at departmental working of forests continued to generate difficulties even in the late nineteenth century (Sivaramakrishnan, 1999:156-58). Much of what Brandis did had already been part of state regulations, in one province or another. But he brought these different practices together, wove them into a pattern, and created a series of modular procedures that simultaneously served as a blueprint for actions in the forest, a justification of those actions, and collectively, the first comprehensive code aimed to produce forests.

The most distinguishing and lasting aspect of his operations in Burma were perhaps his efforts to create a body of statistical knowledge about forests that would be useful for their commercial exploitation and yield efficient results.[37] The concern for statistical information insinuated itself into various reports that all forest departments began to prepare from the last quarter of the nineteenth century. As the next section makes clear, the statistical nature of these official reports was very different from the early textual descriptions of Indian forests by natural historians, medical surgeons, and administrators.

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<u>Forests of Statistics</u>[38]

> The study of natural history should be conducted with special reference to forestry, but for economic forestry a knowledge of mathematics is equally important.
>
> — W. Schlich, *Manual of Forestry,* 4.

If one looked for quantitative methods or massive tables of quantitative information in Indian natural historical writings in the eighteenth century, one would look in vain. Most of the writings on Indian flora were descriptive. Some were highly detailed classifications in the Linneaen mold.[39] Others were accounts of the country, with special emphasis on its vegetation. Several general publications on Indian flora had appeared early in the process of colonization. Grove tells the fascinating story of the foundational role of indigenous taxonomies and knowledge of plants in the seventeenth century for the later creation of "European texts on south Asian botany" (1998a: 192), John Forbes Royle's *Illustrations of Himalayan Botany,* published between 1833-39 described 207 families of plants, and was later described as the first and only attempt to connect features of plants and their distribution in northern India with the elevation and climate they inhabit (Hooker and Thompson, cited in Sangwas, 1998:219).[40]

The more descriptive studies of forests and the country were often produced as exploratory reports, travelogues, notes by traders, official descriptions, letters, and despatches.[41] Many accounts contained some passing information about forests as part of a larger concern with the resources in an area. So even when there was quantitative information about other features of the social landscape such as villages or cultivated land or the major crops, little similar information about forests was available. Most reports on forests during the early eighteenth century gave only a general sense of the important features of the vegetation in an entire region,[42] and in some cases saw forests only as obstacles to the extension of agriculture.

By the middle of the nineteenth century, many of the reports written by natural historians, medical surgeons, and administrators described high levels of wasteful tree felling by private contractors and timber

traders, and the effect of such felling on changes in local climate and rainfall patterns. If some of them

made measurements of trees during their travels like Nathaniel Wallich, it was less an attempt to assay the

forest itself, more a means to portray outstanding specimens of valuable species they might have

encountered (Stebbing 1922:139).

The relative trickle of writings on natural history turned into a flood of scientific facts, figures, and

statistics in the latter half of the nineteenth century as the professional requirements of a new forestry

service began to be felt.[43] One crucial difference between many of the publications during this later period

and those in the earlier part of the century was their greater emphasis on precise quantitative information to

illuminate various aspects of what by this time forestry had come to denote: forest utilization and

protection, forest surveys, preparation of working plans, sylviculture, and forest policies and regulations.

Especially important in this period was the creation of a large number of periodicals devoted to forestry.

The *Indian Forester* was founded in 1875 by the second Inspector General of India, William Schlich. The

different provincial forestry departments prepared regular working plans and published annual reports that

condensed the chief features of their operations in the form of statistical tables. A large number of other

official periodicals began to be published regularly with the creation of a Forest Research Institute in 1906,

among them, *Forest Bulletins, Forest Pamphlets, Forest Leaflets, Forest Records, Forest Memoirs,* and

Forest Manuals. Pocketbooks that foresters could carry conveniently provided yield, volume, outturn tables

by species, and masses of statistics that would help foresters convert a given log of wood into its content in

cubic feet or decide on monthly or annual wages given the rate for a day's wage (Howard 1937). In

addition to the Forest Research Institute, different provincial forestry services also published their own

series of specialized pamphlets and bulletins on issues of more regional interest.

The passage of the Government Forests Act in 1865, and especially the Indian Forests Act of

1878[44] was responsible ia significant measure for the standardization of data collection and reporting for all

of India. The first Annual Report of the Forest Administration in India after the passage of the Forests Act

of 1878 contained quantitative information mainly on the area of land under the control of the forest department, and the revenues and expenditures of the provincial forest departments (Brandis 1879). There were other tables scattered throughout the report, but the nature of the information was more summary than thorough. It hinted at the quantification that was to come, especially in the everyday operations of the forest department with the embracing of working plans for increasing areas of land, survey operations to demarcate and bound departmental forests, and adoption of mensuration techniques for more and more timber species. Within the next decade, all forest departments had begun to follow uniform reporting requirements to describe the state of forests under their control and their actions in forests. Masses of statistics were the result

Quantification was necessary for the desired uniformity in provincial and divisional operations. But it faced significant difficulties. Brandis summed up the tension well. "Forest management must always be essentially local; its operations are governed not only by the peculiar climate and character of Forest growth of each district and province, but equally so by demands of trade, the land tenures, and the customs regarding the use of the waste and Forest on the part of the agricultural population and by other consumers which prevail in each district. Yet on the other hand Forest administration in all provinces and district is, or ought to be, governed by the same general principles, and hence a comprehensive review... cannot fail to be useful and instructive" (1879:1).

Despite difficulties, and periodic modifications in reporting formats, the annual reports of forest administration begin to give a flavor of the extent to which the work of the forest department depended on quantified measures of operations and on numbers to represent what was happening to Indian forests. The Report for 1903-04, for example, is 64 pages long of which 30 pages at the end are devoted to 24 tabular appendices of numbers describing forests in each province. In the textual part of the report, there are another 14 tables. Together, these 38 tables provide information by each, province on land classified as Reserved, Protected, and Unclassed forest, changes in the area of these classifications, the progress and

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nature of survey operations and boundary demarcation, adoption of working plans, breaches of forest rales, types of offences committed in relation to forests, protection from forest fires and grazing, area covered by plantation activities, output of different forest products, the agencies involved in forest exploitation, the value of forest products that were harvested, and detailed budgetary statements on revenue, expenditure and surplus. In addition, the report contained three major maps that plotted the spatial relationships for changes in forest area, and land areas that had been surveyed or brought under regular working plans. These tables, appendices, and maps were built from the ground up, on the basis of statements submitted by each provincial forest department. The production of numbers was unceasing and insufficient. It was insufficient because more numbers could only improve, never perfect the numerical representation. But the lure of better, more accurate representation provoked the production of ever more numbers. But by any measure, the various reports of the different forest departments are a remarkable feat of synthesis, carried out year after year.

Some of the results portrayed by the Annual Reports of Forest Administration for India are staggering. Over the five years between 1899 to 1904, the area under the direct or indirect control of the forest department changed from 122,000 square miles to 232,000 square miles.[45] Looked at another way, in these five years the forest department almost doubled the land it controlled: 24 percent of India's territory, from just about 13 percent. Such rapid progress in acquiring land could be matched only slowly by the organizational efforts necessary to systematize the activities on the acquired land.

Other figures are at least impressive. The surplus of 10 million rupees in 1904 was just about half of the total revenue of 22 million for the forest administration. The ten million rupees represented a nearly five-fold change during the preceding 30 years. In 1874, the department had generated a surplus of just 2.2 million (Eardly-Wilmot, 1906:2, 26). Figure 2.3 shows the increasing financial scale of the operations of the forest department in the first six decades of its formation. It is clear that the forest department enjoyed a surplus of revenues over expenditures in every year of these six decades.

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(Figure 2.3 here)

Yet others statistics simply reveal how the Department visualized its major functions. For example, the report presents information on breaches of forest rules after categorizing them by each type of offence (fire, unauthorized felling, appropriation of non-timber products, and grazing), whether the case was resolved, and whether the identity of the offender was known. All over India, nearly 60,000 offences were detected in these different classes. Of these, more than 80 percent concerned illegal grazing or removal of forest produce. The author of the report expresses an ongoing concern with phenomena represented in the report through their numerical value. But the numbers do not always make sense. Although the department collected figures on breaches of rules religiously, forest officials were unable to explain variations over time in these figures. The 1906 Annual Report asserts, "It is impossible to give reasons for these statistical variations. The case of each Province or even District presents different conditions which Local Governments treat, after due investigation, with punitive or alleviating measures suited to circumstances" (Eardly-Wilmot, 1907: 9). We shall see in the next chapter how the government in United Provinces chose to handle extreme variations, again represented by numbers, in the grievances that Kumaonis expressed against the activities of the forest department.

The forester's bafflement when forced to explain variations in social pressures on forests was at odds with their ambition and accomplishment where more biological aspects of control were concerned. An established science of forestry gave the forester an urgent mission, unprecedented tools, and enthusiastic confidence to remake India's forests in the image of the model. Observations and experiments provided the basic information necessary to manage vegetation. Surveys, demarcations, and settlements of land prepared the ground upon which this information could be used. Working plans were the chief instruments to implement desired objectives.

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By the 1890s, experiments to examine the effects of various methods of propagation, growth, and management of various indigenous and exotic species were under way in most parts of India. Results were disseminated through a variety of vehicles, including the *Indian Forester,* but especially through special series of publications such as *Forest Bulletins* and *Forest Records.* A number of experiments simply recorded failure. Despite sustained effort, for example, rubber *(Hevea braziliensis),* and mahogany did not take root under Indian conditions. Some experiments attempted to investigate the prospects of products such as lac and camphor, or coffee, cardamom, and vanilla, rather than timber alone. But the bulk of the experiments focused on timber, with a significant emphasis on ascertaining the germination rates, rates of growth, and area to volume conversions for various timber species. The effects of new experiment-based knowledge were becoming obvious by the first half of the nineteenth century. "Revolutionary advances in experimental techniques based upon modern statistical methods were introduced in most of the provinces after testing at Dehradun and the proportion of valid results now obtained in silvicultural experiments is very much higher than it was formerly" (GOI 1941:6);

Each year, the forest department also undertook survey, demarcation, and settlement operations for the land it controlled. By 1905, the Department had surveyed nearly half of its possessions. Surveys were followed by demarcation of the areas owned by the Department, and their settlement as Reserved or Protected Forest. Careful accounting revealed the progress (or its lack) in each of these domains, by providing precise, even if not always accurate, numbers.[46] For example, between 1878 and 1882, the area reported as reserved forests for a given year changed in each *Annual Review of Forest Administration* published by the forest department.

The influence of numbers and statistics in imagining and creating a new type of forest was perhaps the most visible in plantations that the forest department attempted to create. Overall, plantation forests formed a very small proportion of total forest land. The 140,000 acres (225 square miles) of plantations in 1908 were just about 0.1 percent of the nearly 235,000 square miles of land classified as forest. But their

consideration is important for two reasons. Forest department actions in plantations are the most comprehensive official interventions, both when they succeeded and in case of failure. Department officials kept far more careful records of their activities and the vegetation in plantations than was possible in areas that were already under vegetation. Secondly, when successful, plantation forests produced far higher levels of revenue and reliable information than forests that were managed primarily through clearing, thinning and felling and without much recourse to sowing and plantation work. Consider as an example, the well known Nilumbur plantations in Madras, one of the earliest effort to create a forest completely as a plantation. The value of teak in just about seven hundred acres planted between 1842 and 1850 was calculated at more than 1.1 million rupees in 1878 (Beddome 1878). Compare this figure with the surplus of 2.2 million rupees for the entire Indian forest department in 1880 (Ribbentrop, 1896: 70)! The actual experience of revenue realization came nowhere close to these optimistic estimates of the 1880s.[47]

The District Collector of Malabar, Mr. Connolly, initiated the Nilumbur teak plantations in 1842.[48] The basic reason was the perceived shortage of good teak timber for shipbuilding.[49] Nilumbur valley was selected for the plantations because of its combination of favorable soil, rainfall, and temperature for the growth of teak. It was also conveniently located to float teak logs down the Beypur river once trees reached the appropriate size. Although land in the valley was mostly under private ownership, the Company purchased a large area from one of the temples in the area. Over the next forty years, the size of the plantations reached nearly 19,000 acres, and the plantations became a forest division whose land was classified in 15 separate blocks.

To guide forestry practice, Connolly specified seven types of rules that resembled some of the prescriptions for protection that Brandis was to create in Burma a decade later. These rules addressed issues of planting, inventory, felling, contractual arrangements, monitoring, enforcement, and personnel.[50] Initially, the sowing and germination of seeds required much experimentation. Consultations with visiting botanists yielded little success until the appointment of Chatter Menon, a "native" as the sub-conservator of

the plantations. Menon's method for germinating teak continued to be used for the ensuing half-century, and he remained in charge of plantations until his death in 1862.

One of the most comprehensive records of the status of the plantations is available in an 1878 report prepared by the Conservator of Forests at Ootacamund when the Government of India sent several teak specimens from the plantations to an exhibition in Paris (Beddome, 1878). This report provides information on the growth of teak in the entire plantation. The forest department had planted new acreage each year, starting from 1842. Beddome's report classifies each year's planting according to the quality of soil and the rate of growth of trees. With information on every tree above a certain size, the report is invaluable as a statement of the care lavished by the department on raising the plantations. The complete exclusion of fire, cattle, and creepers had led to "wonderfully straight [trees] with only one stem... The immense length of the boll in every tree [gave] the plantations an enormous advantage.... since the yield per acre will be out of all proportion to that in any natural forest in India" (Beddome, 1878: 26).

For the argument in this chapter, the most interesting part of the report are its statistical appendices. The forest department considered a density of sixty trees to the acre as the most desirable. Beddome lists precise measurements of trees for several half-acre plots from different years of planting to demonstrate shifting patterns in the growth of teak from its early to later years, and to advance an argument about the remarkable profits the plantations were likely to yield. Initially, for almost the first twenty-five years of its life, teak grew the fastest in height. It is only then that it started amassing girth, increasing by 200 to 400 cubic feet per acre in a single year. Once teak achieved the minimum length of 40 to 50 feet in about two decades, its value increased most from improvements in girth. Beddome's measurements reveal the importance of numbers, averages, variations from the average, and mathematical equations in calculating the volume of wood in a given plot of land. Once the volume of wood yield over time was known, the calculation of revenues and profits, decisions about future plantations, and the timing of harvests and transportation to the market were simply a function of prevailing prices.

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The use of numbers and statistics in departmental work was facilitated immensely by the production of new manuals of silviculture and forestry. These manuals helped standardize the methods used in managing landscapes as forests by providing detailed information on the suitability of various methods of treatment and felling, and tending forests from their early youth to the point where they began to produce large timber. In addition, these manuals provided standardized procedures to measure the volume of wood in a given tree and/or patch of land using instruments and equations. The yield tables they contained for different types of woods and soils stabilized expectations of foresters about what to expect under "normal" conditions from the area and species they were managing.

If these manuals were useful for creating new forests, they were invaluable for shaping the contours of existing vegetation. The need for complex calculations using numbers and mathematics was obviously greater for vegetation that had not been planted at a known time and whose growth rates therefore could be estimated only by positing rough relationships between girth and age. Assessments of market value of acquired landscapes, where trees of many different species were mixed with a vast and undetermined assortment of other vegetation, needed an immense labor of identification, classification, and enumeration. To this end, the forest department prepared detailed working plans to consolidate its hold and manage the vegetation over the lands it came to control.

Working plans

The rate at which different parts of India came under working plan management varied immensely. In 1908, 90 percent of the forest land in United Provinces and all of it in Northwest Provinces were being managed through working plans; but working plans had been prepared and sanctioned for only 4 percent of the area in Burma, eastern Bengal, and Assam (Beadon-Bryant, 1910:33). Although all working plans shared a core of common features and a similar organization of materials, they did not all contain precisely the same information, especially in their numerical appendices.[51] Some of them focused more on describing the existing state of the vegetation or on the supplementary regulations necessary to control and reshape

existing vegetation, others on the means through which such forest-making could be accomplished or on the anticipated outcomes. And ultimately, to be meaningful over time, working plans for the same forest could undergo modifications depending on the extent to which anticipated outcomes materialized over the period for which the initial working plan was formulated - anywhere between twenty to forty years.

Variations in the contents of the plans depended on the relative importance of the objectives for which a particular patch of land was to be managed: for firewood, to stabilize and contain soil erosion, as a plantation forest, for rationalization of the existing diversity, and most importantly, to improve timber yield. Variations were also a product of the different conditions that department officials encountered across space, and because of the different histories of government that various patches of vegetation had undergone. Apart from differences that existed already when the forest department became part of the history of a given landscape, the timing and nature of its entry itself produced variations. It was precisely because existing variations had to be tamed in the service of a common goal that working plans exhibited variations in their contents and prescriptions. But the common objectives of conservation, improvement, and revenue also lent the plans a common organizational core if not identical content

Each plan was based on several visits to the field by foresters. Plans were typically divided into two parts: the first described the situation as it was: a representation of the area that was to be made to conform to the ideal of the forest. This part was filled with information about climate, soil, topography, geology, size and boundaries of the area, vegetation condition, species composition, distribution of the existing "crop of trees,"[52] systems of management and property, levels of products, quantities and value of harvests in the past, local customs and agrarian practices (where relevant), and how the area was connected to markets and means of transportation. Where possible, maps revealed the spatial relationships among the different parts of the area that the plan sought to reshape.

Numerical information was important in ascertaining the situation on the ground in a number of ways. Foresters used tables of numbers to classify a given area of land and vegetation on the basis of a

whole range of factors. Take as examples just three elements: climate, soils, and vegetation. Information on different aspects of each of these elements was available in numerical tables that facilitated estimates of the potential performance of a given patch of forest. For climate, foresters might consider rainfall, temperature, light, and moisture; for soils, they might examine mineral composition, organic matter, water retentivity, consistency, permeability, and depth; and for vegetation, they might focus upon morphology, space requirements, age, height/growth relationships, volume, life expectancy, means of reproduction, and diversity within the area for which working plans were to be prepared. An analysis of the forest in terms of these tables of numbers made them accessible to intervention and management as relationships among these numbers became clearer with successive experiences over time. Tables of numbers also allowed informal comparisons across plans at a glance because averages and tables revealed how the situation varied from the norm.

The second part of the plan concerned the grid of legibility and control that would make the existing features of the landscape match the goals that were the basis of any working plan. The selected area was divided into working circles, each with an area of anywhere between just a few square miles to more than a hundred square miles. The type of vegetation, and the extent to which the vegetation required similar treatment before timber could be extracted usually determined the creation of a working circle. These circles were further divided into compartments or blocks based on natural landmarks within the forest, and so as to create well-bounded divisions that could be harvested in a given year. The vegetation within each compartment and circle was then classified into specific size classes, trees in each class were roughly enumerated, and the total was summarily valued. Ail the measurements, counts, and valuations were carried out only for the dominant and valuable commercial species that the compartments contained.

Once these facts were determined, methods for treating the vegetation and felling of the timber followed more or less as a matter of course. Only trees over a certain minimum girth could be felled with any profit. Once this minimum for different species was determined, rates of growth and distribution of size

classes across the different compartments influenced the timing of treatments and fellings. The plans made proposals about the year in which different compartments should be worked and the number of trees to be felled, using a rotation of anywhere between 10 to 40 years for a compartment. Since trees in a compartment that had not been worked at all did not conform to any particular size class, it became necessary to return to the same area so as to reduce size class variations within it. Historical information on rates of growth and past results helped fine tune proposals for the future.

In addition to prescriptions for treatment and felling, each plan also listed detailed guidelines on other activities and restrictions that were necessary in a working circle. These concerned planting, thinning, clearing, and improvement-felling operations that could amplify the growth of selected trees. To prevent external influences from affecting the rate of growth, the plans also stipulated how grazing, fodder harvesting, firewood collection, removal of subsistence timber, and fire were to be controlled. It were often these additional restrictions that set forest department activities and staff on a collision course with villagers and others who had depended on forests for their lives. In region after region departmental restrictions on human activities and cattle movements in forests resulted in widespread grievances and scattered efforts to address these grievances. Recall that the first forest conservatorship in India had to be abolished precisely because of the ire it aroused. Later forest operations in Bombay Presidency led to letters of complaints signed by more than 18,000 people affected by the these operations, and the appointment of the Bombay Forest Commission in 1885 (Bombay Forest Commission, 1888). The next chapter explains at greater length similar tensions in Kumaon.

Working plans wove together the multiple strategies of control through which foresters sought to reshape vegetation and create forests that would fit their objectives of more efficient and convenient exploitation. Plans expressed most explicitly the confidence foresters felt in the desirability of reshaping vegetation and landscape and their ability to accomplish change. The sheer number and magnitude of tasks involved even in creating a single plan reveals the reliance foresters placed on numbers in drawing lessons

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from the past, and making proposals for an uncertain future. Classification and enumeration of all trees that could be harvested, and the creation of a schedule of harvests that stretched up to fifty years in the future could simply not have been possible in the absence of statistical techniques, expectations about averages, and projections about future prices of timber based on past evidence. In the absence of statistical histories of actual results, quantified information about likely production levels (based either on past evidence within the same forest, or on results of experiments carried out elsewhere), and numerical assessments of potential pitfalls even the undertaking of working plans would have been unimaginable. Before colonialism it was.

Of course, no working plan came to pass as conceived initially. If the success of working plans is to be assessed on the criterion of whether they were more or less completely presciently formulated and smoothly implemented, then all working plans must be considered a failure. Plans needed constant modifications in light of experiences about the behavior of trees and associated communities of vegetation, and unanticipated actions of people who had depended on appropriated land. The next chapter examines in greater detail the plans of the Kumaon forest department to transform the region's landscape into different categories of forests, the resistances these plans encountered, and the resulting shifts in technologies of government. The point is ultimately less that events and outcomes as they were imagined in plans did not conform to what happened after plans were executed. That is the fate of all plans, in all places. Rather, I have tried to show that Indian foresters were able to create and modify forests in unimaginable ways, and to an unprecedented extent, using techniques they brought together in the shape of a plan and which were based upon numerical representations of the world of vegetation. As the conquest of landscape proceeded under the auspices of the forest department, little was left unchanged.

Before the end of the eighteenth century, *man* did not exist.... He is quite a recent creature, which the demiurge of knowledge fabricated with its own hands less than two hundred years ago.... When natural history becomes biology, when the analysis of wealth becomes economics, when, above all, reflection upon language becomes philology... then, in the profound upheaval of such an archaeological mutation, man appears...

— Michel Foucault, *The Order of Things*, 308, 342,

(emphasis in original)

Our Indian forests were thus exposed at the same time to the legitimate demands of a rapidly spreading modern civilisation, and the waste which accompanies a more primitive state of society... even when protection was afforded, this was for many years not extended to the forests as a defined organism in the household of nature, but merely to a few marketable species.

— B. Ribbesitrop, *Forestry in British India*, 61-62.

The previous sections have tried to present some of the strategies of knowledge/power that were central to the colosial government of forests. They have also tried to document how numbers and statistics were central to these strategies of power/knowledge. The idea of Indian forests was based upon the purposive selection of specific features of a set of objects. No prediscursive understandings of that set of objects called "Indian forests" survives the history of selective representation and construction launched in the nineteenth century. What forests today mean, how they are imagined as part of a natural heritage that needs to be conserved and protected, managed and sustained, and the strategies through which this

inheritance can best be used and passed on to future generations could not have been possible without widespread and enduring recourse to statistics. The standardization that numbers introduced in representations of the occurrence, density, health, and diversity of forests continues to shape understandings of forests to this day, even if we might agree that the political-economic regime around forests is undergoing a significant shift.

Colonial interventions to shape landscapes to bring forests into being had three basic features. For one, they were founded on an underlying conception of forests as valuable resources that required demarcation, exclusion, and government to yield optimum levels of production. Grove (1993) points toward the management of forests in pre-British India in the kingdom of Travancore as well as under Maratha rule on the west coast According to Grove, the most thoroughgoing conservation occurred in Sind where local rulers had initiated afforestation programs to create hunting grounds and relieve firewood shortages. Certainly in these and other indigenous systems of control one can discern a vision of forests as valuable for specific purposes. But colonial policy initiated something more: the possibility of surveying, classifying, and then governing forests through the application of specific techniques of power/knowledge aimed at the improvement of a given resource. Even in Sind, the most significant aspects of precolonial conservation were enclosures, appointment of guards, scattering of seeds, and thorough involvement of local governments in protection (Stebbing 1922:280). The application of new strategies of knowledge to manage, improve and govern was absent. Although state controls over forests and harvesting of forest products had existed in pre-Bsitish India even if only in isolated places and for limited purposes, none of these controls led to the kind of governmentalization of landscapes that colonial administration sought, and in many places accomplished.

A second critical innovation in the making of forests was the institutionalization of the belief in the science of forestry. Proper government of forests implied an intimate familiarity with the condition of vegetation In a given area of land, and *the* application of techniques of improvement and modification that

drew upon the categories of knowledge and information that could be validated through a forestry science. The colonial impact on forestry science in India began with the publication of natural historical descriptions of the flora of the different regions in the country, but by the beginning of the twentieth century had assumed quite different forms. Even books about trees in India distinguished between those that were seen as commercially valuable and others that were less central to the concerns of the forester.[53] More fundamentally, the objective of the colonial forestry service was to bring the entire category of "Indian forests" under a regime of rules and practices that were outlined in forestry manuals, and assembled in working plans on the basis of their relevance to specific locations. This transformative process did not stop in 1900, or even 1947.[54] Indeed, it continues till today with even more precise controls and refined application as we will see in the following chapter on forests in Kumaon.

The third major feature of the idea of forests is what this chapter has focused upon with the greatest intensity: the reliance on numbers and statistics to represent forests. Numbers and statistics achieved their special force in conjunction with the previous two underlying beliefs about forests, but these two beliefs also gained greater credence and justification because of the deployment of numbers. The ability to use land for activities other than agriculture and make it yield a profit by managing its timber was enhanced by the ability of government to defend its day-to-day and long-term operations with the help of numbers. In this sense, one can truly refer to a mutual constitution between statistical representations of forests and what forests came to mean.

The use of numbers transformed what ideal forests looked like and how one might obtain such an ideal. It lent force to technologies of government by facilitating four different types of operations in forests, each visible in the description of working plans above. The first of these was directly related to the constitution of forests as a domain of governance. Surveys, demarcation, and settlement of forests into particular categories of protection was the basis on which a piece of land was called forest. As Schlich tells us, the Forest Act of 1878 defined forests simply as a legislated category, preferring not to get into the

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complex and ultimately undefinable question of what is a forest. A forest is just what the government says is a forest. Such a legal definition makes sense in the context of the confidence that given the right conditions, foresters could create forests in the image they considered ideal; witness the making of Nilumbur forests in Madras presidency. The vegetation in the domain of government called forests was tamed by the use of numbers.

The series of conceptual operations with their counterparts in practices and rules that then created forests involved the identification and enumeration of individual trees in a landscape, classification of these trees into territorially-fixed statistical categories tied to age and size, the creation of imagined forests by aggregating these categories on the basis of their yield of products such as timber, and valuation of the forest and its projected revenues by converting each category of trees into a volume of wood and its likely market price. None of these operations would have been possible without using numbers and statistics.

A second way in which new forms of statistical knowledge contributed to forest making was by helping create a new history for them, a history that would be free of the commonplace and extraordinary problems to which all landscapes and vegetation were typically subject. With the implementation of a working plan in a forest, it commenced a new life, one in which future performance was assessed numerically, in relation to the impact of new technologies of rule and management. The initiation of the government of forests meant the identification and precise calculation of the effects of such obstacles to steady growth as fires, insects, parasites, creepers, agriculture, grazing, firewood collection, unauthorized extraction of forest products, careless harvesting of timber; in short, any of a host of events that could limit or threaten those "wonderfully straight [trees] with only one stem" (Beddome 1878). Further, *it* was insufficient just to know the threats to timber growth. Exact figures on the magnitude and relative impact of different threats were necessary. Only by using numerical estimates on how a problem affected the forest could it become evident how and in what proportion available resources should be allocated to address these problems.

Numericized knowledge helped in a third way. It gave concrete form to potential obstacles to conservation and growth of forests, and it was useful in applying the specific silvicultural and other technologies that could ameliorate the ill effects of obstacles. This is where the science of forestry came in, with its promise of precisely stated higher levels of returns per acre of managed forests. Recall the discussion of working plans. Silvicultural knowledge based on field experiences, and later codified and disseminated by forestry manuals, indicated how, when, at what intervals, and with what results various methods of treatment could be used in lands classified as forests (Schlich 1910: 92-117). Methods of treatment were specified not just for the various stages in the life cycle of trees and vegetation, although obviously these were the most important aspects in governing forests. Techniques for treating forests were also available to address problems related to soils, geomorphology, and external human and non-human influences.

Numbers also played a critical role in the ability of foresters to modify plans by helping pinpoint deviations more precisely. The implementation of techniques related to land and vegetation was never a seamless pursuit proceeding without resistance. Efforts to execute any plan generated resistance based in climates soils, history, and human uses. The desire to achieve goals required accommodation.[55] The interplay of implementation, resistance, and accommodation was unavoidable in a context where the unceasing generation of statistical information was always insufficient owing to the inherent complexity and unpredictability of the factors that affected growth and output.

Finally, numerical understandings of forests and their own practices allowed foresters *to* establish commensurability in their actions and results. They could use numbers to compare forests anywhere in India by using uniform criteria such as rates of growth, relationship between age, girth and length of trees, volume of wood or other biomass, revenue streams, and so forth. It did not matter that forests *in* different parts of India might differ sharply because of a multitude of climatic, edaphic, and and human factors. Their performance could still be compared by referring to specific numbers representing conservation,

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improvement, and revenue: biomass per unit area, cubic meters of growth per year per unit area, and the likely profits from harvesting and selling the standing crop of trees. Even when foresters recognized the importance of local and regional specificity, the use of statistics to represent the most valued features of forests and timber transformed them into comparable entities.[56] The dimensions of costs, yields, and surpluses were relevant for all land and all trees, whatever the complexity of underlying forces that yielded these simple, summary statistics.

By the end of the nineteenth century, summary representations of India forests, based on a uniform set of numerical indicators, had become routine. If unambiguous numbers denoting area under different classifications stood in for forests of different types, changes in these statistical indices were indicators of the dynamic performance of forest departments. This aspect of numbers as a measure of performative excellence facilitated the territorial organization of forests under a hierarchical administrative system of authority, and cannot be underestimated. The statistics contained in annual reports, budgetary records, bulletins, research results, and working plans were basic to the self-assessment of each provincial forest department. Statistics were also crucial to the exercise of central guidance, and in the relationship between knowledge and government.

Each of the four ways in which numbers helped make forests had a technical impact. But each is also obviously political in nature. What Ludden says about the role of colonial knowledge in the construction of a traditional village India (1993:259-63) is as relevant for the role of colonial knowledge in the construction of forests. The choice of certain characteristics of landscape and vegetation to represent forests numerically was based upon a prior selection of objectives of timber production and revenue maximization. The suppression of fire and grazing to produce timber that was not crooked or gnarled excluded those whose livestock depended on grazing in the forest or whose lopping for tree fodder prevented unrestricted growth in a straight line. The implementation of a particular set exclusionary techniques to manage growth led to the displacement of large numbers of people whose agricultural

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practices involved forest clearing. But the extraordinary triumph that the use of numbers gained the forest department was the seeming elimination of politics from the government of forests. After all, who could argue with the assertion that 200 cubic feet of wood per acre per year were better than 100 cubic feet (or even 199 cubit feet) per acre per year? Efficiency in all its forms could now be given a concrete content.

In the ease with which numbers could be used to organize and rank outcomes lay one of the secrets of their success as "apolitical inscriptions." The purging of the political was also enhanced by the adoption of uniform, standardized procedures of environmental government, authorized by a numerically precise science. As Rose puts it, when "numbers are used as 'automatic pilots' in decision making, they transform the thing being measured - segregation, hunger, poverty - into its statistical indicator, and displace political disputes into technical disputes about method" (1999:205). The development of systematic procedures of identification, enumeration, classification, calculation, and valuation was an attempt to eliminate or at least reduce the influence of the individual in governing forests. Similarly, the adoption of working plans that had the same general format, used the same kinds of calculations, and relied on the same methods of propagation and protection contained art implicit message: idiosyncratic and subjective effects of individual preferences and biases had no part in a systematic and rational government of forests.

The depoliticization of the government of forests was spatially variable. And the stability of the achievement required constant work. Ultimately, depoliticization depended precisely upon the ability of forest department officials to model the forest effectively as the product of a small set of variables and relationships. By limiting the representation of desirable features of forests to one or two or three numbers, and by yoking the governmental practice of entire generations of officials to the maximization of these numbers related to volume, growth increment, and revenue, other products that forests could provide became devalued. To the extent firewood and fodder and household timber were necessary for the livelihoods of many households living close to forests, they might grudgingly be admitted into the calculation of foresters; but only as a constraint upon the main goals of forestry.

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Those who objected against the forest department's efforts to control ever increasing areas of land in the name of state interests, environmental health of the country, or higher revenues also used numbers in their arguments. Numbers were deployed in the rivalries between the revenue and the forest department in Kumaon, Bombay, and Madras. Such rivalries were a staple of bureaucratic politics in India throughout the late nineteenth century. But with the availability of more statistical information, opponents of centralized control could also begin to question, undermine, and reshape existing efforts to regulate the landscape. The recourse to numbers and statistics in the first quarter of the twentieth century to question centralized control over forests has its echoes today in the advocacy of community-based forest government in many parts of the world, including India.

Conclusion

In trying to trace the making of forests in nineteenth century colonial India, this chapter has focused on the role of power/knowledge; more specifically, statistics and numbers in new technologies of government. It has outlined some of the critical assumptions that reshaped how forests were seen. The discussion has also tried to assemble the chief instruments through which new views of forests came to be stabilized and won for their proponents in the forest department control over some 24 percent of India's territories by the beginning of the new millennium. New views about forests were made possible in large measure through the deployment of summary figures, numerical tables, and statistical relationships that began to be formulated in the second half of the nineteenth century, and were pervasive by the last quarter of that century. Almost all significant documents related to forest creation, protection use, and government represented forests numerically. Foresters saw statistical tables as the most precise, unambiguous, and apolitical way to convey information, choose between different forms of management, and defend their chosen positions.

But the emergence of these forms of representation, and the specific ways in which forests came to be made through numbers was not inevitable. That a particular way of imagining and governing forests came to prevail was dependent first of all on posing the political question: how best to manage forests for the particular purpose of harvesting large quantities of timber.[57] It was related in part to the location of timber and trees in the colonial political economy, the initial investigations of a large group of natural historian-administrators, and the formation of an organizational frame that developed a long-term interest in appropriating large areas of land under its direct control. That forest, techniques for their governance, and the effects of these techniques began to be represented by statistical tables it itself dependent on other factors, some unrelated to forests and the environment. An important role was played by the temporal sequence of colonial conquest in India and the emergence of statistics in the early nineteenth century as a means to represent social phenomena. It is in the intersection of such varied processes that the contingent nature of all representations and their consequences is to be found.

Nor is it the case that some underlying material reality of a physical entity that we call forests made it inevitable that its representations would assume the final form they did. Forests have been represented in many different ways, some of them radically different from each other (Harrison 1992). Even the stability of current representations is questionable. It is likely correct that perceptions of forests as resources that serve human ends and which can be governed more effectively through numerical representations and managerial techniques underlie most contemporary actions in forests whether human actions are concerned with livelihood, profit, or aesthetic preservation. But the persistence of these perceptions is as much a result of the uses to which they are put and of beliefs about their scarcity as it might be of some inherent qualities of forests, or of their internal structure.

In becoming durable devices of representation, statistics and numbers contributed to the creation of forests through a doable erasure. These new understandings of forests hinged upon the possibility that some prominent aspects of existing vegetation could be selected and signified by counting and calculation. The

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numbers representing these features of the forest then erased, and came to stand in for the vegetation from which the numbers were abstracted.[58] For example, in the case of Brandis's work in Burma the number of teak trees in different size classes initially represented what Burmese forests meant for the forester. The erasure of an ensemble of vegetation and relationships, both human and non-human, was necessary for forestry to proceed apace. The most significant characteristics of the forest became the number of specimen of preferred species, their age class and size structure, the rate of growth or annual increment, the volume of timber that could be harvested, and so forth. These numbers about a forest could stand for it, and the relationships among these numbers could become the basis for future proposals about what to do in the forest. The constituent elements to which the vegetation was reduced could be recombined and restructured in light of desired goals to produce new forests.[59]

This re-creation of ideal forests on paper and in plans, and the consequent implementation of the planned paper forests in preference to existing communities of vegetation constituted a second erasure involved in the making of forests. Classifications of inanimate objects such as trees and vegetation types set in motion a very different process of social worldmaking in comparison to classifications of human beings upon which statistical counts are based. When humans are classified, the classification and the allocation regimes of which the classification is a part generate a new politics. Awareness of the classification on the part of the classified person itself may be crucial in the embracing or the rejection of the new classification and their political effects. Indeed a large literature on contemporary social conflicts in India has related their origins to processes of classification initiated under colonial rule, thereby testifying to the durability and inventiveness of colonial knowledge (Dirks, 19S7;Inden, 1990; Prakash, 1999).

In the making of forests, the second erasure was related thus not just to a particular way of self regarding and self knowing, but also to the object of government itself. It was embodied in all the plantations, and the working plans to transform landscapes that the British created, implemented, and bequeathed to their Indian successors. Actions based on plans, yoked to an imagined forest with its regular

increments and revenue streams, seldom came to pass as anticipated. They met local obstacles and underwent constant reformulation. They were the product of a representational economy, but had to accommodate to the dynamics of a political economy as well. It is in the intersection of representations and their referents that the story of forests in India makes the greatest sense.

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Figure 2.1: Area Controlled by the Forest Department (1898-1940)

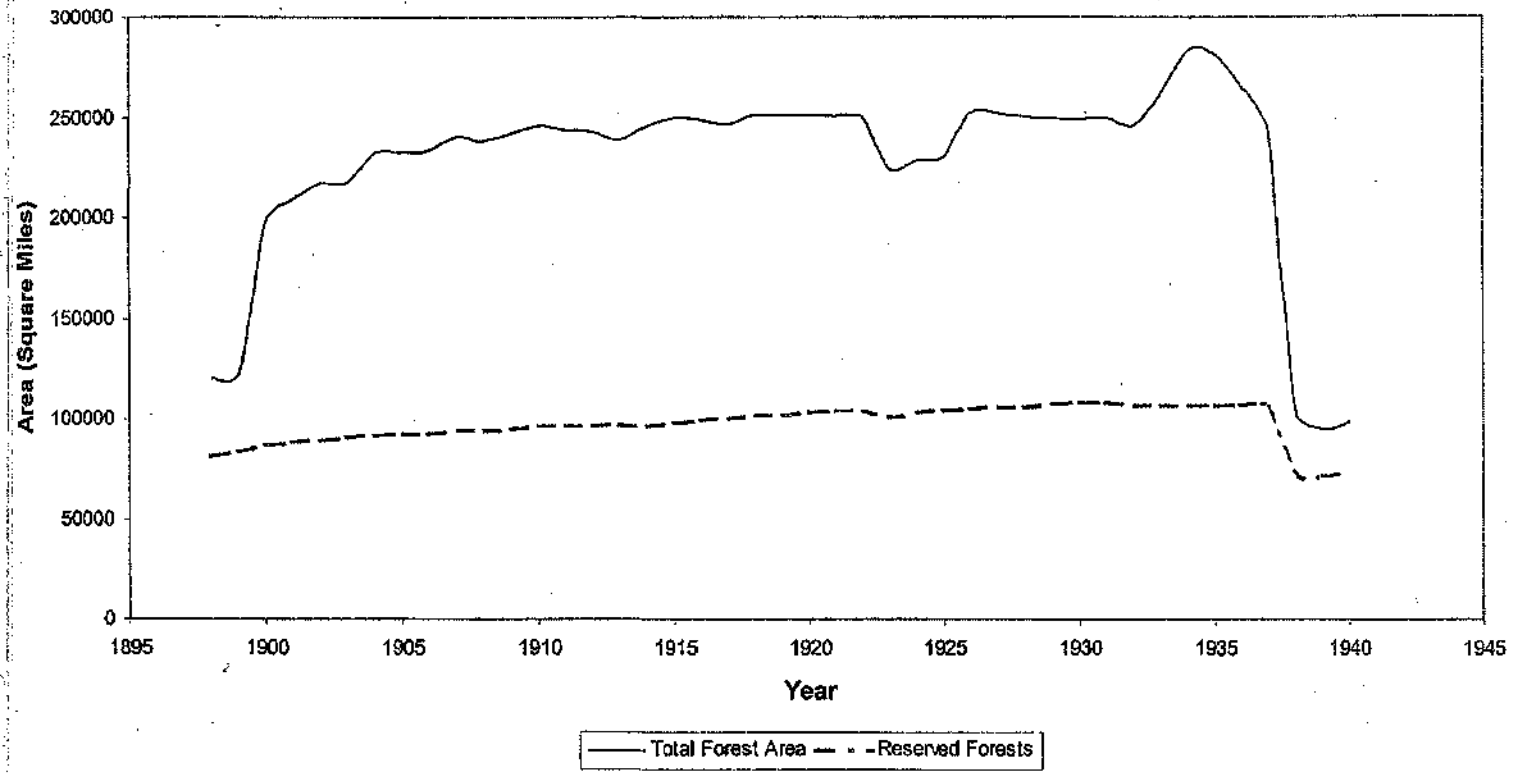# Figure 2.2: Agencies Involved in Timber Harvesting in Indian Forests (1898–1940)

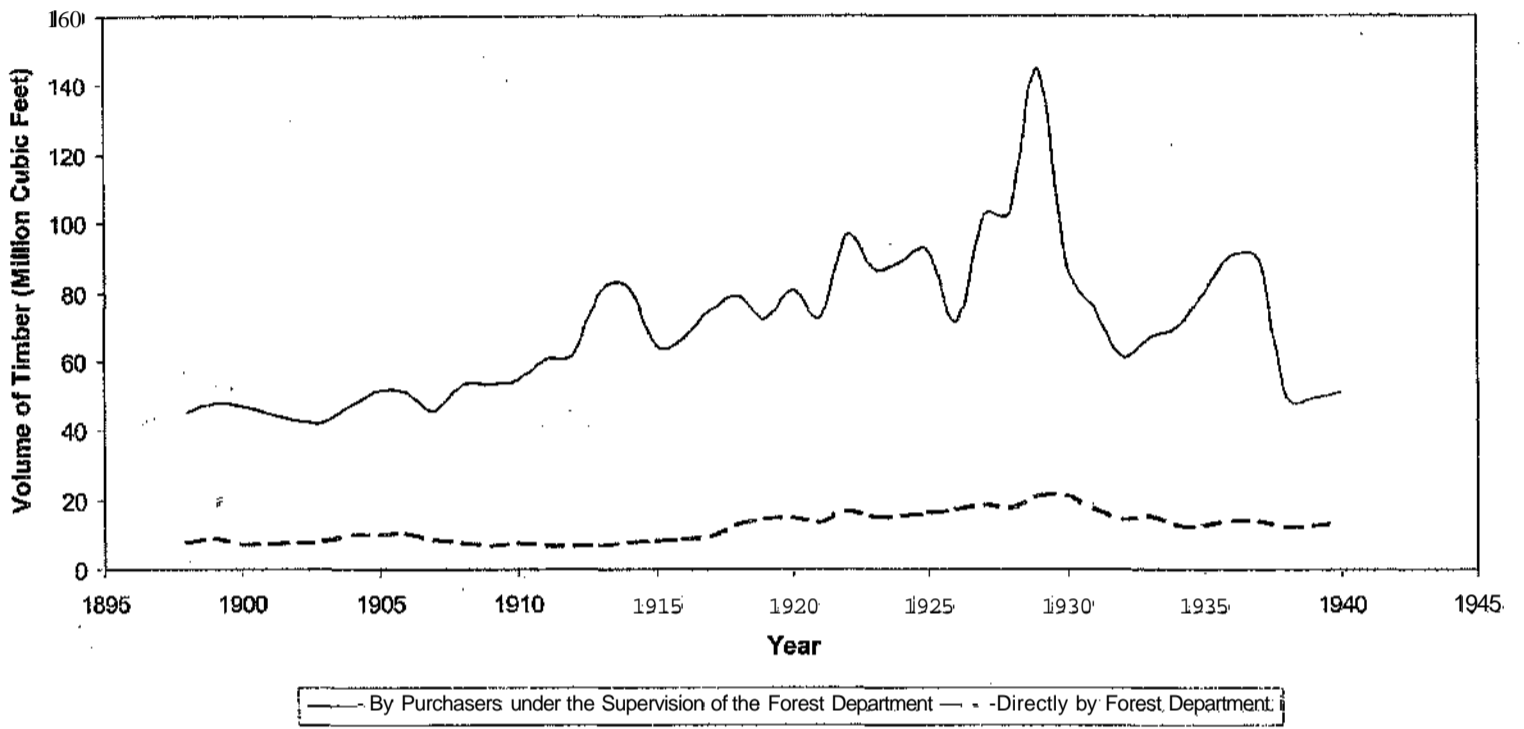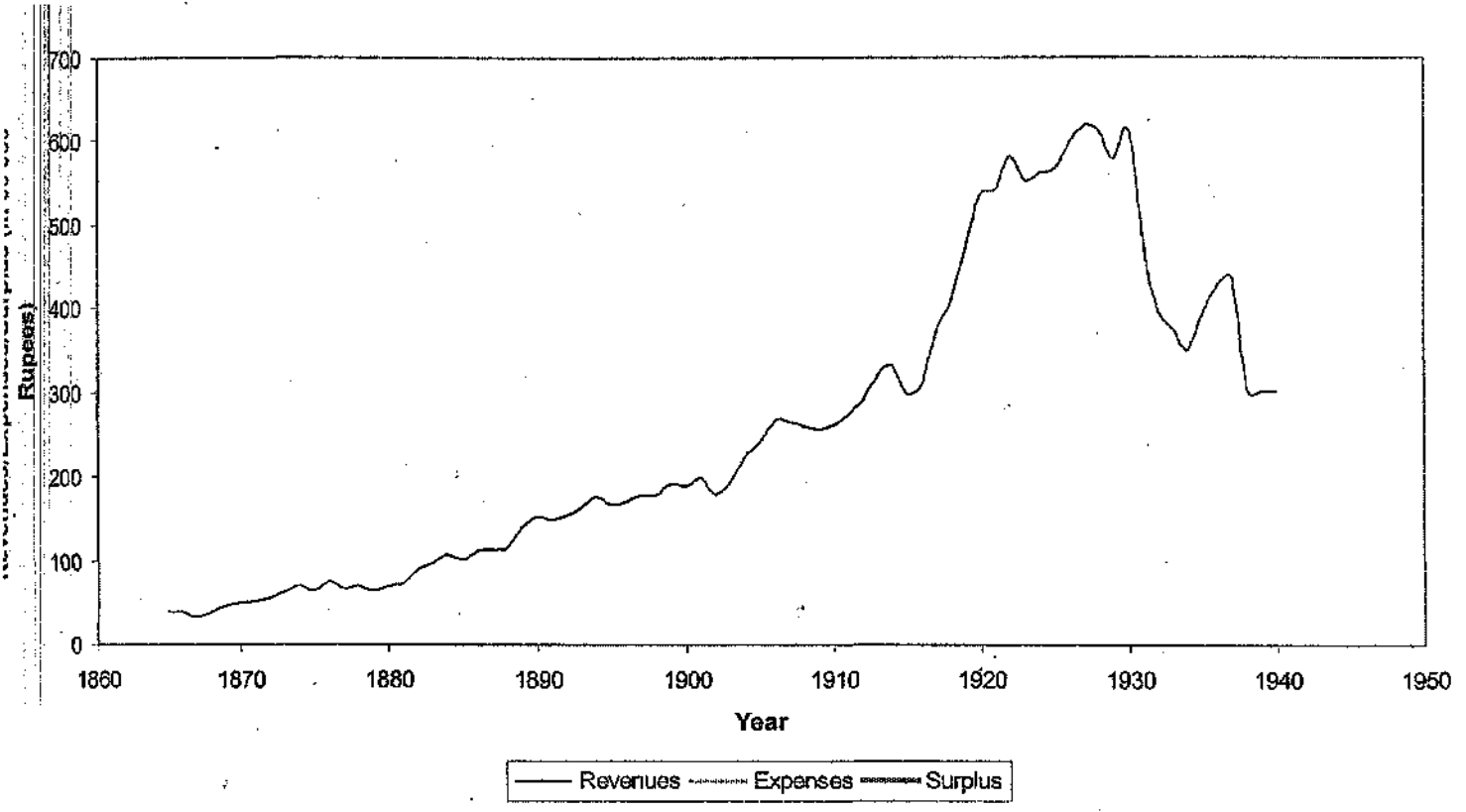By Purchasers under the Supervision of the Forest Department — · -Directly by Forest Department

Figure 2.3: Financial Statistics for Indian Forest Department (1865-1940)

Endnotes

1 .In his remarkable history of measurements, Kula (1986:13) contrasts our pervasive reliance on counting and numbers with an aversion to it in the not so distant past. "To count and to measure [was] sinful... Among the Czechs, at the end of the eighteenth century, a belief was prevalent that a child under six years of age would cease growing, become stunted, a 'measureling,' if the cloth intended for his shirt or outer garment was measured... In Macedonia, at the end of the nineteenth century, peasants would not eat what had been measured for fear of developing a goitre. In the Vladimir *gubernya,* at the beginning of the second half of the nineteenth century, peasants were inimical to the practice of calculating what they had harvested." Such doubts about measurements were also to be found in nineteenth-century India. See Prakash (1999:42-43).

2. I am indebted to Hacking (1999: 6) for this distinction in his analysis of social constructivist studies in the 1980s and 1990. I use forests to refer both to a physical entity and to the idea of that entity, preferring this strategy over that of always using a different sign for each concept. Concerns about readability have prompted ray choice, and I trust that the different meanings of the term are clear in my usage from the context.

3. A spate of writings on Indian environmental history and politics made an appearance in the wake of the seminal research of North American historians such as Richard Tucker and John Richards, and Indian scholars such as Shekhar Pathak and Ramachandra Guha. Although I draw upon this research only as it seems relevant to the major arguments in this chapter, a useful thematic introduction is available is Grove, Damodaran, and Sangwan (1998), and Agrawal and Sivaramakrishnan (2000). Some of the more important studies of environmental changes in south Asia are Gadgil and Guha (1992), Grove (1995, especially chs. 3 and 8), and Guha (2000). Dangwal (1997), Grove, Damodaran, and Sangwan (1998), Guha (1989), and Rangarajan (1994) provide valuable entry points for a better sense of the political-economic impact of colonial forestry policies.

4.Sivaramakrishnan's (1999) recent study of colonial forests in eastern India is exceptional in the attention it pays to representations of forests during the nineteenth and early twentieth centuries.

5. The history of statistics continues to be a vital field of intellectual inquiry. For a useful introduction, see Rose (1999:197-232). The field, in its current critical shape, began to emerge from the late 70s, with several pioneering contributions (Cline-Cohen, 1982; Hacking [1981] 1991; Irvine et al.,' 1979; Porter, 1986), although studies of statistics had appeared even earlier (Cullen, 1975; Glass, 1973; Lazarsfeld, 1961). More recent studies have been even more insistent on the significant role of numerical representations in constituting and constructing what they seek to represent (Alonso and Starr, 1987; Hacking, 1986; 1990; Porter, 1996). Other studies have fruitfully examined "statistical social construction," to use a somewhat awkward phrase, in specific domains (Appadurai, 1993; Hopwood and Miller, 1994; Patriarca, 1996).

6.1 am especially indebted to the important work of Arjun Appadurai (1993) and Talal Asad (1994) on numbers and power, and the thoughtful research of Theodore Porter (1986, 1996) and Ian Hacking (1999) on the history of statistics and the social construction of ideas and objects. Together, these works suggest novel ways of understanding, among other things, the impact of colonial rule on the environment. See also Anderson (1991), Hirsch (1999), and Scott (1998).

7.See Hacking (1999) for illuminating studies of the reciprocal relationship between classifications and the nature of objects or entities being classified.

3.Much of the work on prehistoric environmental history has been produced by archaeologists (Lal, 1985; Mishra, 1989). See also Murali (1995). Sumit Guha's (2000) short essay on rural Maharashtra debunks much misperception about the nature of community in premodern India. His book length study (Guha, S. 1999) is a careful investigation of forests and their role in subsistence and state formation in premodern and British India. The essays by Erdosy (1998), and Chakravarti (1998) are especially useful recapitulations of extant understandings of prehistoric environmental changes.

9. If one excludes official publications and histories such as those by Stebbing and Ribbentrop, and papers appearing in periodicals such as *Indian Forester,* even the earliest writings on ecology and society in the Indian context are not too old. Official histories are available in the pages of periodicals like the *Commonwealth Forestry Review, Empire Forestry Journal,* and *Indian Forester,* and monographs and travel memoirs written by officials in the forest department. Elizabeth Whitcombe's work on the ecological impact of the irrigation policies of the British is seminal (1972). Even within environmental history, writings about forests are dominant. It is for good reason that Guha has suggested, "Forest history is, without question, the real growth area of environmental history of India" (2000:213). The dominance of papers on forests in several recent edited collections on environmental politics underscores Guha's point (Agrawal and Sivaramakrishnan, 2000; Arnold and Guha, 1995; Grove, Damodaran and Sangwan, 1998).

10. According to Guha (2000:211), "earlier generations of Indian historians [have been] indifferent to the natural context. Traditions of social and economic history, well developed in themselves, paid little attention to the role of natural resources such as water and forests in rural life." Indeed, occlusion of issues pertaining to politics around resources continues to haunt even some more recent historical surveys. Grove, Damodaran, and Sangwan (1998: 21) point, referring to Washbrook (1988), to an innocence from "environmental preoccupations" that colors even wide-ranging economic and social historical reviews.

11. For Himachal Pradesh, see Saberwal (1999) and Singh (1998). See (Dangwal (1996,1997) and Srivastava for Uttar Pradesh, (1996); Anderson and Huber (1988), who undertake the study of a contemporary project, and (Prasad (1994) Rangarajan (1996), and Sundar (1997) for the central Provinces; Sivaramakrishisan (1999) for Bengal; Skaria (1999) for western India; Philip (1996) for Madras, and Bryant (1996) for Burma.

12. The literature on each of these themes is immense. For some recent studies on gender and environment that do not take these as fixed categories see Agarwal (1994) and Gururani (1996); for social movements see Rangao (2000) and Weber (1988), and for a discussion of the reciprocal constructions of the

relationship between the agrarian world and the environment see Agrawal and Sivararnakrishnan (2000) and Dangwal (1998). This new scholarship has shown the regionally variable relationships of colonial officials and those subject to colonial rule; the development of official forestry practices, existing use and management patterns, and local distribution and growth patterns of vegetation; and the diverse articulation between the intentions of officials as expressed in written documents and plans and the lived experience realized in the processes of creating forests.

13. For some representative writings on the themes of colonial scientific investigations, see Grove (1998a), MacLeod and Kumar (1995), Rajan (1998b), and Sangwan (1994).

14. Sarsgwan (1998) questions much earlier research on colonial science that saw it as an inferior collaborator in the larger enterprise of European scientific research (Basalla, 1967; Kumar, 1980; McLeod, 1975). Other studies have demonstrated the importance of European models of the environment and forests on colonial policies, and diffusion of scientific ideas within the colonies (Rajan, 1998a, but see also Sivaramakrishnan 1999).

15. Stebbing (1922,1923,1926) has written perhaps the roost comprehensive imperial history of forests in British India, Earlier efforts by Brandis (1897) and Ribbentrop (1900) were formative in their influence, but far less complete. Champion and Osmaston (1962) have made a useful attempt to extend a state history of forests that follows the same plan as that of Stebbing's earlier volumes.

16. This taxonomic exercise is accompanied by strict generalizations that are based on the relationships between the categories that the science of forestry constructed, and that it connected to categories from other sources. These generalizations brook no exceptions and must have been invaluable to budding foresters, giving them a bedrock of certainties about the forests they would be managing. Consider the following, for example: "As a rule, tropical evergreen forests which grow on metamorphic rocks are richest in species, while those occurring on the sandstones and other sedimentary less-altered rocks are poorest in this respect" (Stebbing, 1922:42-43).

17.Stebbing was prodigious in his output. Quite apart from books in the more autobiographical vein, he wrote three books on forestry in Britain (1916, 1919, 1928), and another book on colonial forestry in west Africa (Stebbing 1937).

18-This is just the beginning of Stebbing's book. After invoking the all-India terrain of forests he goes on to describe in massive detail what happened once the British began to concern themselves with the wealth that forests contained. He organized his account by period, and within each period by major political divisions. Numerous contributions from scholars, ethnographers, administrators, travelers, statisticians, and tabulators form the basis of his history. Ranging over more than 1900 pages, he describes personalities and their actions, state policies and their origins, new technologies of exploitation and their consequences. *It is an invaluable source to begin tracing the narratives that constitute the colonial knowledge of Indian forests, although Stebbing affects a staunchly official stance throughout, and seldom provides bibliographic references.

19. Brandis studied botany and forestry in Copenhagen, and Gottingeo, and received his PhD in Bonn. He was appointed Conservator of Forests in Pegu on the recommendation of General Havelock, a close friend of Dalhousie who was the Governor General of India (Rajan 1998a: 343).

2O. Interestingly, after Brandis's retirement in 1881, the two foresters who followed him as Inspector Generals - W. Schlich (1883-88), and B. Ribbentrop (1888-1900) - were also German trained (Ribbentrop 1900).

21. It is only in the last two decades that a different principle of rule has come to animate, perhaps only uncertainly, the work of Indian foresters in any significant manner through what is widely known as Joint Forest Management Joint Forest Management rules frame the governance of forests over nearly 20% of Indian forests, and are based on a formal partnership between village residents and forest department officials. Although many observers have argued that in its effects Joint Forest Management is not too different from earlier operations of the forest department, the recognition of management rights and a share

in commercial revenues on an all India basis is unprecedented.

22.The combination of the objectives of revenue maximization and sustained yield required assessments of the availability of the most valuable timber in the forests; protection, preservation, extension, and consolidation of existing forests; and rationalization of harvesting and marketing of trees. According to Lowood, three basic principles linked the desideratum of a regulated, systematically managed forest to the methodological focus on measurement and calculation: "minimum diversity," "the balance sheet," and "sustained yield" (1990:333). He describes how these principles translated into the practice of forestry in Germany once the objective of foresters became systematic management to enhance supplies.

23.Brandis's method could be used for any tree species, and continued with some modifications for more than half a century. His appointment as Inspector General played an important role in the adoption of valuation surveys throughout the provinces, especially in forests stocked with higher density of timber-bearing trees and reserve forests. In view of the importance of survey work, the Government of India created a separate Forest Survey Branch in 1872 that functioned independently until 1900 when it was absorbed into the Survey of India as a branch of that organization (Ribbentrop, 1900:132-33). Eardiy-Wiimot (1906:3) dates the amalgamation of the Forest Survey with the Survey of India to 1899. AH forest surveys were placed under the Superintendent of Forest Surveys and the general direction of the branch was transferred to the Surveyor Genera! of India in 1904.

24.The method Braedis used is reminiscent of the one developed by Johann Gottlieb Beckmann from Saxony. Beckman employed a team of assistants, equipped with nails of various colors to represent different size classes. As the group walked through the forest at intervals of a few yards, members made estimates of the size class of all the trees they passed, and marked individual trees with nails of appropriate colors. At the end of the operation, unused nails were counted and subtracted from the original supply, yielding an estimate of the number of trees in each class which could then be converted into a volume of wood using appropriate multipliers. I am indebted to Lowood (1990:325-26) for this description.

25.The description below is based on heroic assumptions that equate area with value. Over the course of the nineteenth century, foresters in Europe developed a number of other strategies to smooth fluctuations in revenues by basing the principle of extraction on factors such as volume or value of timber (Lesch 1990; Lowood, 1990).

26.Despite the obvious difficulties involved in realizing such a scheme in practice, Heske informs us that "As early as 1359, the city forest of Erfurt in the German territories was divided into as many annual cutting areas as there were years in the rotation, and one such area was cut each year... A simple regulation of yield on the basis of area was also carried out in the Mannsfield forests in the Harz in 1588 and at about the same time in the Miltenberg forest" (1938: 22).

27.For a comparative history of forestry in different European states, see Fernow (1907). Fernow's work is itself based on other published materials for specific countries. Kirkwood (1893) provides a collection of papers dealing with forestry in the nineteenth century in different European countries. For information on French forestry, see Woolsey (1920). Woolsey (1917) discusses the effects of French influence in colonial forests in Tunisia and Algeria. Heske (1938) describes the beginnings of forestry management in Germany, dating it to the Carolingian dynasty (751-911 AD). He traces planting, clear-cutting, and the regulation of timber harvests through selection felling to the mid-fourteenth century.

28.Brown (1883) provides the complete translated text of Colbert's ordinance, and also places it in the context of earlier forest ordinances in France. Some of these proclamations dated back to the thirteenth century. See also Sahlins (1994:52-55). Whited's later history of forestry in the nineteenth century in the French Alps confirms the patchy effectiveness of Colbert's Ordinance.

29.Comparing the estimated 1,200 indigenous tree species of India (in an area half the size of Europe) to the 158 species in Europe, Brandis wrote, "The forester finds himself bewildered by this overwhelming variety of forest vegetation. Few can attempt to acquire a knowledge of all these species, but a large number of the more important kinds the Indian Forester must know, if he is to do his work" (1897:130).

Brandis's estimate of 1,200 indigenous species of trees was later revised upwards to more than 5,000 woody species by Troup. Of these, he estimated 2,500 to be tree species. He described and reported on nearly 550 of these species by their uses and technical characteristics (Troup, 1909).

30. As Schlich explained in the preface to the first volume of his *Manual,* the objective of his work was to provide a set of instructions that would be useful for foresters working in Britain and the British empire. Before British as opposed to continental forestry could be learnt or taught, "we must set to work and collect statistics based on home experience" (1906: vi).

31 .See for example, the second and third volumes of Schlich's *Manual of Forestry* (1910, 1911). The first three volumes were published for the first time during the period 1889-1895 (Rajan 1998a: 347-49).

32.The serious defects of monocultures of even-aged plantations - "soil deterioration, decreased rates of growth, lessened resistance to animal and plant parasites, and increased liability to injuries from snow, hoarfrost, and wind" led foresters such as Karl Gayer to propose a "Back to Nature" movement for mixed forests, retention of broad-leaved species, natural regeneration, and uneven-aged stands" (Heske. 1938: 40).

33.Later, in 1881, Brandis provided a different estimate: about 2 million teak trees of over 6 feet girth scattered in 2,400 square miles of prime forest (1881: 5).

34. Although artificial plantations of teak were never pursued in a significant manner in Burma except through Toungya cultivation, other parts of India witnessed sustained and sometimes successful effort to create plantations of teak and other valuable commercial species as we shall see later in this chapter.

35. Writing about how to improve forest administration in British Burma, Brandis said, "the chief object of forest conservancy in Burma is to ensure the permanent production annually of a sufficient quantity of teak and other valuable kinds of timber... teak may justly be called the prince of woods... teak in the London market maintains a price which is higher than the price of any other timber, and which is surpassed only by mahogany and one of two other furniture and fancy woods" (1881a 1). For Brandis, although mahogany or other woods might surpass teak in price, it was only because of their cosmetic and fancy value.

36.Figures 2.1 to 2.3 are based on statistics reported in Government of India publications series, *Annual Return of Forest Statistics* published as a part of the *Review of Forest Administration in British India.* Earlier volumes in these two series were published under the authorship of the Inspector General of Indian Forests, but after the first 25 years of publications, the forest department stopped providing a report each year. Instead, it published only statistical information annually. The textual reports were published every five years - yet another indication of the importance attached to numbers over text.

37.Brandis's experiences in Burma are also important because of his later appointment as the Inspector General of Forests of India, and his role in the specification of different provisions of the first Indian forest acts (See Brandis 1897:136-37). At the turn of the century, forests outside Bombay and Madras were all classified as being in Bengal Presidency. Three separate acts were passed to cover all the forests of British India: the Indian Forest Act of 1878, the Burma Forest Act of 1881, and the Madras Forest Act of 1883. These laws helped transform the government of forests over time, but is the first few years the area classified as forests declined by nearly 4000 square miles (25 percent) as forest administrators interpreted and implemented the provisions of the acts (Brandis 1881b 13) Guha (1990) describes some of the considerations and political manoeuvring that went into the making of these forest acts. Brandis (1897) himself provides a fascinating glimpse into the political calculations that led to the establishment of a separate forest department in India. The alternative was to let the revenue department also manage forest lands.

38. I am indebted for this expression to Hacking's "avalanche of numbers" (1991:187).

39. The three fundamental features of Lirmaeus's classification were abstraction, numeration, and artificially' (Lesch, 1990: 74-82). Each classifiable entity was fixed formally, beyond the accidents of time, history, or spatial particularities. Thus, the clarity and utility of Lirmaeus's classification system, based as it was on essential sexual reproductive features of plants, came at the price of empirical intuition. Contrast his work with that of French botanists, Michel Adanson and A. -L. de Jussieu (Lesch, 1990; Foucault,

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1970) who paid much greater attention to the group of features that were characteristic of each organism rather than to the reproductive organs alone.

40. Other notable publications from around this time include William Roxburgh's (Head of Calcutta Botanical Gardens) *Plants of the Coromondal Coast,* and Robert Wight's *Illustrations of Indian Botany.*

41. Many of these accounts were important because they argued for a systematic exploration and exploitation of forests through careful government.

42. For a review of such early descriptions in Bengal, see Sivaramakrishnan (1999). Grove's (1993) account of the role of surgeon-naturalists in imparting an environmentalist rather than purely economic concern to early conservationist advocacy in south and western India also contains references to several travelers' accounts. See also Grove (1998b). Stebbing's (1922) discussions of reports on forests between 1810 and 1850 by people like Clementson, Connolly, and Gibson in Malabar, Wallich in Burma and the northwest, Blair as the district collector for Cartara, and Jervis, a member of the Military Board of the East India Company, for south Indian forests in general, also bear out the claim that few of these reports contained much quantitative information on forests or their condition.

43. The range and number of monographs and other publications is too vast to be listed in any representative fashion. See Brandis (1897:130-32;) for a selected list of titles.

44. See Guha (1990) for a detailed discussion of the passage of the 1878 Forest Act, and the debates surrounding different positions on the extent to which the government should exercise a strict control over forests.

45. This number ignores the area in "native states" that was governed under very similar forestry practices as forests in British India. In 1904, an additional 12,500 square miles were being managed as Reserved or protected forests in Kashmir, Mysore, Travancore, Jodhpur, Baroda, and other princely states (Eardly-Wilmot, 1906:30-34).

46In a number of years, for example, annual reports disclose earlier misclassificatiori of land, inaccuracies

in area considered to be under the control of the forest department, and corrections of past figures on breaches of forest law or valuations of forest produce (Eardly-Wilmot 1907:2).

47.The Quinquennial Review of Forests for the years 1924-29 reports, "It was hoped in Madras, by mens of modern American methods, to extract and utilise very large quantities of valuable timbers, but the final result of this work was to prove that this extensive exploitation was not justified either by the stand of timber in the forests or by the possibilities of satisfying markets (Rodger, 1930: 6).

48.Prior to the Nilumbur teak, plantations, the British had started planting trees along the Western and Eastern Jumna Canals in 1820-21, and 1830-31. The chief species planted along these the Western Jumna Canal were Sissoo, Toon, Kikur, Sal, and Teak and the revenue derived from the sale of wood from these plantations more than covered their expenses (Stebbing: 1922:201-02). The value of the plantations far exceeded their planting costs. (Captain R. Baird Smith, Calcutta Review, #23). Other efforts at plantations were far less successful Sivaramakrishnan (1999) explains how several attempts to create plantations led to no perceptible improvements in Bengal.

49. Alter more than four decades of discussions about declining timber supplies for the navy, and increasing urgency about the need to secure supplies of timber well into the future, the Court of Directors of the East India Company agreed to lease land for the purpose of raising teak plantations in Malabar. The Court also set aside a bond for a forest establishment, and provided a modest stipend for a sub-Conservator of forests under Connolly.

50.The set of rules was as follows: 1) Seeds were to be collected in sufficient quantities and planted with due attention, seedlings were to be protected from injuries, pruned, and fostered during their first years of growth. 2) The forests were to be patrolled, and registers of the number of trees in each forest were to be prepared. These registers were also to contain information about the size and age of each teak tree, their distance from water. Other trees that might have to be removed to ensure the proper growth of teak were to be described. 3) Teak trees were to be carefully barked and seasoned before and after felling, none were to

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be cut without adequate supervision and clear orders, and sufficient numbers were to be left standing for future seeds. 4} Where contractors were involved, young trees and coppices were to be protected from injury, and marked trees were to be felled as close to the ground as possible. 5) The forest was to be protected from the activities of private individuals, and any violators were to bs handed over to the nearest police officials. 6) The District Collector was to be informed of any neglect on the part of subordinates, and consulted on issues of suspension, and, 7) The needs of the employees were to be satisfied, and their salaries were to be paid on time. His rules, "a wonderfully good set of prescriptions" for the time, were followed with such success that in 1860, there were nearly 400,000 surviving plants, and the plantation forest witnessed regular planting and thinning operations. (Balfour 1862).

51. The following discussion of working plans is based on a selection of plans created to work five forest areas: South Kabirwala and Mailsi Reserved Forests in Punjab (1899), Kangan Range in Hazara District, Punjab (1901), Murree-Kahuta Forests of the Rawalpindi Division, Punjab (1901), Topla and Kuilikapah Forests in Bakghat, Central Provinces (1901), and Uanaungmyin, Kaing, and Palwe Reserves in Pyinmana Division, Upper Burma (1902).

52. Existing vegetation in the area being considered for working plan prescriptions was often referred to as crop, and the plans provided information about the state of the crop, distribution of various species in the crop, and the injuries to which the crop was vulnerable.

53. For example, Brandis's (1911) *Indian Trees* describes 4,400 species, but pays special attention to trees that are useful for the forester: descriptions of these species appear in larger font than descriptions of other species.

54. Brandis is explicit in delineating what he considered progress in forestry. Talking about publishing more sophisticated descriptions of Indian trees, he asserts, "When forestry has made more progress in India, when successful systems of regenerating forests of the northwestern and the eastern Himalaya have been established, when the effects of fire protection upon Teak and other trees have been determined by series of

comparative valuations surveys in different districts, when yield tables showing the amount of timber production per acre per annum of the principal kinds under different circuraatances have been prepared, and when the chief enemies, insects and fungi, of these species are more fully known, then it will be time to publish complete and practically useful books in each province" (1911: viii)..

55.Pickering (1995) examines the old adage, "science proposes, nature disposes," in the context of high energy physics. He focuses specifically on the sources of resistance in experiments that test validity of theoretical predictions, and how scientists make accommodations to such resistance by modifying their theories, models, conjectures about the apparatus that is used in an experiment, and the working of the apparatus itself.

56.Grover (1997) studies the production of timber and its role in the colonial economy in the Himalayan Punjab. She also studies how the meaning of timber changed under the British.

57Jardine (1991) is no doubt correct in suggesting that scientific questions make sense only within a particular framework and may be unintelligible in others. But the asking of questions also helps generate and consolidate particular frameworks of knowledge.

58.The process I am describing is analogous, in an even more defined fashion, to Cohn's description of the production of "cultural identities" in the nineteenth century. Cohn argues that to see the process of cultural change as a kind of by-product of an historical experience whose major thrust has been political and economic, is to miss some of the significance of what has happened. According to him, when Indian intellectuals tried to think about their culture and identity, they have "in some sense made it into a 'thing': they can stand back and look at themselves, their ideas, their symbols and culture and see it as an entity. What had previously been embedded in a whole matrix of custom, ritual, religious symbol, a textually transmitted tradition, has now become something different" (19S7: 229).

59.For a discussion of the classical view of a model and its use to represent natural phenomena, see Lesch (1990: 82-84). Foucault's (1970:138-45) description of a system, with the Linnaean taxonomy as the

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prime example, is valuable for the insights it affords about the epistemological arbitrariness but practical usefulness of the processes of selection that ultimately yield any system and its constituent units and relationships. A model can be taken as a product within a system that is based on the use of numbers or signs to represent the features of a phenomenon or entity.

3. Struggles over Kumaon's Forests: 1815-1916

3. Struggles over Kumaon's Forests: 1815-1916

It is time for us to ask history to tell us who we are instead of beating its sides once more in order

to extract a final drop of prophetism.

-Jacques Donzelot [1977] 1997.

Introduction

The first two decades of the twentieth century were a transitional phase in the government of

forests in Kumaon. This period witnessed the conjuncture of a range of struggles over forests: between

different departments of the colonial state, over different conceptions of forests and the uses to which they

should be put, and between state officials, local elite, and common rural residents. Forests were not just the

stake in these struggles. They were also the basis of an unprecedented historical compromise. They became

locations that state officials and rural residents formally began to govern jointly. Starting from the third

decade of the century, there was a slow growth and consolidation of new forms of management of nature.

Crucial to these forms of governance were calculation and care, and the extension of caring calculation to

the level of the community. From being the driving concerns of the forest department, calculations of area

of land, number of trees, amount of products that could be harvested, and strategies to shape individual

behavior and beliefs became the concerns also of community. A widening circle of Kumaon's residents

began to be occupied with the care of nature.

Through much of nineteenth century and before, forests had been impediments to agricultural

extension in Kimaon. Their ruthless exploitation and taxes on exported timber remained the overwhelming

basis for rule. In the early 1820s, Boulderson the magistrate of Bareilly said, "everything which had the

breath of life instinctively deserted these forests and not so much as a bird could be heard or seen in the

frightful solitude" (cited in Tolia, 1994:22). Boulderson was speaking about terai forests located below the

Kumaon Himalaya. But even in mountain Kumaon the desired fate of forests was their clearing (Trail!

1828). People needed to be protected from forests. It would be another half century before forests would

begin to need protection irons people. Still further in the future was the birth of the Chipko movement,[1] with its hallowed place in imaginings around resistance to coercive state policies, nature's fragility, and human struggles to protect it.

Forests became increasingly important in Kurnaon's regional economy as the nineteenth century yielded to the twentieth. Many forest products acquired new value - timber, resin, and firewood among them. Technological innovations, experiences of scarcity, articulation with larger markets, and the invention of new needs were some of the factors at play. Merchants, timber contractors, different departments of the colonial government, and local populations and their leaders devised new procedures through which to appropriate this new found value. Their interactions created enduring conflicts that were usually resolved only provisionally. However, the first two decades of the twentieth century witnessed the emergence of a new equilibrium in Kumaon around resource allocation. Under this equilibrium, the forest estate that the colonial forest department had created over the past five decades was partitioned. The claims of communities and state actors were settled by each of them receiving one part of the divided estate. At the same time, new mechanisms of rule and government produced quite different relationships among the major actors interested in forests and their products. A new concern for the environment began to permeate Kumaon.

Two ironies haunted the apparatus through which states and communities came to care for nature. The more threatened nature was perceived to be, and the more humans intervened to care for it, the less could nature survive in a realm imagined as separate from humans. Careful calculation on the part of the state and the community transformed nature into environment.[2] The romantic appreciation of nature as a space to escape human activity was doomed progressively as human themselves became the agents for saving it. The community and the state entered a new partnership to save and protect *the* environment by assessing and evaluating forests, and by refining mechanisms of governance.

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If nature could not survive calculated care, the separation between community *and* state did not survive their emerging partnership to govern forests through community-based conservation. Communities, by definition, must be central to community-based conservation. But the communities that came into being in Kumaon in the early twentieth century were shaped very much by state efforts. The second irony, in part semantic, involves the processes that eroded the separation between the state and the community. The involvement of community in the conservation of forests occurred concomitantly with the steady and subtle erasure of the lines that limned its independent existence.

This chapter traces the historical processes through which Kumaon's forests were made. It examines how these processes redefined the context in which social and political relationships around forests unfolded. Locating Kumaon's forests in history, the chapter explores the technologies of government that were central to their environmentalization. It thus points to the changes in human/nature relationships that led to the founding of the Kumaon forest councils.

Forest Regulations in **Kumaon**

Although early historical accounts of Kumaon describe the succession of rulers that fought for supremacy in the region, they are less informative about how these rulers governed forests prior to the nineteenth century (Rawat, 1989). We need not confuse absence of evidence for the evidence of absence, but in this particular instance the silence regarding forests can be taken accurately to signify their relatively limited role in the formal monetized economy of the region.[3] The Chand dynasty ruled Kumaon for nearly a thousand years before the British. It derived most of its revenues by taxing agriculture, trade, mining, and labor dues (Atkinson, vol.3:1882: 456). The Gorkhas of Nepal ruled Kumaon for a short period (1791-1815) between the Chands and the British (Pande 1993, Regmi 1999). During this period as well, timber and other forest products formed just about 2 percent of all realized revenues *(ibid,* 462).[4] Even these limited revenues from timber and non-timber products were derived as taxes on exports, not as income

from a systematically governed resource.[5] Neither for the Chands, nor for the Gorkhas then, were forests a major domain of regulatory concern. During this early period, as far as the state was concerned, "the [forest] products consumed within the hills by the people themselves were too inconsiderable to be taken into account"(Atkinson, vol. 1: 845).

The Extractive Phase: 1815-1968

The British East India Company conquered Kumaon and Garhwal in 1815. British expansion in India had been halted for a few years in the early nineteenth century as a result of engagements with Napoleon's armies in Europe, but Lord Dalhousie began his tenure with the Anglo-Gorkha war of 1814-16. After ousting the Gorkha rulers of Nepal, the British restored the kingdom of Garhwal west of the Alaknanda river to the king of Garhwal. He had lost it to the Gorkhas in 1804 (Rawat, 1983,1989). That region became Tehri-Garhwal. The region to the east of Alaknanda until the border with Nepal came to constitute British Garhwal and Kamaon. British Kumaon was of significant strategic importance, both because of the location of high mountain passes through which trade with Central Asia and Tibet could be controlled, and because of the potential strategic advantages it afforded the Company to dominate northern India (Farooqui 1997: 5-6).

The first commissioner of Kumaon, G. W. Trail!, had a relatively free hand in reorganizing the civil, police, and revenue administration of Kumaon. During Gorkha rule, the regional economy had declined greatly owing to high taxes on trade and agriculture.[6] As local residents abandoned agriculture and migrated out of the hills, vegetation regrowth reclaimed many abandoned fields. To facilitate more efficient collection of revenue and at the same time assure people that only a reasonable proportion of their incomes would be appropriated by the state, Traill simplified civil administration, eliminated many official positions that seemed to him unnecessary for the scale of government, carried out a new land revenue settlement,[7] and reduced charges that Gorkha rulers had tried to levy (Tolia, 1994:18-32). The greater importance of Kumaon lay at this time in its strategic value, less in the revenues it could afford the British. Such

considerations made Traill's task easier. But even with a lenient hand, he doubled Kumaon's land revenue between his appointment In 1918 and retirement in 1835.

Traill's main contribution in the government of forests was to assert state control over any areas from which timber was extracted. At this time, government income from forests was derived through a contractual system. Contracts could assume two forms: areas of land could be farmed out to landowners or tax collectors after the payment of specified dues, and forests could be leased to private timber contractors who paid the government a fee on the timber they harvested. "No attempt was made to enforce any system of conservancy" (Atkinson, Vol. 1, 1882: 849). State revenues from taxing timber and non-timber products hovered around ten thousand rupees even at their highest levels in the first half of the nineteenth century whereas land revenue climbed to about Rs. 125,000 by the middle of the century, and reached more than Rs. 200,000 in the last quarter of the century (Atkinson, vol. 3, 1882:478,486). This picture would change drastically as state income from forests rose to rival and surpass land revenue early in the second half of the nineteenth century. By the early twentieth century, revenues from just one forest product - pine resin - were more than double the entire land revenue in the hill districts of Kumaon (Trevor and Smythies, 1923:40).

The recourse to private enterprise and unfettered extraction was not surprising in a situation where dominant British perceptions about forests concerned their vast extent. Batten, who succeeded Traill as Kumaon's Commissioner (1848-56) discussed the supply of wood for mining operations in Kumaon.[8] He concluded that local forests were so vast that they could provide "sufficient charcoal for the largest English furnaces for a hundred years... renewing themselves without limits"(Cited in Shrivastava 1996:120-21).[9] Looking back on this halcyon period of forest abundance, one forest service officer observed in 1924, "[a]t first there was an idea that there was unlimited forest wealth in India and for years nothing was done to protect forests in any way" (Bailey 1924:189).[10] In the first half of the nineteenth century, most administrators felt *it* necessary to reduce the extent of forests, encourage local industry, and increase the

area under cultivation (Walton 1911). These feelings about the expansion of agriculture and reduction of the area under forests coexisted in part because not all administrators realized the tight links between agriculture and forests in the hills as compared to the plains, and in part because forests seemed so extensive that a reduction in their size appeared inconsequential.

The perceived vast extent of vegetation wealth in Kumaon itself precluded systematic governance. Why manage plethora when there are no intimations of scarcity? But despite abundance, higher levels of revenues from sale and taxation of timber did not materialize until the latter half of the century. By the second half of the nineteenth century, a combination of factors conspired to increase the perceived value of timber and trees. Demand for timber as wooden sleeper ties escalated rapidly with growth of the network of Indian Railways after the 1857 Revolt (Guha 1989). With the rise in the value of timber, speculators became actively involved in its extraction. The government initially leased out areas to contractors "who had uncontrolled liberty to cut where and how they pleased with the result that large numbers of trees were felled and for want of transport were left to rot in the forests" (Walton 1911: 11).[11] Within a few years, Kumaon forests suffered a paroxysm of felling so intense that their first official surveyor in 1869 was forced to say, "...[T]hese forests have been worked to desolation, but perhaps even this does not given as adequate idea of the waste that has occurred and the mischief that has been committed. Thousands of trees were felled which were never removed, nor was their removal possible" (Pearson, 1869, cited in Shrivastava 1996:136).[12]

Tree species like sal *(Shorea robusta)* were especially valuable for the durable railway sleeper ties they provided. Sal had always been important commercially. Traill had classified it as a reserved species as early as 1826.[13] But in the latter half of the nineteenth century species such as Sissoo *(Dalbergia sissoo),* Tun *(Toona ciliata),* and Khair *(Acacia catechu)* also became valuable for construction, industrial consumption, and as firewood. The use of creosoted pine, a technology innovated in England, led to pine sleepers becoming more durable (16 to 18.5 years) than even sal and teak sleepers (13 and 14 years), This

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made pine, which grew abundantly in Kumaon, a highly valued commodity in preference to trees like oak and other broad-leaved species (Molesworth 1880). Pine also became important because it yielded resin, and La the early twentieth century forest department researchers successfully extracted turpentine and rosin from pins resin (Smythies 1914). Surpluses from sale of resin began to approach the total surplus of the forest department in the United Provinces, especially during the war years.

Henry Ramsay, the commissioner of Kumaon following Batten, abolished in 1858 the contract system for exploiting timber. He also started the first forest conservancy in Kumaon. In its initial stages, the organization of forestry in Kumaon differed significantly from that in other parts of the country such as Burma or the Central Provinces in that an official from the revenue department was also in charge of forest governance (Fisher 1885:586).[14] When this arrangement changed, and a professional forester replaced Ramsay, seeds were sown for a long-term rivalry between the forest and the revenue department.[15]

Ramsay implemented a series of measures that slowly increased the area of forests under state control in Kumaon and the type of regulations that the state exercised. He began clearer demarcation of forest boundaries, introduced rotational working of forests, and enforced the practice of hammer marking of trees to be felled (Weber 1866: 3). As Smythies observes, "The farming of leases and the indiscriminate felling of trees was stopped... The most valuable sal forests were formally demarcated as reserved forests under the Forest Act of 1865."[16] These steps led to a steep rise in revenues from forests, with an average surplus of nearly 70,000 rupees during 1859-68 (Walton, 1911: 12). Forests were beginning to assume the critical role in the regional economy that they undoubtedly enjoyed at the end of the century. With the increase in their worth came assertions about the wastefulness and unsustainability of existing methods of exploitation. It would not take long for new forms of government to emerge and hold sway for nearly seven decades. A new environmental regime was being born in Kumaon, defining what forests meant, how they should be managed, and for what purposes they should be used.

The Consolidation of Government: 1868-1921

Ramsay continued as the Conservator of forests until 1868. A new forest department was constituted in 1863 following a conference in Naintal that all Indian conservators attended (Chaturvedi, 1925: 358). Major G. Pearson became the first independent conservator of the North-Western Provinces and elaborated further the conservation measures initiated by Ramsay. The forest department began to pay greater attention to mapping areas under its control, framing regular working plans, opening unworked forests, and recording existing rights in forests (Pearson 1869). The overall shortage of trained foresters at this time meant that most of the staff of the forest department was recruited from among engineers, military officers, and naturalists. After 1870, an influx of trained foresters changed the character of departmental activities. As these foresters assumed senior positions in the department, they began increasingly to use interventionist procedures based on calculations of growth, volume, and yield, and numerical estimates of valued species of trees. These strategies were systematized in the form of working plans that would come to cover almost the entire extent of land classified as forest in Kumaon by the first decade of the twentieth century.

Ramsay's views on forest conservation had been relatively mild in comparison to those of the new foresters. For them, exclusion and comprehensive central control were foundational to conservation and higher forest-related revenues. Over the next three decades similar processes of forest making ensued in Kumaon that chapter two elaborated for India. The passage of the Indian Forest Act of 1878 facilitated the forest department's work of surveying, demarcation, classification, settlement, and systematic classification of lands it considered valuable as forests. New categories of protection, increased emphasis on timber production and marketing, direct involvement in the collection of resin and manufacture of turpentine, and refinement of the regulations that governed new forests were the hallmarks of an aggressive forest . conservation policy. The very success of these mechanisms to make and govern forests, we shall see, produced unexpected divergences in the agrarian political economy of Kumaon.

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Starting from around 1875, the forest department began to prepare working plans to regulate the felling of trees. These plans detailed the area of forest to be worked over, the number of trees to be felled, and operations needed to improve the forest. A working plans division was formed in 1880, and department officials began to develop regionally specific models of a normal forest with a normal increment, a normal distribution of age classes, and a normal growing stock. The objective of defining the normal was to make existing vegetation approach the values associated with the normal (Trevor and Smythies, 1923). Within about three decades, the forest department had taken over nearly half of Kumaon, and classified nearly 85 percent of this area under different forms of government based on working plans. Appropriate methods of planting and harvesting were devised, and applied to specified blocks. Given the imperfect state of knowledge about the region's forests, persistent revisions were commonplace in all working plans. But as foresters began to develop more reliable quantitative estimates of the relationships between age, growth rates, diameter and girth, volume, yield, and value, they could begin to congratulate themselves on their success in rejuvenating vegetation in a province that they had inherited in a ruined state (Chaturvedi 1925: 366; Robertson, 1942: 55).

The initial method adopted to work forests was an adaptation of Brandis's strategy in Burma (chapter two). It involved the regulation of annual yield by volume based on diameter classes, and the time taken by trees to pass from one diameter class to the next (Trevor and Smythies 1923:15). Fire protection was introduced in Kumaon in 1876. By 1901 more than 65 percent of the area under the control of the forest department was being protected from fire. Regular records helped keep track of the number of fires, their location, origins, and motivations, and the degree of success in protecting forests from them. But there was always debate on the advisability and feasibility of complete fire protection. In the early twentieth century, the forest department initiated the policy of departmental burnings in areas that were not being protected for regeneration (Osmaston 1921). Together with fire protection, the department also sought to restrict cattle grazing, fodder harvests, and lopping. In addition, department officials classified many non-

timber plant species as parasites, and undertook regular operations to eliminate them. Going far beyond anything Brandis had attempted in Burma, Kumaon foresters began frequent creeper cutting operations from 1887 in several working plan circles.[17]

The establishment of the Forest Research Institute in Dehradun made United Provinces the center of new research in silviculture and forestry. By 1906 R. S. Troup had initiated systematic statistical research in several valuable timber species such as Chir *(Pinus roxburghii),* Deodar *(Cedrus deodara),* and Sal *(Shorea robusta).* Other officials were producing comprehensive listings of Kumaon's flora (Osmaston 1927). The yield tables Troup created for Sal dramatically changed the rotation, thinning, and yield calculations in later working plans. The drafting and implementation of working plans was necessarily a slow operation. But by 1924, the forest department could claim in its annual report that all the areas classified as reserved forests in the United Provinces were either under a sanctioned working plan, or under a plan that was already being implemented (UPFD, 1924).

The Forest Act of 1878 allowed three new categories of protection: reserved forests, protected forests, and village forests. In reserved forests, the forest department could restrict all activities by local users such as grazing, and lopping of fodder or firewood without explicit permission. Although the state could create reserves even under the 1865 Act, the extent of restrictions in reserved areas came to be far greater under the 1878 Act. Village forests were those lying within the boundaries of a village. In Kumaon, these were forests that lay within boundaries demarcated by Traill in his settlement of 1823. Villager could have unrestricted access to their village forests. Protected forests were all the other uncultivated lands not classified explicitly as reserved forests, and gazetted as protected. Further, under the provisions of the 1878 Act, the government could reclassify any Protected Forest as reserved forest depending on its commercial value. Combined with the fact that valuable trees such as deodar and sal were also placed on the reserved forest list, villagers' access to forests could be significantly restricted depending upon the decrees the forest department chose to issue.

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The area under the control of the forest department increased substantially by the 1890s. The government issued a new notification in 1893 to convert all wastelands and uncultivated lands into district protected forests.[18] Two additional notifications in 1894 reserved all commercially valuable trees such as *Chit (Pinus roxburghii),* Cypress *(Cupressus turulosa),* Deodar *(Cedrus deodara,* Sal *(Shorea robusta),* Sissoo *(Dalbergia sissoo),* Tun *(Toona ciliata),* and Khair *(Acacia catechu),* and restricted the activities that were permitted in protected forests. Cutting timber, selling it, lopping for fodder and firewood, hunting, and use of traps were all severely curtailed (Rawat 1991:286-87).

But enforcing these regulations proved exceedingly difficult. Senior administrators complained that although the laws forbade the felling of trees, there was no way to enforce the laws owing to the lack of trained personnel and resources.[19] According to the Deputy Commissioner of Almora, it was unreasonable to suppose that the department "could ever secure real control over the district forests with only one ranger to 4,832 square miles, and one forester to 371.7 square miles of forests" (cited in Shrivastava 1996:÷183). Such difficulties in protecting the district forests and other protected forests led finally to the massive conversion of the protected forests into reserved forests. Between 1911 and 1916, more than 3000 square suites of protected forests were reserved. Prior to this, only about 200 square miles of forests were classified as reserves in Kumaon. Even for the entire province, this reclassification doubled the area of reserved forests between 1911 and 1917: from about four thousand square miles to over seven and a half thousand square miles (see figure 3.1 below).[20] The process of demarcation and actual reclassification was slowly completed by about 1920.

(Figure 3.1 here)

The department's conversion of large areas of land with or without much vegetation into reserved forests helped the cause of exclusionist protection by reducing the costs of protection. Since villager

activities in reserved forests were prohibited, any villager found in the reserves was automatically in violation of forest laws. In district and protected forests, villagers could always protest that they extracting fodder or firewood only up to the permitted levels. The conversion into reserves was also in line with the stated policy to regulate and expand the production of timber.[21] The department's success in preparing working plans for almost all the areas it controlled, and the high levels of revenues it procured from what it already possessed, made it eager to acquire new land. Three additional reasons served as justifications to expand territorial control. Department officials linked forest protection through "scientific forestry" with soil conservation and stabilization of hill slopes. They equated the felling of trees without careful regulation with unpredictable and undesirable climate change and flooding in the lower reaches of rivers originating in the mountains. And they identified local practices with deforestation and environmental destruction.[22] Through such justifications did the forest department came to defend efforts to control and regulate a vast area of land that it classified into different types of forest.

However, the territorial gains of the forest department were shortlived. It had to concede control over a substantial proportion of the uncultivated lands it had classified into reserves. Its pursuit of what it called scientific forestry ran into the obstacle of powerful opposition from the revenue department and determined protests by rural residents. To make regulation permanent, a radically new strategy had to be devised, one in which those currently contesting control by the forest department - revenue department officials and rural residents - would become willing accomplices.

Cracks in the Regulatory Edifice

The takeover of land in Kumaon was based on the oft-repeated argument that all uncultivated land belonged to the sovereign. Administrators like Traill had asserted at the very founding of British rule in Kumaon in the 1820s that forests were the property of the ruling power and forest revenues belonged to the state (Traill 1826). Atkinson and Walton repeated this view in their gazetteers. "From time immemorial, the

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sole property in all forests has vested in the Sovereign... the right of Government to ail the forests and waste lands not included in the assessable area of the estates remains utterly unaffected" (Walton 1911: 9). Under this view, any claims of villagers on forests were really privileges they exercised at the discretion of the state, For more than half a century, government officials in Kumaon echoed the refrain that all rights in land belonged to the government, their very vehemence and persistence on the matter signaling continuing contestation by powerful actors. We will see below how differences developed between forest and revenue department officials, and how another group of actors, peasants, questioned and undermined the presumption that the state owned all forests and their products.[23]

Like a dog-in-the-manger

The success of the forest department in increasing its territorial possessions was often under attack by officials in the land revenue department. Revenue department officials questioned the very logic of land appropriation by foresters. The power and income of the revenue department were in part based on the area of land it could govern and tax. It argued therefore in favor of expanding agriculture and cultivation. The claim by the forest department that it had the legal right to decide the fate of areas that were not cultivated naturally became a bone of contention between the two departments.[24] Both departments claimed the right to administer their own tracts of land: reserved forests for the forest department and cultivated land for the revenue department. But each wanted also to control the remaining uncultivated wastelands. The strategy for the forest department was to declare these lands as forests and progressively convert them into reserved forests. For the revenue department the strategy was to question this classification by raising doubts about whether reservation was necessary for such a large area in the hills.

Tensions between the two departments were evident even in the 1860s when the forest department was created. After 1893, as the forest department sought to extend its reach into Kumaon's territory, these tensions often came to the surface. Official correspondence between the provincial government and officials in the revenue and forest departments makes these tensions and their reasons quite clear (Farooqui, 1997:

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52-55). The forest department, having increased the income from forest exploitation to historical highs, was unwilling to cede authority over the forests It had created. The revenue department was similarly loath to give up control over virtually the entire territory of Kumaon to a rival. V. A. Stowell (1916), Deputy Commissioner in the revenue department, protested the work of the forest department by arguing, "the Commissioner in the hills is not overworked, you are taking away his civil and judicial work if you lop the forests out of his administration. What is left for him to do? Practically nothing apart form his loss of all authority of the most vital interests of his district..." (Cited in Baumaun, 1995: 86). Another revenue official claimed, "They [forest department officials] apparently do not want the forests themselves, but, dog-in-the-manger like, they say nobody else shall use them" (Ross 1894, cited in Shrivastava 1996:146). A senior settlement officer compared the forest and the revenue departments as "two kings in one city" (Pauw 1895, cited in Shrivastava 1996:147). Such tensions were not particular to Kumaon. About the same time as the passage of the Forest Act of 1878, one of its chief architects Baden-Powell summed up the frictions in Madras Presidency, "It is not the fault of the Madras [forest department] officers that the forests are undemarcated, are destroyed without check, that the reports repeat year after year the same sad story of fires, cattle-trespass, and waste: nor is it their fault that... hundreds and thousands of rupees are annually converted from Imperial revenue to local purposes... It is the fault of the obnoxious system which places every forest officer in subjection to the Collector [of revenues], the relation being at once unsatisfactory and undefined" (1876:198).

Foresters felt they had good reasons to be pleased about transforming uncultivated lands into different types of forests. They argued that with the new settlement there were no doubts as to the nature of rights of users in various forests, and that this was all the more remarkable because only the less valuable forests were left to villagers (Shrivastava 1996:163). As a result, forests had become one of the most important sources of revenue to the government Trevor and Smythies (1923:14) argued that "present and future generations owe a great debt of gratitude to... [those] who rescued the great forest estates of United

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Provinces from destruction, and who have assured and built up such a splendid heritage." But revenue department officials were often critical of the new restrictions and protested that these restrictions created the potential for massive conflict with the peasantry.

Especially vocal in expressing their dissatisfaction were senior revenue officials like Henry Ramsay and D. T. Roberts, and later, V. A. Stowell and P. Wyndham. According to Ramsay, the restrictions on grazing, firing, and firewood collection were unnecessary, against custom, and unprofitable. His belief that the forest department was extremely unpopular was shared by those outside the revenue department. V. A. Stowell argued passionately in 1912 about the prevailing hatred among Kumaonis against the "horde of forest department underlings" and "survey parties that had flooded the hills" (cited in Farooqui, 1997:49). Even some forest department officials admitted the unpopularity of their conservation measures (Chaturvedi, 1925). It was only the reasons for unpopularity that were a matter of dispute. Revenue department officials argued that the unpopularity of forest-related measures was unnecessarily earned. Their counterparts in the forest department insisted on the foresightedness of the new laws, and attributed their unpopularity to the ignorance of the peasants.[25]

Clashes of interest between the forest and the revenue department were common in other parts of India as well. Intervening in such a dispute between district collectors and forester in Bombay province at the turn of the century, the Secretary of State for India enjoined the need for cooperation and said, "the proper growth and protection of forests is as important to the government as the cultivation of any other crop" (UPFD 1961, cited in Baumann, 1995:85). But these differences were so pervasive in Kumaon that the provincial government called a meeting of the region's revenue and forest officials in 1916. The meeting was held in Nainital, and was attended by James Meston the lieutenant-governor of the province together with most senior forestry and revenue officials. Two questions needed to be settled. To what extent was the reservation of almost the entire area of Kumaon to be upheld, and whether revenue authorities were to exercise any control over the forest department. Revenue department officials considered questions about

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grazing fees, supply or sale of forest produce to villagers, budgetary proposals regarding new buildings, and assessment of the performance of the forest department to be properly within its purview. To their dismay, both questions were settled in favor of the forest department. The forest department was to continue to decide on all matters related to forests, even if they impinged on land revenue and village life, and the policy of reserving forests was to be continued (Farooqui 1997:54-57).

The more exclusionist views of foresters in Kumaon succeeded in no small part because of the success of the forest department in producing large surpluses year after year. Revenues from forests were relatively small at the beginning of the nineteenth century. By the early years of the twentieth century, they had multiplied by orders of magnitude. India's export surplus was critical to the colonial state's balance of payments as Indian economic historians have pointed out (Bose and Jalal, 1998:100). The forest department in Kumaon produced revesues and surpluses far in excess of those from land revenue. It was because of this success in revenue generation that even outside observers found the work of the forest department praiseworthy.[26] A cursory look at the financial performance of the forest department makes clear its commercial success, despite the professed aim of conservation. Since its formation, revenues and surpluses of the department increased steadily (see figure 3.2 below).[27]

(Figure 3.2 here)

Forest officials often complained about the limited funds available to them for undertaking improvement activities in forests. Indeed, compared to forest management in countries like Prussia and France which respectively spent 1.8 and 0.9 dollars per acre on the upkeep of their forests, the Indian forest service spent no more than a pittance: 0.076 dollars per acre (Anon 1912a: 224-38; Anon, 1912b). But the emphasis on producing a surplus necessarily limited potential expenditures on improvement of forests.

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Although the high revenues from forests gained the forest department a victory in its efforts to reserve the larger part of Kumaon, this victory did not last very long. The retreat that forest department officials had to beat in less than a decade was not just because of the efforts of their revenue department rivals. In significant measure, it were protests by Kumaon's villagers that forced the issue. The basis of the successful performance of the forest department - planning and care - were vitiated by fires in the forests.

The Growth of Peasant Protests

The revenues and surpluses of the department were directly related to the increasing area under its control, and greater restrictions on villagers' activities. They came thus at the expense of what villagers had considered to be their rights in forests: to collect firewood, graze animals, harvest fodder, and cut timber. These restrictions naturally made the forest department extremely unpopular throughout Kumaon (Shrivastava 1996:190-205). As early as the turn of the century, villagers had attacked foresters trying to reserve areas they considered as sacred groves (Rawat 1991: 308-10). Guha (1989) and Farooqui (1997) describe at length the wide range of strategies villagers adopted to protest the forest reservation policies of the government.

The forest policy of the government was also condemned in various parts of Kumaon by local leaders. After a large public meeting in 1907 in Almora, the local leader Badri Dutt Joshi lodged an emphatic protest against the policy with the government (Pant 1922: 44). Even government officials noted the depth of discontent among villagers (Farooqui 1997:79-80). It was not just the government policy on forests that led to remarkable discontent among villagers. Kumaon villages had been burdened with the *coolie* system of forced labor extraction since the early part of the nineteenth century.[28] Under the coolie system, Kumaon villagers could be recruited to meet any labor needs of the administration.[29] Noted leaders in the hills established the Kumaon Parishad in 1916 with the explicit aim of abolishing the levy of forced labor (Pathak 1991).

In part as a result of these protests, the Lieutenant Governor of the province Sir John Hewitt claimed somewhat disingenuously at a speech in 1912 at Haldwani that "the Government had no desire to make money out of the forests in Kumaon and intend[ed] to spend for the benefit of the people of Kumaon, the amount by which the receipts exceed the expenses,"[30] The existing orders, however, could not be changed because they were necessary for the protection of wooded areas from "reckless destruction" (Cited in Pant 1922:44). Sir Hewitt had promised Kumaon's villagers in 1912 that there would be three classes of forests: Class A would consist of areas intended principally for protection, Class B forests would be fuel and fodder reserves, and Class C would be freed from official control and people would be free to exercise usufruct rights over them.[31] But by 1917, the rights people enjoyed in Class B forests had been eliminated altogether and many of the trees in Class C forests were also notified as reserved trees. The new reservations simultaneously helped increase revenues for the forest department,[32] and the ire of villagers against it.

Especially irksome to villagers was the conversion of almost all uncultivated *(benap)* land into protected forests in 1893, and then their gradual reclassification into reserved forests between 1911 and 1920. This change left villagers almost no uncultivated land outside the class of reserved forests. By 1917, the cultivated area of Nainital and Almora was less than 10% of the area of reserved forests. Class C forests, under the control of the revenue department and from which villagers could collect forest products for their needs, comprised just about 100 square miles in Nainital (Pant 1922: 53).

In addition to prescribing limits on the geographical area in which villagers could enter and use forests, the forest department also specified elaborate new rules to restrict lopping and grazing rights, reduce the extraction of non-timber forest products, prohibit the extension of cultivation, and enhance the labor extracted from villagers. These rules were implemented and enforced by increasing the number of forest guards. The new rules were complicated, and enforcement was not as strict as the letter of the law required. But the increase in the size of the forest bureaucracy still created opportunities for guards to

ftvtort bribes, and raised the level of hostile interactions with village women and children who harvested products from the forest.

Friction with, forest guards occurred in part because they were enforcing a stricter set of regulations over a larger area classified as reserved forests. It was also made inevitable because forests were a critical part of Kumaon's agricultural economy, significantly based as it was on cattle.[33] Animals provided not just dairy products but also manure to fertilize agricultural fields and draught power for tilling. Agricultural productivity was an almost direct function of the amount of manure added to the fields.[34] Forests were the source of firewood for heat and cooking. Thus, rural residents depended on forests for three types of products: fodder for livestock, manure for fields, and firewood for the household. Links between forests and agriculture were far more critical in the hills than in the plains. They continue to be critical to this day.[35] Even Baden Powell, indefatigable in his defense of state ownership of all forests, conceded that villagers in Kumaon may have some rights in forests precisely because of the close connection between agriculture and forestry.[36]

Although government officials asserted that the new laws were never strictly enforced, they goaded villagers into "violent and sustained opposition" (Stebbing 1922:258).[37] The Annual Administration Report of the Forest Department in 1916 was explicit. "In the Kumaun circle, there was an epidemic of fires in the whole area: 44 are ascribed to organized incendiarism... This appears to be proved by the fact that numerous fires broke out simultaneously over large areas and often the occurrence of a fire was the signal for general firing in the whole neighbourhood... the resulting damage was enormous..." (GOUP, 1916:7). According to one of the forest officers (Chaturvedi 1925: 366), "the formation of the 'reserves' led to an epidemic of forest offences which culminated in organized incendiarism in 1921 ,"[38] Villagers simply refused to accept the rules. Nor were they willing to concede the fundamental assumption undergirding the new rules: the state's power to constitute a monopoly over all natural resources it deemed significant.[39] The best efforts of forest department officials failed to convince the villagers that forests

belonged to the state.[40] The officers who had designed the new settlement had hoped that the residents of the hills "would gradually become accustomed to the rules as gazetted and that control may be tightened as years go on" (KFGC 1921: 2). But hill dwellers dashed these sanguine hopes.[41]

Villagers broke almost all the rules they were supposed to follow, swelling the records the forest department maintained on breaches of forest rules. Many of their actions were at an individual level, oriented to extracting forest products like fodder and fuel wood, and grazing livestock. But their offenses also reveal an interesting pattern overall (see figure 1.1). Prior to 1916, the number of people convicted for each detected infraction was less than two. Between 1917 and 1921, the number of people convicted for each infraction rose to somewhere between five and six. After 1926, the average dropped down again to less than two (Guha, 1989; Agrawal 2001). Collectively organized breaches of forest law, thus, occurred far more often at the peak of the new restrictions.[42] Although the direct testimony of villagers is not available, it is clear that their dissatisfaction and responses were expressed far more collectively in 1917-21 than in the period before or after. In light of this it is hard to accept the official suggestions that Kumaonis broke the new rules because they did not really understand them.[43] They may not have understood the exact test of the rules. But they understood well enough the implications. They acted collectively against the rules with all that such actions imply it in terms of joint discussion and understanding, and the reimagining of personal interest. Indeed, villager protests were so vehement that the annual report of the forest department for 1922 accepted that "owing to the anti-forest campaign, the machinery for the control of forest offences more or less broke down." Grazing infractions increased so greatly that forest officials found "the pressure of grazing combined with the lawless attitude of the people a serious menace to the tree forests" and in some cases found the position so bad that they contemplated the "abandonment of the forest" (GOUP, 1922: 7).

Villager protests against forest reservations intersected with agrarian unrest and their grievances against the system of forced labor extraction in powerful ways (Siddiqi: 1978). Throughout the period

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between 1916 and 1921, there were massive demonstrations in Kumaon. These demonstrations and strikes

led the forest department to abandon many working plans. The 1921 Annual report of the forest department

admits that, "owing to the [coolie] *utar* strike and the general political conditions in Kumaun preparations

of the East Almora working plan had to be abandoned for the present which is much regretted as forest

management in this division is far from satisfactory. The whole subject of forest policy in Kumaun is now

under review..." (GOUP, 1921: 2). The Report also warned that if the forest department did not receive the

authority to close off forest areas and take appropriate measures against fires, "no scientific management is

possible" (ibid: 2).

In their demonstrations and in the meetings of the Kumaon Parishad, Kumaon residents showed

their unremitting opposition to the coolie system. The movement took a turn toward greater radicalism in

1921, with a series of continuous meetings in different Kumaon villages, hundreds of villagers courting

arrest, and many villagers simply refusing to perform the labor required of them (Pathak, 1991: 270-76).

Protests against forced labor became especially fierce in 1921, the same year that incendiary fires in forests

registered their greatest upsurge. Another critical development at the same time was the return of nearly

10,000 Kumaonis whom the British had recruited to serve as soldiers during the First World War

(Farooqui 1997: 80). The fear of the government that these soldiers with their deep local ties and their

experience of armed fighting could set the whole of Kumaon ablaze in a revolutionary flame contributed in

no small way to its willingness to listen to people.

"The Strictness of Popular Control": Community and Conservation in Kumaon: 1921-1931

The incessant, often violent, protests against reservations occurred in the context of tensions and

rivalries within the colonial state: between its two most powerful arms in the hills - the land revenue and

the forest departments. They were coupled with discontent and visible protests against forced labor, and the

presence of a large number of young Kumaonis who had served as soldiers in the first World War for the

British. Paying attention to the protests against forests, the government appointed the Kumaon Forest Grievances Committee to look into local "disaffection." Comprising government officials and local political leaders,[44] the Committee examined more than 5,000 witnesses from all parts of Kumaon. It used the resulting evidence to make nearly 30 recommendations. The Committee felt that many of the breaches of law by villagers were simply a result of unenforceable rules that interfered directly with actions of villagers aimed at securing a livelihood. It advocated the repeal of all restrictions grazing of livestock, and on lopping of fodder from oak trees that were the main source of food for livestock in the winter season. These two set of restrictions were responsible for most of the breaches of forest laws, and gained the government little.

The Committee also recognized the social power dynamics surrounding the enforcement of the new laws when an agent of the state such as a forest guard was empowered to cite villagers for actions that constituted for them no more than everyday use of the forests, but were seen as infractions under the law. Under such a situation, not only would a larger number of guards be needed to enforce the law, but enforcement itself would promote dissatisfaction among those being cited. In addition, law simply created opportunities for guards to extract bribes for minor infractions.[45] The giving and taking of bribes simultaneously demonstrated the coercive power of the state, and exposed its limits (Agrawal 1999: 64). The new laws were an expression of power in the sense that their effects on the lives of the hill residents could be shifted only by resorting to another source of power—money. But bribes also create the possibility of circumventing the intent of the exercise of power as expressed in the new laws. The Committee suggested that forest department employees would be prevented from harassing villagers, especially where women and children were involved, if they guarded a smaller area of forest and were kept busy in other departmental work.[46] The Committee's observations about limiting the area of forest under the control of the forest department matched the department's own earlier complaints about not having enough employees

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to guard its possessions. But the Committee's solution differed from that of the department. Instead of advocating an increase in the number of employees, it suggested a reduction in the area of forests!

The most significant concrete suggestions of the Committee were twofold: 1) dereserve the larger part of the newly created reserved forests between 1911 and 1917, and 2) lay the foundations for creating community forests that would be managed under a broad set of rules framed by the government, but for which villagers themselves would craft the specific rules for everyday use to fit local conditions. The government took both these recommendations seriously, much to the dismay of the forest department officials. The 1922 Report of the Forest Administration argued that the reservations had resulted in far better protection to the forests, the extension of the resin and turpentine industries, and higher revenues.[47] The 1925 Report complained that the Committee had given to villagers "virtually everything they asked for in the way of unlimited grazing and forest produce... (but) the case of Kumaon was one where a population ought to be protected against itself, however unpopular such action may be" (Anon 1926: 47-48). But these arguments did not prevail against the combined effects of local protests and the opposition of the revenue department.

At first, the new reserved forests that had been taken over by the forest department between 1911 and 1917 were reclassified into Class I and Class II forests. Class I reserved forests were of relatively limited commercial value. They contained broad-leaved tree species upon which villagers relied for fodder and fuel. Class I forests also comprised smaller patches of vegetation (less than one or two square miles) located close to the village. All these forests were transferred to the revenue department as district forests and, in time, could come to be controlled by villagers by following a specific procedure as described in the 1931 Forest Panchayat Rules. Class II Reserved Forests were those stocked with commercially valuable species. These included Chir, Sal, Deodar, and Cypress. They were to be retained under the control of the forest department. But even in the Class II forests, villagers gained the rights to collect dry twigs for

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firewood and cut grass for fodder. It was mainly over the larger areas of forests that contained commercially valuable species that the forest department continued to retain full control.

By 1927, nearly 2000 square miles of Class I forests had come back under the control of the revenue department. Another 1300 square miles remained with the forest department of which 1100 square miles were the new reserves, now classified as Class II forests, and 200 square miles were the old reserves dating from the 1890s. It was the 3100 square miles of Class I (2000 square miles) and Class II (1100 square miles) forests over which much of the battle for control had been fought in the preceding thirty years. Increasing reports of deforestation and degradation in the 1870s and the 1880s had prompted the drastic rules of 1893-94 whereby the forest department brought these forests under its control as protected forests. When this measure proved insufficient, the forest department settled these lands as reserved forests during 1911-17. The resulting protests and the opposition of the revenue department finally prompted the "disforestation"[48] of part of this land. A significant proportion was converted into Class I forests. Over the next sixty years, a large proportion of the Class I forests and even some of the reserved forests have come to be managed by village level forest councils *(van panchayats)* as community forests.

At least initially, the formal transfer of 2000 square miles of forests to the revenue department by 1926, and more radically, to village councils over time, was seen by forest department officials as a move toward their destruction "in view of the shortsighted outlook of the inhabitants"[49] The annual report of the forest department for 1927 warned on its very first page that the forests that had been transferred were unlikely to survive: "...their ultimate destruction is possible. There are proposals to manage some of them by village panchayats, which may retard their disappearance, but in the opinion of the writer will not save them to posterity" (GOUP, 1926:1). Over the next decade, forest officials were repeatedly to predict the dire consequences of the change in the administration of forest resources, and make assertions about literal deforestation together with the administrative disforestation of land that had occurred.[50] For the forest department, at least as difficult to swallow as the creation of the village-level council forests and the

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transfer of land to them was the bitter pill that these forests and forest councils would be under the control of the revenue department. After the provincial government had accepted the recommendations of the Forest Grievances Committee, foresters complained, "The draft rales (for the Council Forests) submitted to the government for approval leave control entirely in the hands of the Commissioner and the Deputy Commissioner while the Forest Officer is merely to be consulted, when necessary, in the capacity of advisor" (Anon 1931: 240), The Annual Report of the Forest Department stated, "The work of the forest department in regard to panchayat forests is limited to giving help and technical advice" (UPFD, 1930:2). It was clear that popular mobilization, villager protests, revenue department hostility, and the use of forests as a political issue in local elections made it impossible for forest conservancy to be only a technical or scientific subject.[51]

Conclusion

The forest department in Kumaon remade what forests meant and institutionalized their care and maintenance by the end of the nineteenth century. The rules and forms of governance it endorsed and attempted to implement were parallel to those pursued in other parts of India. Protection from fire, exclusion of local residents and their animals, systematic planting and harvesting, all based on careful classification of land into administrative units and their planned exploitation through working plans were the highlights of normal forest department activities. Calculation and numbers, played a major role in the production of the idea of forests.

In developing the above themes in relation to Kumaon's landscape, this chapter follows the lead of chapter two. But it has also shown how the plans of forest department officials did not always get realized. Consistently high levels of revenues and surpluses, far exceeding those produced by the land revenue department in Kumaon, were instrumental in ensuring that the forest department would emerge victorious in its initial skirmishes with rival departments. But given the close links between hill agriculture and forest

products such as fodder, green manure, and firewood, the actions of the department in Kumaon had far more adverse impacts on local residents in comparison to those of its sister departments in other provinces of India. Territorial aggrandizement and restrictions on rural residents' actions in forests resulted in a series of protests between 1916 and 1921. These protests coincided with resistance against forced labor and the return of more than 10,000 Kumaoni soldiers. The presence of widespread grievances coupled with tensions within the colonial administrative apparatus led the state to concede the demands of the Kumaonis.

A number of measures between 1921 and 1931 for deciding on the disposition of almost 2000 square miles of forests were finally given form in the Forest Council Rules of 1931. These rules permitted village residents to create forest councils and bring under their own control the Class I reserved and civil forests that were with the revenue department. The historical process by which forests came to be regulated collectively (but not necessarily without tensions) by these important actors - the forest department, the revenue department, and village residents - can be seen to be analogous to the policies followed by>the British colonial state in some of its other possessions,[52] and in the Madras Presidency in India as well (Shrivastava 1996: 301-2).[53] Dietrich Brandis contemplated a category of village forests from which villagers could gain their needs for firewood and fodder and also gain nutrients for agricultural fields as early as 1863. It was laid down as ultimate policy even in the United Provinces in 1912 (Mobbs 1929: 470). Baden Powell wrote in 1892, "The day will probably come in India when village bodies will hold regular forest estates... (and) in time we may hope to see villages or groups of villages regularly owning well-managed forests (203, 237).

Foreseeing the continuing formation of forest councils and development of a "movement" in favor of local protection, the Chief Conservator of Forests in the United Provinces suggested in 1930, "My own impression is that if popular control of forests is shortly attained, Kumaun may first obtain some relaxation, but will before long be called on to pay its way and that *popular control may in the end insist on much stricter control of Kumaun than we can at present enforce"* (Canning, cited in Srivastava 1996:

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296, emphasis added). Canning's faith in the ability of the local populations to protect forests hinged on the imarticulated assumption that they too would come to see forests as did the forest department: exhaustible commodities that needed care. The transformation of forests into calculable resources and of Kumaon's residents into environmental subjects are the processes that the chapters in the next part of the book investigate.

Endnotes

1.Rangan (2000) discusses the different narratives that have been woven around the Chipko movement, and how it has become a part of environmentalist folklore.

2.For two interesting, somewhat different perspectives on the relationship between nature and human interventions, see Dove (1992), and Merchant (1980).

3. Although there are few accounts of how humans governed forests prior to the nineteenth century, Champion (1923) constructs an absorbing general narrative about how human activities likely shaped the distribution of major tree species in Kumaon Himalaya for the period we do not have written records.

4.The difficulties of measuring land and demarcating cultivated and uncultivated land constitute one piece of evidence about the lack of government over forests in the period before British rule. Throughout the Chand period, rural land area was measured in terms of the amount of seed necessary to cultivate a given tract. "No estimate even of the area of the waste and forest land was ever made by the former governments" (Atkinson vol. 3,1882:467). Since this varied depending on the fertility of land, the Gorkhas tried to introduce a more uniform system of measurements. Introduction of uniformity proved to be so costly that they abandoned their efforts.

5.Three types of taxes were common: *kath-bans* (on wood and bamboo), *kath-mahal* (on catechu, a type of dye), and *ghikar* (on cattle) (Atkinson, Vol. 1, 845-46).

6.By some estimates, nearly 200,000 hillmen were sold into slavery or bondage in the markets in the plains to meet the high tax demand of the Gorkhas (Atkinson, vol.3,1882). However, Traill fixed his revenue assessments at the same level as had been realized by the Gorkhas.

7.Under this settlement, known as Traill's San Assi settlment, all land was measured, boundaries of cultivated and forested lands were demarcated, and the domain of control for private holdings was designated as the cultivated land. The settlement made no provisions for the conservation of forests, because at this time, forests in Kumaon were considered to be almost inexhaustible. Despite some concerns

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about the declining availability of teak, the impression of the inexhaustibility of forests was not peculiar to Kumaon administrators. Stebbing, reviewing the progress of Indian forestry policy in 1921 said about the early years of British rule, "The great continent appeared to hold inexhaustible tracts covered with dense jungles... The early administrators appear to have been convinced that... in many localities forests were an obstruction to agriculture... The whole policy was to extend agriculture and the watchword of the time was to destroy the forests with this end in view... This was a transitory period, but enormous destruction to valuable forests was the outcome... The spread of railways at a later period brought the matter to a head... The Keynote of our interest in the Indian Forests between the years 1796 and 1860 may be said to have been their exploitation for timber" (1922:82-83).

8.Kumaon Iron Company had its own mines, and owned nearly 350 square miles of forests in the terai. The Company had rights to all the fuel it needed from these forests, but not to sell the firewood, nor to extract timber (Atkinson, vol. 1,1882: 856).

9.The estimate by British colonial administrators that Kumaon forests would not be exhausted even if they were used to supply the fuel needs for mining and processing of iron is Interesting when compared to earlier comments by English observers. John Evelyn, one of the earliest writers on conservation in England, had talked about the ill effects of mining and iron works on forests as early as 1664. The "exorbitance and increase of devouring iron mills" could ruin England, and he wrote that "it were better to purchase all our iron out of America, than thus to exhaust our woods at home..." (cited in Glacken 1967:487).

10. Bailey goes on to say that it was only the wholesale clearance and difficulties found in procuring railway sleepers that made the state realize the necessity of forest protection (1924:189-90). Responding to Bailey, whose observations were about the forests of the United Provinces in general, another forest officer added, "The extensive clearance of forests... referred to by Mr. Bailey are but a small portion of the whole to which the present day destruction of the Kumaon and Garhwal forests may be added. The rate at which these hill forests have been destroyed was fittingly indicated in the recent debate on supplies in the Local

Council, by a reference to an old man who now had to walk 40 miles for his plough wood, whereas in his youth he could obtain it in his village" (Benskin 1924:492).

11. According to the Gazetteer of Nainital, the contractors had "uncontrolled liberty to cut where they pleased, with the result that large number of trees were felled and for want of transport were left lying in the forests. To such an extent was this reckless felling carried out during this period that for several years after the control of the forests was taken in hand by the Commissioner, the energy of the officials was directed towards extracting the timber thus left by the contractors" (Neville 1904:19).

12. Trevor and Smythies (1923: 3) paint a similar picture: "The forests were treated to an orgy of destruction in many districts... After the mutiny of 1857, the great expansion of the railways developed an enormous demand for timber for sleepers, and all the accessible forests of the province were depleted of their best timber trees for the production of sleepers and other uses." Chaturvedi, another member of the Indian Forest Service remarked, "The first half of the nineteenth century witnessed an exploitation of forests on a scale hitherto unprecedented in the history of these provinces... an almost callous destruction of forests took place... extensive tracts of forests were sacrificed for the cultivation of tea in Kumaun and Garhwal" (1925: 357).

13. Walton (1911:11) calls Traill's proclamation restricting the felling of Sal as leading to the "first forest reserves in Kuraaon" since they were thereby excluded from leases given out by the state.

14. Both in Bombay and Madras, which witnessed among the earliest efforts at governance of forests, revenue department officials also managed forests for much of the first half of the nineteenth century (Fisher 1885: 586).

15. For an in depth discussion of the rivalries between the forest and revenue departments in Kumaon between 1890 and 1925, see Shrivastava (1996). His argument draws its inspiration in part from Guha's (1990) discussion of the differences between centralizers and decentralizes in the making of the Indian Forest Act of 1878 and the Madras Forest Act of 1883. See also Farooqui's discussion of the

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disagreements among British officials about the necessity to classify large areas of land as reserved forests (1997:49-57).

16.More systematic management in Kumaon can be dated to the 1870s. Smythies argues, "It was in 1876 (that) forest conservancy was systematically started in some of the hill forests of Kumaon" (1911: 54). Although many of the practices that led to systematic state control were initiated in the 1860s, a more far-reaching implementation of these and some of the refinements of these practices took an additional decade.

17.The gigantic elephant creeper, a vegetable pest, could attain such dimensions that a single plant, "with its spreading limbs, like some vegetable octopus, [could] sometimes cover the tops of the trees over a quarter of an acre of densely grown forest. The suppression and extermination of these natural enemies is therefore one of the most important points of forest conservancy and one of the chief factors in the future well-being of a timber-producing area" (Walton, 1911:15).

18. As Pant puts it, "[B]etween the property-grabbing zeal of the revenue officers and the exhortations of experts of the forest department, the rights of the people were ground down to bring forth the above notification. By this notification, all the forests and waste lands of the districts of Almora, Naini Tal, and Garhwal not forming part of the measured areas of villages of of the reserved forests were declared to be protected forests under Section 28 of the Indian Forest Act" (1922:39).

19.The forest department officials also tried not to be unduly harsh in punitive measures they imposed. In 1915-16, the average level of fines on rule breakers in Kumaon and Garhwal was less than 20 percent of the level of fines in other parts of the United Provinces. The exact figures are approximately Rs. 1.4 for Kumaon and Garhwal as opposed to more than Rs. 7 for the rest of the province (GOUP, 1916: 6).

20.Part of the reason for this drastic increase in the area that the forest department brought under its control must be sought in the shortages created by the First World War. The shortage of shipping because of the War brought into "high relief the dependence of India, for *coniferous* timber, on foreign countries" (Smythies 1917:166). In India, the Kumaon region was potentially one of the most important areas for the

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production of softwoods.

21. For a discussion of the forest policy objective of reducing import expenses, see Ribbentrop (1900).

22. The most popular journal of forestry in India at the time, *India Forester,* was filled with articles and research reports that suggested links between greater rainfall and existence of forests, the role of forests in preventing flooding, recharging sub-surface water, and increasing soil moisture. For some representative articles, see some of the papers in a single volume of the journal: 37(3-4): 119-30, 37(7): 354-64, and 37(9): 477-88.

23. The peasants of Kumaon were not alone in questioning the state's rights to all land and trees. Baden Powell, the eminent British jurist remarked, in a surprised tone, "In Rawalpindi, judging from the earliest declarations of rights in the rules of 1855-56, the state asserted u*s* exclusive right to all *trees,,* acknowledging only the rights of the people to grazing firewood, and timber for their own use, to be granted on application on payment of a tax or rate: and a portion of the fund so realized to be paid to the communities (not as any acknowledgment of their proprietary right but) 'on condition of their cooperating with the officers of the government in enforcing the rules.' This state of things the people have, notwithstanding 20 years of its currency, never recognized. Long ago the payment of the share was stopped because the condition was not complied with, and the people to this day resent the treatment of occasional trespass on the forest rules for timber, brushwood and other produce, as *crimes.* They consider the forest *theirs,* in spite of the rules to the contrary..." (1876: 5, emphases in original).

24. See also Rangan (1997) for a discussion of how the differences over definition of access by local populations to forest products were increasingly a source of tensions between the forest and the revenue departments.

25- Baden Powell, for example, argued, "First as regards the people. They are ignorant as we have seen of the practical truths established by forest science, the more so as they are blinded by a short-sighted idea of their immediate interest. *All forest conservancy is therefore necessarily disliked...* [A] real cause of

unpopularity of forest conservancy... arises from the fact that the people continue to adhere to their own notion as to the proprietary right in the forest, while the Government declaration on the subject is, and has been for years past, at variance with such notion." (1876: 3, 4).

26.Reporting on Indian agriculture at the end of the nineteenth century, J. A. Voelcker said, "the forest department by its intervention has stopped in a good measure the work of destruction and has... ensured a continuous revenue to government" (1897:135).

27. A number of other writings attest to the profitability of the forest department (Anon 1912b, Blaschek 1912, Fisher 1885).

28.The coolie system refers to three types of exactions: coolie begar, which referred to forced labor without any remuneration; coolie utar, which carried an obligation of minimum wage payment; and coolie burdayash, which referred to the appropriation of articles like food, fuel, fodder and so forth for officials, soldiers, hunters, surveyors, tourists, or their animals (Pathak, 1991:261).

29.Shekhar Pathak has undertaken the most thoroughgoing study of the various types of forced labor arrangements in Kumaon, their institutionalization under the British colonial state, and people's movements against forced labor. He presents a summarized English version of his study in Pathak (1991).

3O.Hewitt had made similar remarks earlier in 1908 at the Durbar in Bareilly (cited in Rawat 1991: 288).

31.This classification of forests followed the recommendations of a conference of concerned district and forest officials in 1911 (Shrivastava 1996:204-5).

32.Some forest department officials observed that reducing coniferous timber imports by improving the quality of the timber through more scientific forestry would save many hundreds of thousands of rupees that left the country (Gibson 1920: 360-1).

33 .According to Pauw, the settlement officer for Garhwal and Kumaon at the time, the people in the hills were "no less pastoral than agricultural, and in parts of the north, the former is their predominant character" (1896, para 24 and 25).

34.Stowell, deputy commissioner in Kumaon, observed about Kumaon forests in 1911, "in these forests we have conditions wholly unlike those of the plains forests; we have alternate village and forest, the economic life of the former essentially bound up with the latter everywhere" (cited in Farooqui, 1997: 34).

35.Traill remarked on this in Ms original land settlement for Kumaon (Shrivastava 1996:103-4). But the strength of such links is remarkable even in the late 20th century. A survey in Almora district, carried out in 1982 indicates that 57% of the fodder needs of cattle are met from common forest lands (Jackson 1985: 137-38).

36.Quoting Colonel Ramsay, the Commissioner of Kumaon, Baden Powell said that the Kumaon villagers '"owned their jungle in a way before we came;' and so when we recognized their proprietary right in the cultivated land, the people acquired 'a certain right in the use of the forest'" ([1892]1974: 310).

37.lt may be useful to mention that much of the ensuing discussion of peasants' protests is based on official writings rather than any direct testimony from the peasants. In using officials writings to reconstruct the nature of subaltern opposition, the strategy I follow is not very different from that used by a number of historians of colonial India. This reliance on official records, as Nelson carefully points out in her discussion of crucifixion stories in the caste war of Chiapas, Mexico in 1869, raises a potential doubt. The doubt is that "the prose of counterinsurgency may be primarily about the colonizer and have little or nothing to do with the insurgent" (Nelson, 1997: 349), see also Spivak (1988: 203). In the case of the protests of peasants in Kumaon, however, this doubt is neither supported by historical evidence nor by alternative contemporary interpretations. Nor, given the reaction of the colonial state - to create a new basis for joint regulations in Kumaon - does it seem likely that the picture painted in the records is far from what is likely to have happened.

38.The Annual Forest Report for 1921-22 explains the sharp rise in fires by the following statement: "the considerable increase in the number of fire cases is... mainly due to the terrible incendiarism which marked the hot weather of 1921, especially in the Kumaun circle, where the number of cases rose from 134 to 539,

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of which 331 were undetected. The number of fire cases taken *into* court rose from 16 to 139 and convictions were obtained in the great majority; the sentences were adequate running up to seven years' rigorous imprisonment" (GOUP, 1922:7). The report goes on to state that the decrease in number of unauthorized fellings is no guide to the real state of affairs.

39. Peluso and Vandergeest discuss the emergence and acceptance as normal the claims of the state on natural resources such as forests, parks, and wastelands (1998). Although their discussion is for Southeast Asia, the processes they outline resemble the ones that occurred in Northwest India.

40. Nelson quoted in Ballabh and Singh 1988.

41. Similar activities by peasants were also noted in other parts of India where there was organized defiance of the forest laws, sometimes as part of the Indian freedom struggle. During the Moplah rebellion in Madras, for example, many forest department buildings were looted and burnt, records destroyed, and several forest guards assaulted (Anon 1923: 327).

42. there was another wave of protests in Kumaon in the 1930s which coincided with the Civil Disobedience movement launched by the Congress. Villagers set a large number of incendiary fires, and on occasion threatened forest department employees with physical intimidation and violence (Robertson 1936).

43. The Report of the Kumaon Forest Grievances Committee observes, "It is clear to this Committee that these hill men never half understood the rules that were made and often had vague ideas of the entries within their rights lists" (KFGC 1921: *2)*.

44. Initially, the Committee had three members: The District Commissioner of Kumaon, the Member of the Legislative Council from Garhwal, and a Conservator from the Forest Service. An additional member, the chairman of the Municipal Board from Almora, was later appointed as a representative of the region (KFGC 1921).

43. As the Committee observed in its report, "the hill man is impatient of control, and we have it on record from the Deputy Commissioner and sub-divisional officers that any attempt to strictly enforce these (rules)

would lead to riot and bloodshed" (KFGC, 1921: 3).

46. That rules and new programs can often be the visible stage for official performances, whereas corrupt practices are enacted behind the curtain is thoughtfully described for a plains village in India (Gupta 1995). Although Gupta is less interested in providing a causal analysis of corruption, his arguments throw significant light on the relationship between a discursively produced state, discussions of corruption as they become current in the public sphere, and the effects on the lives of villagers.

47. The Report further argued, "That the reservation benefitted Kumaon as a whole, there can be no doubt. When reservation of forests is first brought into effect, certain hardships naturally follow. This was found to be the case throughout India in the early days of the Forest department, but looking back at the results who can say that reservation was not the correct policy?" (Anon 1923a: 253).

48. The forest department used the term disforestation, in contrast to deforestation, to signify that the land was no longer classified as forest.

49. This was the opinion expressed in the Annual Progress Report of the Forest Administration for the province. According to the Report, the new system was futile because the "difficulties of the villagers are unsolved by any temporary relief obtained by wholesale destruction of the forests, and their later end will be worse than the first" (Anon 1927: 594).

50. Part of the reason, to be sure, must have been the worries associated with the insecurity of tenure that the transfer of huge quantities of land to communities created. Because neither the forest department nor the revenue department would remain in a position to control the direct day-to-day management of land transferred to villagers, they would also be unable to ensure that trees would survive. Such views about tenure are, of course, very common now, but even as early as the late eighteenth century, William Roxburgh, a surgeon with the East India Company noted how in the absence of permanent title to land, peasant cultivators have little incentive to protect or improve their lands (cited in Grove, 1995:405).

51. As one Indian Forest Service officer remarked, "In West Almora it is essential to proceed with the

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utmost caution and forethought in all schemes to avoid clashing with the people's interests. In the political arena, the forests take a prominent place.., In the manufacture of forest grievances, and preparation of petitions to appellate authorities, the people are experts'" (Turner 1929:584).

52.For example, Dietrich Brandis who was to later serve as Inspector General of Forests in India, began his career in Burma. The general scope of his proposals for the forests in Burma was their division into three classes: "1st. State forests to be under the control of the Forest Department, but subject to certain rights of neighbouring villages to be formally settled and registered. 2nd. District Forests in which for the present the timber trade shall be under the control of the Forest Department, while the permits for all timber for local use (free permits), together with trade permits for charcoal, cutch, and wood-oil, should be granted by the Civil Officer on payment (the revenues from these sources being credited to the forest department); ultimately (after the first class of forests shall have been demarcated) it is proposed to vest the control of these forests entirely in the hands of the Civil Department. 3rd. Communal or village forests, to be administered by the State for the benefit of the villagers" (Blackthorn 1876:191-92).

53.The Annual Forest Administration Reports of the Madras Forest Department in this period often contain information on the transfer of local forests to *panchayat* management (Anon 1928: 462). The process of creating village forests to supply firewood needs of local residents had progressed by 1929 to a point where the Madras department had handed over nearly 20% of all its forests to forest *panchayats*. The actual area of community-managed forests in Madras thus amounted to 3,400 square miles, leaving behind 15,500 square miles with the forest department (Anon 1930: 356).

Part II. A New Technology of Environmental Government in Kumaon

Politics, Institutions, and Subjectivities

The first part of this book explored the technologies of environmental government implicated in the making of Indian forests. It examined the strategies of power/knowledge involved in the production of forests, paying special attention to the role of numbers and statistics in government. Focusing on the changing character of the representation of forests, it suggested that the very idea and possibility of the centralized government of forests depended upon the possibility of using numbers and numericized relationships represent forests, exercise control, and produce government at a distance. It also suggested that plans to govern never translate into practice as they are intended, and went on to illustrate some of the obstacles that hindered successful implementation of centralized forest conservancy by examining a specific instance: Kumaon. The most obdurate of these obstacles turned out to be the opposition of Kumaon'-s residents who relied on the same forests for a significant part of their daily livelihoods.

This second part of the book examines the reconfiguration of a new technology of government that relied on localities as partners for successful regulation. The three following chapters focus in turn on three crucial aspects of decentralized environmental regulation: a) the redefinition of political and administrative links between the state and localities, b) the realignment of institutional and social relationships within local communities; and c) the emergence of a more widespread concern with the environment and the making of environmental subjects. It is worth pointing out that although I use the terms locality, state, and community seemingly uncritically to begin with, part of the objective of the discussion in the following chapters is to show the constructed nature of each of these terms and the usefulness of the concept of technologies of government to rethink them (Abrams 1988, Agrawal and Gibson, 1999, Appadurai 1996, Li 1996, Mitchell 1991, Moore 1996a, Raffles 1998, Rose 1999, Steinmetz 1999).

Chapter four examines the first facet of decentralized environmental regulation by focusing on what I call the governmentalized locality. If one contrasts the centralized bureaucratic control that the

forest department embodies with the regulatory power invested in governmentalized localities, the obvious difference between these technologies of government lies in extent to which power is dispersed. Instead of an identifiable point and marker, a single source and logic that the early efforts of the British represented, power over forests is now scattered and emanates from multiple locations as forest councils have increased in number over the last half century.[1] With the emergence of forest councils in Kumaon, no longer can a single agency such as the forest department be identified, in which all power is vested. Instead, in any given locality, power is visibly exercised through a multiplicity of forms, strategies, and agencies, and in a way that is highly modulated to variations across settings. The need for modulation results from variations in vegetation, social landscapes, productivity levels, articulation with market forces, connections with other centers of power, and so forth. The proliferation of sources of power is unavoidable because the usual binary of domination and resistance can no longer be mapped on to the forest bureaucracy and the locality respectively. The locality itself is divided -most obviously, against itself- as multiple agencies and forms of power emerge in it.

This leads to the second obvious difference. Within each territorialized, governmentalized locality, regulation is practiced by multiple agents - the headman., the council of elected representatives, guards appointed by the councils, and depending on forms of monitoring and enforcement, people themselves. Together with the increase in the number of agencies of power, there is also a proliferation in the forms, strategies, flows, and directionaiities of power. Headmen, guards, and council members are officials, but they are also local residents who meet other villagers frequently, and depend for their positions on villagers' support. They are involved in complex relations of sociality and reciprocity that are only inadequately described by unidirectional mappings of domination and resistance. Governmentalized localities constitute an "effort to adjust the mechanisms of power that frame the everyday lives of individuals; an adaptation for and a refinement of the machinery that assumes responsibility for and places under surveillance their everyday behavior, their identity, their activity, their apparently unimportant gestures; another policy for

that multiplicity of bodies and forces that constitutes a population" (Foucault [1975] 1970: 78). In contrast to the environmental control that the forest department sought to enact, the government of environment crafted and implemented by the forest councils touch the lives of their targets far more lightly, regularly, intimately, and in proportion to their activities.

The increase in the number of loci through which regulation is effected implies a concurrent change in the nature and prospects for collective action. No longer is the state or even the forest department the center of governmental power that shapes the practices in forests. No longer are there large masses of humans, ranked against singular injustices. Instead, there is a fragmentation of government, and localized efforts to change the way government functions. Within the governmentaiized locality, the more familiar means to alter how forests are regulated is likely the individual defense of livelihoods rather than a collective movement to revolutionize institutional power. The creation of formal institutional mechanisms through which villagers can express dissatisfaction implies that they are less likely to take to the streets or set fires in the forests in the name of greater local control. The transformation of the relationships between the center and the locality may occur in a manner that slowly dissolves the differences through which the boundaries between the state and the community are policed. But the dissolution of these boundaries occurs together with a revision in the relationships between the state and its subjects.

Although the nodes, forms, modalities, floes, strategies, agencies, and practices of power proliferate, their multiplication is not chaotic or unruly. Instead, the articulation between sources of power nominally located at the levels of the locality and the state occurs according to a new combinatorial and sequential logic. Localities articulate with the state on the basis of a one-to-one relationship, and with each other only minimally or not at all. When they do interact with each other, their relations are often conflict laden, as when residents of one settlement extract products from the forests of another. The fact that relationships across localities that are not mediated by the state can only occur on a non-formal, legally unrecognized basis means that efforts to channel power in alternative directions require immense initiative.

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At the same time, new procedures of rule redefine the nature of the relationship between the erstwhile state and the locality by ensuring asymmetric flows of power along administrative channels. Take for example the written records that forest councils maintain on the behavior of their members, the condition of the forest, infractions of environmental rules, illegal activities in the forest, and their incomes and expenses. These records are visible to state officials (and indeed to researchers from the outside), but forest council members themselves have little access to administrative processes within the provincial state machinery.

Further, localities enter into formal institutional relationship with the state piecemeal. Instead of the forest department extending its control over vast areas of forests en masse, a process that is vulnerable to obstacles and resistances, it is locality by locality that control is extended. The state is willing to give up the idea of protecting and improving all the forests in its domain once and for all, by a single stroke of the administrative pen. But it concedes the grand project of extensive control only in return for a more sure means of intimate regulation. Through the Forest Council Rules, the decentralizing state determines the spaces of illegality that it will tolerate, and permits decisionmakers within the locality to define the depth and nature of regulation within that space. It comes to participate in what might be called flexible regulation, but which is nonetheless more entrenched for all its flexibility. The idea of greater ability to regulate everyday practices on the part of the locality becomes the coin through which the state buys relief from possibilities of fire, arson, and other violations of forest laws.

More precise regulation is ensured as well by the sequence of this finer-scale extension of government. Localities become formally affiliated with the state as their members express an interest in pursuing such relationships of environment-related regulation. There is a curious marriage then of interest with regulation. To illustrate, forest councils are formed in Kumaon after a third of the village residents express an interest in creating a council. This implies that those groups where a significant proportion of the population has a strong interest in creating institutional connections with the provincial state are the ones that first become part of a network of partnerships. State officials encourage local residents and

leaders to affiliate themselves in the regulatory net by pointing out the benefit: control over allocation of products from the forests they will come to govern. Such education of the local leadership began as early as the 1930s in Kumaon, immediately alter the passage of the Forest Council Rules. Through such material rewards and knowledge transfers did the state manufacture a new interest in the goveramentalization of the environment and the locality (chapter four).

Chapter five directs attention to the processes embodied in the regulatory community that comes into being side by side with the govemmeatalized locality. The shift in the exercise of power from the centralized state to the decentralized locality is not just about the creation of multiple locations of power and the creation of governmentalized localities. Nor is it only about the rhetoric of empowerment - of the community and its members.[2] It is also and as much about a new economy of the power to regulate, a better distribution of regulation, and a more modulated application of power to shape individual practices and subjectivities. In contrast to the governmentalized locality that signifies a new regime of political relationships between the state and the periphery, the regulatory community denotes a redefinition of relationships among different groups within the community.

In choosing the concept of the regulatory community to analyze the government of environment, I depart from Foucault's (1979) two preferred metaphors that describe the potential mechanisms through which disciplinary power works: the coercive institution, and the punitive city. The model of the coercive institution that according to Foucault came to colonize almost the entirety of penality is Bentham's well known panopticon.[3] The punitive city would have served disciplinary power equally well but it failed to be adopted as a deterrent.[4] Neither of these models turns out to be so relevant to environmental government through the community. It would be fair to suggest that a well-functioning regulatory community obviates the need for other forms of penality, and does so in a manner that appears far more humane. Communal regulatory authority does not need bud and spectacular dispkys of retribution as sovereignty requires. Nor

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does it need the constant and all pervasive hammering home of representations that establish an irrefutable connection between crime and the return effects of crime upon the criminal. And certainly, it does not need the crotch of the all encompassing physical gaze as the means to ensure compliance. Instead, it relies on intimate knowledge about each member and deploys this knowledge through a patchy system of monitoring and enforcement that limits infractions effectively by bounding them within a sphere of tolerability.

In this regard, the initial important accomplishment of the regulatory community in Kumaon was to force an institutional and social split among community members. This is not to deny the existence of hierarchies and stratification in Kumaon villages prior to the arrival of the British. But the creation of the regulatory community prompted a new, systematic, and well-defined rift in relation to state objectives. Community leaders and members were aligned together against the forest department in the early part of the century in their protests against regulation of forest practices. But these interests suffered a division once communities began to regulate forests as members of a network created by the state. The community came to be the agent of decentralized environmental regulation. Part of the reason the agency of regulation changed is precisely the ability of community-level decision makers to wield information about local residents, and modulate the exercise of power. Decision makers within the community can use their intimate knowledge about members of the community to ensure that power is wielded neither too forcefully, nor too weakly. They neither want to provoke protests nor do they want to be rendered ineffective. Community regulation operates more constantly, more consistently, more effectively and more transformatively on its objects: village residents. To accomplish this, regulation is more comprehensive, but less costly, more modulated, but less visible, more autonomous, but more continuous, more precise, and perhaps for that reason, more humane.

Indeed, new strategies of regulation through decentralized institutions could scarcely be in place without the greater efficiency they permit, and without the savings they allow the state to effect. The efficiency of the new form of regulation is evidenced in the reduction of economic, social, and political

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costs. The fiscal burden of the state is lowered in the first instance by the reduction of the number of administrative and enforcement personnel required. There is no need to devise uniform criteria of selection, apply them to select guards, train the selected individuals, create mechanisms for their supervision, and pay for the costs of these procedures at scales of remuneration that are at a rough parity with salaries and costs incurred in other government departments. The regulatory community comes to bear many of these economic costs. It begins to govern forests and the actions of those dependent upon the forest: it devises rules to use and manage, it plants trees and helps harvest them, it allocates fodder and firewood from the forest in proportions necessary to household needs, it appoints guards and pays them a salary that is far lower than those paid to centrally employed guards, and it sanctions rule violators and settles disputes. It performs all these activities at a fraction of the cost that the forest department would incur.

The reduction in economic costs is accompanied by similar shifts in the nature and levels of political and social costs. By transferring the tasks of protection and enforcement to the regulatory , community, the central state no longer need bear the resentment or ire of those dependent upon forests. Since the forest department and its guards are no longer responsible for translating into practice the rules necessary to exclude villagers from forests, the state can no longer be seen as the agency of exclusion. By changing the nature of protection and the structure of authority relations through which protection is made manifest, the regulatory community also makes redundant the frustration and anger against bribes and corruption in which a government-appointed forest guard is inevitably implicated. Thus, the new strategy of dispersed regulation replaces an excess of erratic and expensive enforcement with an economy of comprehensive and continuous obligation.[6] It installs a whole network of environmental relations that, in comparison to earlier more repressive forms of government practiced through the forest department, are more economical and effective, more dense and widespread, more autonomous and enveloping.

The transfer of the design and enforcement of regulations down to the lowest stratum of a social organization can be successfully maintained only by a simultaneous transformation of the relationship

between the enforcer and the offender. When the agent of enforcement is an employee of the forest department, the offender who violates rules and procedures for a healthy forest needs either to be excluded from the forest or must make monetary recompense. The level of punishment can and often does exceed the nature of the crime.[7] All people who are not part of the government (and even some who are), potentially belong to the class of offenders. Upon detection of infractions, the objective of the state is to innoculate the forests from future illegal actions of the violators. Not surprisingly, one of the primary means of ensuring the safety of the forests is to ensure the exclusion and expulsion of the offender from the forest. But when the task of enforcement is in the hands of the regulatory community, offenders are often within the community or situated as neighbors. Their actions are the source of a disharmony that requires to be balanced/Offenders cannot be excluded, and even if in exceptional circumstances they are, their families and relatives continue to be a part of the community. From being retaliatory measures, punishments become the means to correct behavior. The need to be precise in imposing punishments is therefore not so much the prospect of reactions against a central enforcer. Rather, it is born out of the recognition that punishments are being imposed on group members who will continue to remain members even after the punishment has been meted out.

As a result, there is a more precise calibration of the allocation of benefits from forests, the monitoring mechanisms that are deployed, the type of sanctions that are imposed, and the nature of dispute resolution that is available to settle conflicts. The greater ability of the community to monitor a far wider range of practices in the forest (although, of course, not all actions that transpire) results from the many different mechanisms to monitor that it can deploy. It can appoint a guard, and structure the remuneration to the guard in multiple ways. Besides appointing one or more guards, the community can also pursue more decentralized methods of monitoring. Indeed, many of the mechanisms to monitor derive part of their power from the intimate, daily, multi-stranded contact and the contiguous residential status of monitors and those being monitored. When different community members rotate through the position of a guard, then guards

have significant knowledge about each other even without spending too much effort specifically overseeing neighbors. Similarly, regulation through the community and enforcement of new practices contains within itself potential seeds of reciprocal control by those whose practices are regulated.[8] Mechanisms of accountability can colonize practices of regulation when the election of officials, appointment of guards, and their remuneration depend upon contributions by community members. In contrast, protection of forests by the forest department depends ultimately on the presence of guards whose actions very often become arbitrary in the absence of further supervisory procedures. Of course, their second-order supervision from above runs the same risks of arbitrary implementation in an infinite regress (Elster 1989).

In fact, it is not just in the deployment of monitoring mechanisms that the regulatory community displays a finer sense of discernment to draw a line between the permitted and the prohibited. The more precisely attuned ability to monitor and detect violations exists together with more finely calibrated sanctions.[9] The blunt instruments of deliberate disregard for minor offences, and fines and imprisonment for actions deemed more egregious were the recourse of the forest department for virtually all violations committed by villagers. But the range of instruments available to the community is vaster, and the potential subtlety in how each of them can be deployed is greater. Sanctions encompass varying levels of exclusion and castigation, public reproof and chastisement, finely graded monetary penalties, imposition of socially desired tasks as burdens, impounding of property, and the threat of invoking central authority which can often be more effective than its actual invocation. A more meticulous and thorough understanding of such mechanisms of regulation is the objective of emerging new sciences of community and the environment (chapter five).[10]

It is also necessary to point out that a critical part of the transformed relationship between the community and its residents, and between community residents and the environment, is the change in the object of regulation. Instead of ensuring just strict protection of forests to enhance state revenues, regulation now also becomes a means of pacification, of ensuring subsistence, and of addressing poverty.

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More careful attention to the multiplicity of forest products allows government to undertake a more precise distribution of different types of forests to their best valued uses. The narrow goal of greater efficiency in surplus generation is broadened to include the operations of the community and the satisfaction of the needs of community members. The community, reciprocally, becomes concerned with how best to use, manage, and govern forests for its members.

Chapter six examines the making of environmental subjects. Ultimately, the transformations in the relationships between the governmentaiized locality and the state, between the regulatory community and its members, and between rural residents and their forests are linked to the emergence of new environmental subjects.[11] Indeed, the most interesting question in the two century-long process through which forests came into being may be not about the governmentalization of social formations, nor about the production of regulatory communities, but about the creation of environmental subjects. It is critical to understand and explain how people came to accept the importance of environmental regulation, to respect the authority of the community to sanction actions that did not respect regulation, and to participate actively in regulating the behavior of their fellow community members.

Not all who are subjected to environmental government become environmental subjects. Therefore, it is necessary to tease out the mechanisms involved in the variable production of subjectivities. One can do so further by building on the contributions of some recent accounts of environmental and developmental politics that take Foucault and governmentality seriously (Brosius 1999a, 1999b, Ferguson [1990] 1994, Escobar 1995, Li 1999).[12] More explicit attention to the processes involved in the variable production of subjects through strategies of government helps throw greater light on what remains an underinvestigated puzzle - both theoretically and empirically. It is precisely to this relationship between the disciplined production of the subject and the care of the population that Foucault points in his discussion of biopower as: "the fostering of life and the growth and care of population [become] a central concern of the state,'

articulated in the art of government" (Rabinow 1984: 17). Biopower is as much about the procedures through which each Individual body is regulated as it is about calculations for the population. Without the subjection of individual bodies to discipline and technologies of government, the object of government - whether development, or environmental conservation - is always likely stymied (see Foucault [1978] 1991: 98-99).

Many different forces have conspired, for sure, to change how people imagine their relationship with forests and the environment, among them, experiences of scarcities, media accounts, and processes related to the governmentalization of the environment. Among the most critical of these forces, I suggest, are institutional changes in the regulatory strategies within communities and the related environmental scarcities they force people to confront. Rearrangements and transformations of institutions have important effects in framing people's interests, how people act in relation to their interests, the involvement of people in the enactment of regulation, and the manner of their engagement with the processes of government. The emergence of forest councils, the mechanisms to allocate and enforce that the forest councils have constructed, and the variable participation of people in these mechanisms of enforcement, each affects how environmental subjects have come into being in Kumaon.

It should be clear that new strategies to govern forests - to allocate, to monitor, to sanction, to enforces to adjudicate - do not simply constrain the actions of already existing sovereign subjects. Nor is it the case that people's responses to new forms of regulatory strategies are exhausted by the continuum between resistance and conformity. Instead, it is important to recognize how these strategies and their effects on flows of power shape subjects, their interests, and their agency.[13] By focusing on these strategies as the means through which individuals make themselves into certain kinds of subjects, it becomes possible to specify the micro-mechanisms that are at work in the reconfigurations of subjectivities. That is to say, explanations of why and when people respond in particular and differentiated ways to new strategies of power requires attention to their structural locations, the extent to which they are privileged or marginalized

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by new strategies of power, but most importantly the manner in which they get implicated in the operations of these strategies. To insist on variations in how subject positions change is also to insist on the evident fact that the effects of new forms of regulation are neither totalizing nor permanent.

To portray the transformation of people in Kumaon as the result of some epic battle between dominant forms of state power and resistant local populations would be to ignore the extent to which people and their communities result from power and its institutionalised exercise. To this extent, the separation that Foucault effects between institutions and the "social nexus," or between institutions and "social networks" (1982:222,224) takes for granted a certain fixity of institutional arrangements that disappears when one closely examines institutions, After all institutions are as much about the expectations about the future as they are about the mechanisms that prompt expectations.

Institutional analyses in political science have often been accused of underplaying the importance of politics (cf Knight 1992). But they are especially deficient when it comes to understanding how power affects subject formation through institutional change. Even institutionalists who attend to politics often view power and institutions as the external limit on the expressions that internal processes within the subject would otherwise (in the absence of power) generate.[14] Institutions exist and develop independently of the subject, and the nature of the subject is typically an implicit shadow that lurks between the lines of institutionalist arguments. The writings of most major social thinkers prior to the disciplining of the human and social sciences - consider Marx, Durkheim, and Weber - theorized not just about social change but also advanced an argument about the nature of the subject and more importantly about the relationship between the emergence and organization of new social forms and the transformations in human mental lives and ideas (Rose 1999). Given the intimate connection between policy, institutions, and the self, the question of how human subjectivities are shaped in arenas made by government can certainly be addressed more explicitly in political-institutional analyses. Whatever the many differences that characterize the work of scholars such as Coase and Weingast, Selznick and Simon, and Keohane and Krasner, their limited

attention to the relationship between the subject and the social/governmental is common. Preferences, the term that relates most closely to the idea of the subject in these works, come from outside- structures of social experiences, prior socialization, social location But what distinguishes how they come to colonize particular subjectivities can fruitfully be explored further (Satz and Ferejohn 1994).

When it is long-term historical change in institutions, politics, and subjectivities that requires explanation, new insights emerge by conjoining modular constructions of institutional, political, and subjectival changes. But what does need revision is the conception of institutions and power as constraints, and pregiven subjects (and preferences) as the material under constraint. In Kumaon, variations in people's practices and perceptions about forests, and changes in them that occurred *after* institutional transformations, suggest that we need to think of power as something more than a simple limit or constraint on thoughts, words, and actions. The beginnings of such a view of power are implicit even in Lukes' (1974) discussion of the third face of power although he interprets the effects of power primarily in a negative sense as falling upon preformed subjects. But it is the constitution of the subject itself that is in question when we try to understand social and governmental changes occurring over long time periods. New strategies of regulation in communities seldom work only to secure the cooperation of always-already given subjects or to prompt their coercion into new actions. Instead, regulations flow along channels laid through the body of the community and constitute new, variable understandings of what makes environmental subjects and how the interests of such subjects are to be conceptualized. The manufacture of interest and the redefinition of subjectivities comes to play a key role in the construction of fresh beliefs about what kinds of practices are more attractive. Its effects work alongside those of new regulations.

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Figure 3.1: Area of Reserved Forests in the United Provinces (in square miles)
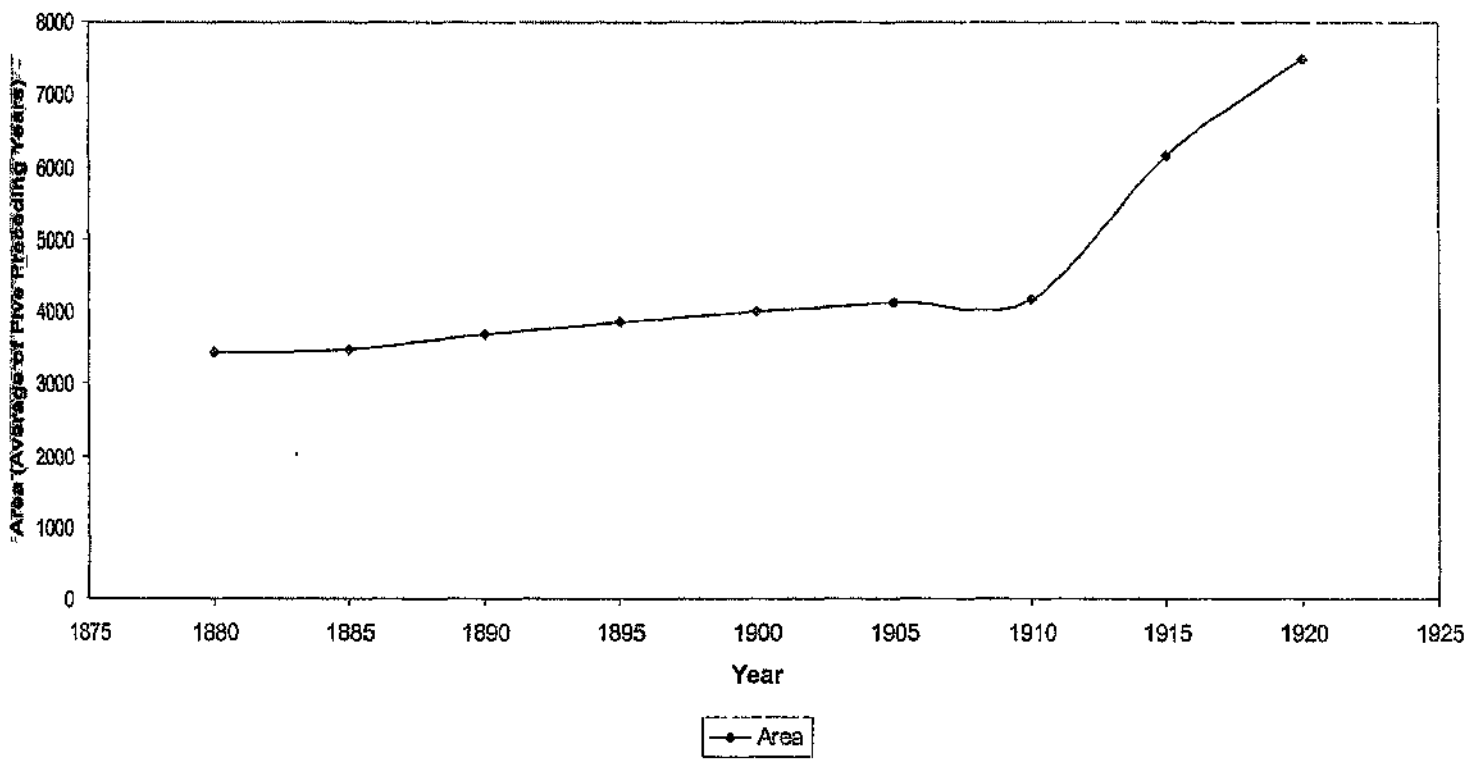
Figure 3.2: Revenues and Surpluses of the UP Forest Department (1880-1920)
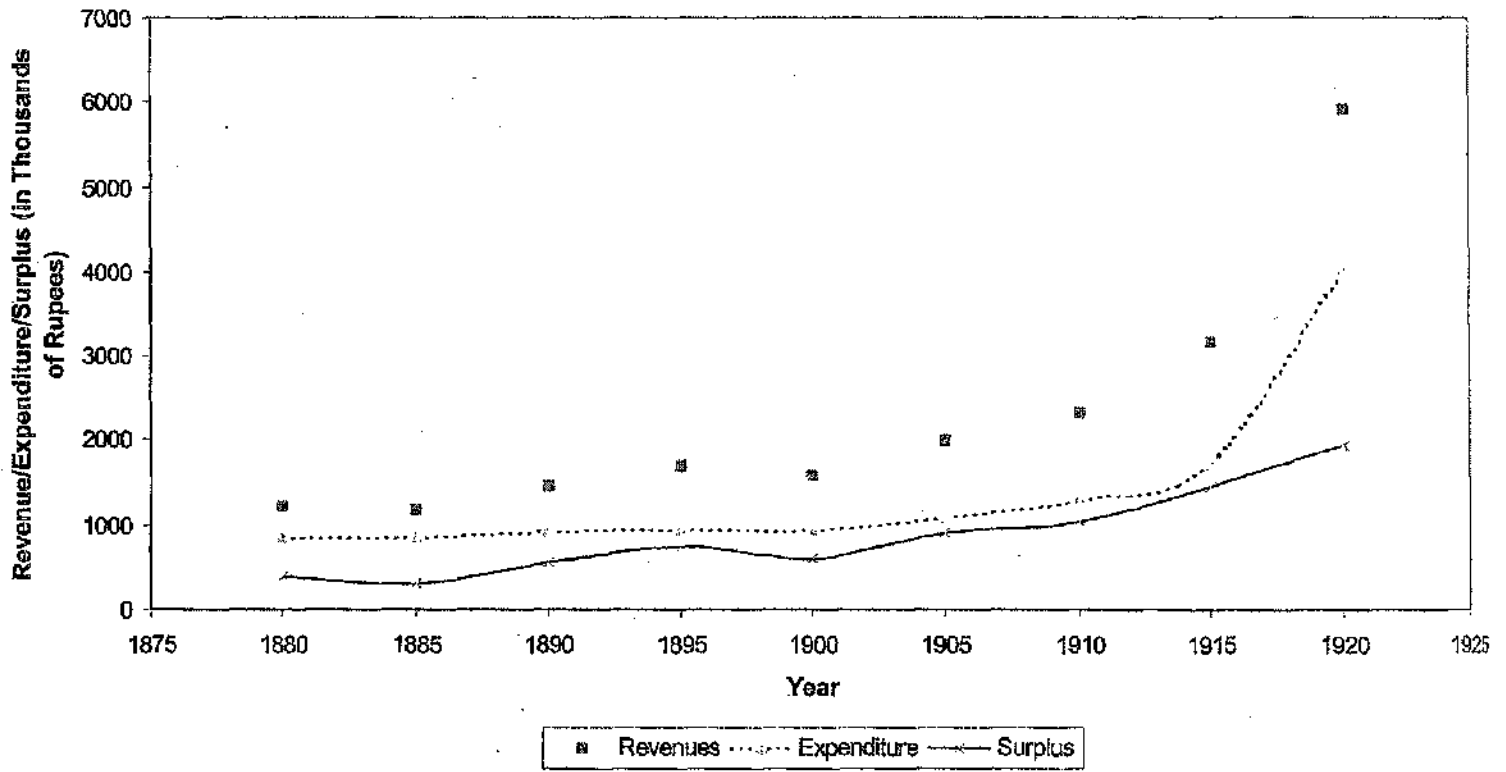
Endnotes

1.With a modest beginning of 273 forest councils at the end of the 1930s (Robertson 1942:120), the number of forest councils had grown to nearly 3000 by the end of 1995 (Agrawal and Yadama 1997).

2.For an iconoclastic analysis of the idea of empowerment popular in policy circles, see Craikshank 1999.

3.For Foucault, the emblem of the coercive institution is Bentham's panopticon. It relies on a direct relation of visibility between power and the criminal. For a discussion, see the conclusion to chapter five.

4.In contrast to the coercive institution, the punitive city operates less on the basis of a direct relation of visibility between the criminal and the supervisor, more upon the activation of a mental relation between a crime and its punishment by making the relationship visible through public examples. See the conclusion to chapter five.

5.See Berry's (1993: 24-40) arguments about the efficiencies that indirect rule permitted in African countries. Although indirect regulation of forests through communities is quite a different proposition in comparison to the indirect rule of native authorities as it unfolded in Africa, the economic logic of the two arrangements is comparable.

6.See Scott's argument about the inauguration of a new game of political rationality as a result of colonial rule that the colonized are obliged to play if they are to be counted as political. According to Scott, the new political game "depend[s] on the construction of a legally instituted space where legally defined subjects [can] exercise rights, however limited they were" (1999: 45). Note also that Scott's views about the shift that colonialism inaugurated are in some tensions with

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4. Govemmentalized Localities:
The Dispersal of Regulation

4. Governmentalized Localities: The Dispersal of Regulation

Cooperation and protection are the most important things in improving the performance of the forest councils. We have handed over many plantations to forest councils. First they did not believe that they really owned the forest. Now they know that the land is under their control; that they have to protect the forests as best as they can. The government can't guard all the forests that the councils are supposed to manage.

— District Magistrate, Pithoragarh district; 1993.

Well, my biggest problem is lack of transport. I am supposed to inspect more than 200 councils in a year and travel more than twenty days each month. How can anyone do that, I ask you? I only travel about seven to ten days. With about eighty days of touring time, it is not possible to visit he 200 forest councils under my control. And if we don't visit, it is not possible to know how they are doing, what we need to correct, and where there are problems.

— Forest Council Inspector, Almora; 1993

We receive many petitions from forest councils - about tree plantation, villagers who are breaking rules repeatedly, and encroachments on council-managed forests. We don't take long to address them. We ask the patwari to take care of the matter. If the council wants the matter resolved immediately, sometimes that is not possible. We have many other duties as well.

— Subdivisional Magistrate, Pithoragarh district; 1993.

The multiplicity of commercial products from Kumaon's forests made them into an object and locus of social and political struggles. Vociferous protests by villagers forced state officials to realize the high cost of centralized regulation. Protests also made them accept the involvement of village-based local communities.' Joint action by localized communities had been the major reason why the attempt to transform hill landscapes into steady sources of revenue had run into difficulties. But the same reasons that

made villagers an obstacle to efficient government of forests could be exploited imaginatively. A reconfiguration of governmental procedures could convert villagers into allies. Village settlements were highly dispersed. Their dispersal meant that villagers enjoyed far better access to scattered patches of vegetation than did government officials. Consequently, they at least possessed a greater capacity to regulate use. Villagers were also highly dependent on forest products because of the importance of fodder, green manure, firewood, and wood in the household economy. In addition to capacity, then, they collectively had an interest in protection. If the actions of individual villagers could be brought to conform to their joint interest in forest protection, and their own requirements of forest products restricted to specific patches of vegetation, they could potentially monitor, guard, and protect the forest far more cost effectively than could the forest department.

But the incorporation of localities into processes of regulation could not be accomplished lightly or easily. State policies after the middle of the nineteenth century had cast localized village communities into an adversarial role so that many villagers preferred to burn the forest over using it Administration based on a new calculus of gains and losses, costs and benefits, and advantage and interest would be necessary to transform rebellious hillmen into allies of conservation and commerce.

Conservation and commerce existed in an uneasy relationship. On the one hand, it could be claimed that these two goals would always be in tension. After all, the pursuit of higher levels of profits would necessarily imply the harvesting of that which had been conserved. But there was another side to the picture. Today's wise use movement followers would have recognized a kindred spirit in nineteenth-century forest officials in Kumaon. For the forest department, conservation was the first step toward higher wood yield, and only a way stop on the path to higher profits from the sale of wood. Localities could play a role in this vision by helping conserve the forest, but their efforts at conservation had to assist the goal of profitable exploitation of Kumaon forests. If procuring the cooperation of Kumaonis meant turning over complete control over forests to them, the whole purpose behind the new alliance would have been vitiated.

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Many advocates of community-based conservation today prescribe a similar role for local communities. If local actors do not conform to externally desired goals of environmental protection, many conservationists would see little gain in creating partnerships with localities,[2]

To resolve this difficult conflict, colonial state officials chose a territorial-institutional solution. The alliance between different departments of the government and Kumaon's localized communities hinged on a division of forests. A territorial demarcation of rights in forests was part of the envisaged alliance. According to this alliance, villagers received the responsibility of conserving their forests in exchange for harvesting subsistence products, and the forest department arrogated to itself the benefits of commerce from its own as well as the villagers' forests. To compensate villagers for their added responsibilities, the colonial state gave them back a part of what it had taken: some rights to products from forests that were used within the household for agricultural and subsistence needs. As one of the forest officers, J. S. Cambell (1924) suggested to the secretary of the provincial governor, "with a modification of the rules aimed more at regulating rights than curtailing them, I think we can get the more sensible people at least to view our policy with modified approval." (Cited in Baumann, 1995: 84).

The territorial-institutional division of forests went hand in hand with a whole new apparatus of regulation. The main aim of this regulatory apparatus was to make communities an effective junior partner of the forest and the revenue departments. Regulation was founded upon new legal measures, fresh administrative and ecological classifications of landscapes, additional official positions and budgets, further responsibilities for existing officials, innovative techniques to redistribute the objectives and instruments of forest governance, wider dispersal of authority and revenue allocations, and even a different way to define community. In short, localities and their residents became part of conservation on the basis of a transformation in the understanding of the place of forests in social life.

Only over time did the different partners in this alliance - localities, the forest department, and the land revenue department - come to appreciate and learn fully the potential and capabilities of the new

regulatory apparatus and their role in it. The most important Instrument that colonial administrators used to try to give shape to relations between localities, rural residents, and forests were the Forest Council Rales of 1931. This set of rules tried to locate, define, and fix localities to a particular structural position -- accomplices in conservation. The Rules of 1931 were based on discussions and experiments in Kumaon between 1909 and 1930, and experiences of collaboration in Burma and Madras. The provincial administration in the United Provinces issued these rules on the basis of recommendations of the Kumaon Forest Grievances Committee and with the firm support of the revenue department Forest department officials came to accept these rules as a reasonable step only after some initial opposition. The forest council rules, however, gave them an important advisory and supervisory role.

No formal state regulation, however successful, translates into practice just as intended. The Forest Council Rules of 1931 underwent the same fate. Different actors involved in forest regulation tried to assert and defend their claims by forcing slippages from intended effects, translating slippages into accepted norms, and even attempting wholesale changes in the substance of rales. Claims and counterclaims over forests have redefined how the government of forests was to unfold in Kumaon after the 1930s. The most visible aspect of this redefinition has been the dispersal of forest regulation through the means of localized communities.

The dispersal of regulation should not be taken to mean the crafting of a smooth, seamless mechanism to conserve forests. Surely the creation of many new centers of environmental decision-making has gained forest and revenue departments of the state important advantages in reducing costs, enhancing compliance, and distributing the desire to conserve to multiple locations. But it has also produced problems of supervision, coordination, and adequate support for these new centers of decisionmaking. Questions and concerns about accountability, measurement, supervision, and enforcement always accompany delegation. The quotations at the beginning of this chapter, illustrating some of these blemishes, are drawn from interviews with people occupying a range of official positions created by the forest council rules of 1931.

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These officers, located at the intersection between what are conventionally taken to be the state and the locality, are a reminder that the concerns of forest conservation have helped undermine and confuse the boundaries between the two entities, if such boundaries were ever precise and clear. The remainder of this chapter investigates the social and political relationships between the state and the locality that formed the context of the forest council rules of 1931, the substance of the rules, and the effects they produced on their context. In so doing, it examines the role of new knowledges and politics in the formation of institutions, and the importance of institutional changes in breathing life into regulatory mechanisms. It thus elaborates the thesis that politics and power thoroughly permeate institutions both in their making and in their effects.

State-Community Relations Prior to 1931

Recall from the discussion in part one of the book that one of the central features of the making of forests was the project of planned improvement for greater revenues. The very idea of a forest came to be defined legislatively. The effort to turn land defined as forest into an image of model forests was codified in working plans. Working plans enveloped into departmental regulations the history of the landscape, its prominent climatic and physical features, prevailing vegetation cover, and a plan of action that would improve vegetation along lines that would bring the landscape closer to what a forest should be like. The idea of model forests was implemented even more intensively on plantations through new knowledges about trees, timber, wood, and the numericized features of each of these entities. The insertion of statistics into the government of nature facilitated taxonomic and silvicultural innovations. Views about forests, where their value was synonymous with the value of their marketable timber, became normal for most officials in the forest department by the end of the nineteenth century (see also Scott 1998).

All working plans incorporated steps that would limit or eliminate undesired influences in the area of their concern. Many forces affected potential improvements of vegetation. Existing biophysical and edaphic characteristics related to climate, water, and soils were factors least amenable to tinkering. In

comparison, human actions were easier to regulate. But ultimately, as Sivaramakrishnan (1999) points out, the cumulative effects of these external influences were impossible folly to envisage, let alone control.

It was easier to exclude and restrict human influences, but nonetheless an immense and complex task. In Kumaon, where villagers depended on hill forests for myriad products, exclusion and restriction were especially difficult, in part because controls on forests had been minimal before the arrival of the British. Dangwal, in his original study of the impact of colonial forestry regulations on grazing, argues, "large areas of pastures and sparse population in the precolonial period made it impractical to control grazing" (1997:411). But with the appreciation of the commercial potential of forests, crafting and executing a raft of new regulations regarding humans became the sine qua non of the government of forests. Increases in grazing fees, restrictions on seasonal migration of animals, reduction of the number of animals that villagers could graze freely, removal of villagers' sheds to shelter cattle, and prevention of lopping of trees for fodder were only some of the new restrictions that were considered necessary.[3] In addition, controls over firewood collection, extension of cultivation, the use of fire, and harvesting of timber also became a part of the fabric of administrators' activities.

As the forest department claimed larger areas, it also grew in size and budget. But its strategy of exclusionary expansion ultimately depended on a balance of threats and sanctions, and faced opposition from those who encountered these threats and sanctions as impositions. The limits of exclusion were most vividly exposed when villagers acted against it collectively, or where there was widespread individuai-level defiance of the new rules. In Bombay Presidency, for example, there were thousands of breaches of new regulations that reclassified large areas of land as forests (Bombay Forest Commission, vol. 4, 1887: 37-47, 73-75).The provincial government was forced to appoint a commission of inquiry to investigate these offences as early as 1885. The limits of exclusionary control were equally in stark evidence in Kumaon all through the early twentieth century as the previous chapter described.

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Prior to the arrival of the British, not only were there few state controls over forests, but village communities also regulated the activities of their residents only sporadically. Neither the rulers of Garhwal nor Kumaon extracted much by way of taxation or sale of forest products in the beginning of the nineteenth century. Some rules about management of forest patches regulated the transhutnance-related practices of villagers when they took their cattle to winter pastures in the terai between November and April. According to Traill ([1828] 1992: 66), "this custom has existed from time immemorial, [and] each community has its own particular tract of forest [in the terai] to which it annually returns." He goes on to say that the need for sending cattle to the terai did not exist in the northern parts of Kumaon because "the forest lands are more extensive," and because of an "abundance of fine pasture" in the summer months (ibid: 67). We can conclude that the incidence and intensity of local government of forests was low until the arrival of the British because of relative abundance of forests, limited possibilities of use for many of their products, and highly imperfect articulation with markets.[4]

Early colonial administrators remarked frequently on the vast extent of Kumaon's forests as chapter three documented. Many of them advocated the clearing of vegetation to advance agricultural settlements. One of them argued, "It is desirable to get rid of jungles as fast as possible in order that wild animals may be destroyed and the way cleared for cultivation" (Batten 1878: 23). These sentiments registered a shift only in the 1870s, with the opening of new markets, discovery of new uses for forest timber, and construction of railroads.

Later accounts by British administrators, beginning from the early twentieth century, provide some information about the government of hill forests. In some areas, village level bodies known as Iattha panchayats[5] existed. They were usually formed without much state intervention, and regulated forest access and use. The more careful land assessments and delineation of village boundaries that the British introduced must have influenced the formation and working of Iattha panchayats. Land revenue demands of the colonial state were collected at the village level, and had to be paid in cash. They furthered the careers

of certain types of middlemen, among them people appointed as village headmen, and traders who could purchase goods made In the village. The need for cash payment to the colonial state would likely have prompted greater use of forest products such as green manure to increase the fertility of agricultural fields. As more lands were reclassified and demarcated so as to fall within the administrative boundaries of specific settlements, they also would have been the object of control by villagers.

Over time, the forest department took over larger areas of land and introduced restrictive regulations in other parts of Kumaon. These steps likely boosted self-organization by villagers as well. The scarcities generated by state enclosures of formerly common land had the potential to prompt villagers into institutional innovations to restrict the unbounded use of local resources.[6] S. D. Pant argues that in areas with thick forests there were no restrictions on forest use but in "more populous areas where no such tracts are available, villagers pressed by hard necessity often deliberately let a few patches of arable land lie waste for grazing. A measured plot of land, subscribed by the entire village community is also kept as a grass preserve and constantly watched... This means considerable self-denial and forethought on the part of the village community" (1935:172). But the exact relationships between government appropriation of land, resource scarcities for local populations, and local institutional innovations are difficult to state in the absence of written evidence.

We do know that several lattha panchayats functioned quite well in the beginning of the twentieth century (Shrivastava, 1996: 223-44). Some of them helped protect forests because villagers believed some species of trees such as deodar to be sacred (Guha 1989:29-30).[7] Long-term economic motivations were at work more often. Many lattha panchayats allocated consumable benefits to villagers, and simultaneously conserved their forests. According to F. Channer, the chief conservator of forests in 1925, community forests near Dwarahat had impressive tree growth in spite of large local demands (cited in Shrivastava, 1996:231). Nagarkoti suggests that Chandkot had several well protected and widely known community forests (1997:269-70). Some villagers deliberately fallowed land for the production of grasses (Pant 1935:

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172). Even after villagers began to create formal forest councils after 1931, there were a large number of lattha panchayats in Kumaon. In the late 1930s, their number was nearly twice that of the approximately 200 official councils (United Provinces Forest Departments 1940:6).

For the most part, the lattha panchayats did not have formal administrative relations with government departments. In some cases precolonial rulers granted lands to villages to be used as commons belonging to a particular settlement, but they did not require residents to follow an elaborate set of restrictions in forests. Many villagers used specific forest patches for their needs and prevented other villagers from using the same forest.[8] Colonial administrators remarked on the fair condition of several forests over which villagers enjoyed the rights of access, use, and management. But there were relatively few localities that developed an elaborate set of rules to govern forests. Residents of one such village, Jalna near Almora, had by the early twentieth century developed rules restricting lopping of oak, cutting of grass, and exclusion of residents from other villages (Pearson, 1926:2-14). In this and other cases, to the extent local authorities regulated use of lands around their villages for grazing or firewood collection, they did so by creating most rules-in-use themselves. They derived their authority on the basis of the prestige and power of their decision-makers. According to Pearson (1926:3), "the old customary restrictions on the use of forests had validity and though there was no formal village management, practical protection was largely secured by hill conditions and customary limits on user."

Quite apart from their status as informal institutions, the lattha panchayats could not work as the basis of a Kumaon-wide network of local regulatory authority because they were too few in number. The costs of knitting them into an effective mechanism of regulation promised to be high given the distances and difficulties in transportation in the hills. But the most important reason why the lattha panchayats were unsuited as the basis of a new system of finer, more precise, and more intimate forest regulation was because their internal working and customary controls were fluid and highly context-dependent. Existing practices of forest protection embodied in the lattha panchayats can be seen as a species of equilibrium

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dependent on the needs of villagers, the activities of neighboring villagers is their forests, the rate at which forests regenerated, and the availability of areas to which new demands could be deflected. State-defined objectives about protection of timber species and control of other vegetation played a lesser role. Variations in the resulting makeup, power, and activities of lattha panchayats, and changes in their characteristics over time had the potential to vitiate the ability of other villagers to copy what was happening in one location, and the ability of state officials to monitor and control. The fact that the existing leadership did not owe its status to state authority also made the lattha panchayats unwieldy instruments of state control. The very diversity of these localized forms of government made them unsuitable for centralized appropriation and guidance.

Indeed, left alone, the forms of social mobilization that the lattha pachayats represented could even act as a foundation for resisting the new regulations that the state introduced. For much of the period prior to the creation of the forest councils, the village community served as a refuge for recalcitrant rural residents. Villagers shielded each other. Village elite did not report on infractions by local residents. Fractious and dangerous activities went on to such an extent that colonial administrators complained about the impossibility of apprehending rule violators unless they caught violators in the act (see chapter six). Existing social organizational forms at the village level thus meant that the village was not a very appropriate intermediary location to facilitate the flow of regulatory authority regarding forests. Rather, the village community acted as an indifferent rival to state power, diverting, blunting, and annulling the effects of state-sponsored control mechanisms.

Colonial administrators did draw some lessons from the lattha panchayats in their efforts to facilitate new forms, of government in forests. These lessons were limited to specific activities of the lattha panchayats, and the use of certain types of punitive measures that panchayat decision makers imposed on villagers - social sanctions and exclusion. By codifying existing local forms of regulations and using the institutional and political power of the state to leverage their application more widely, officials hoped to use

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strategies of government with which villagers were already familiar. Preserving some of the same forms of sanctions could help to consolidate introduced forms of localized government.

But the greater concern of officials was to reconstitute the lattha panchayats as formal van panchayats joined to the state at the hip. They accomplished this goal by redefining the relationship between local government and the state, and creating a domain of regulatory authority in which van panchayats would have significant flexibility and outside of which they would have to depend on formally appointed state officials. Judiciously managed, the reconfiguration of government in the localities could allow colonial state officials to bring environment-related interactions within the ambit of state-sponsored resource control.

Today there are almost no lath panchayats left. Nagarkot's recent study (1997) of eight of these earlier local forest governments suggests that where they exist villagers still depend on the forests they manage. However, few have survived and most villagers can scarcely remember that they had existed.[9]

Discussion

My description of local government of forests in Kumaon prior to the 1930s has emphasized three characteristic features: significant diversity and limited numbers, incomplete articulation with state authority and markets, and potential or actual tensions between the interests of state officials and those of elite and common members of the village community. Before I examine how these aspects of local forest governments changed under the impact of new strategies of forest government, a qualifying note is in order. In focusing upon these three features of protection and regulation of Kumaon forests before their transformation after the 1930, and suggesting that the activities of lattha panchayats were substantially outside state control prior to the 1930s even if influenced by official strategies of government, I do not mean to conform to widely prevalent images that portray Indian villages as independent centers of civic and political life. Such images have a long pedigree and they often continue to dominate studies of rural India.[10]

Consider just one prominent example. Wade's seminal study of community irrigation in south India (1994) borrows its title, *Village Republics,* almost in passing from a phrase suggested more than a century ago by Sir Charles Metcalfe of the East Indian Company. Impressions of village India as autonomous, unchanging, and self-contained owe their origins to arguments advanced by many colonial observers. Metcalfe talked about "village republics" in a British parliamentary inquiry in 1810.[11] Many later writers on Indian village life rely on his statement, among them James Mill and Karl Marx (Inden, 1990:132; Ludden 1993:263). For these analyses, Indian villages prior to the arrival of the British were the locus of an autonomous social and political life that flowed independently of macro-shifts in rulership and dynasties. Monier-Williams provides a portrait, borrowed almost directly from Metcalfe:

> *It* [The Indian village] has existed almost unaltered since the description of its organization in Manu's code, two or three centuries before the Christian era... Invader after invader has ravaged the country with fire and sword; internal wars have carried devastation into every corner of the land; tyrannical oppressors have desolated its homesteads; famine has decimated its peasantry, pestilence has depopulated entire districts; floods and earthquakes have changed the face of nature; folly superstition, and delusion have made havoc of all religion and morality — but the simple, self-contained Indian township has preserved its constitution intact, its customs, precedents, and peculiar institutions unchanged and unchangeable amid all other changes (1891: 455).

This is powerful stuff. It is also, unfortunately, quite mistaken.[12] It substantiates nicely, both in its assertiveness and in its ignorance, Ludden's important point that "colonial knowledge generated authoritative 'facts' that constituted traditional India within a conceptual template that would be progressively theorized within modem world history" (1993: 258, see also Said 1978). Even accounts that question other categories in vogue for depicting Indian politics and history often leave unexamined the idea and formation of "the village."[13] But by now, a raft of research has shown the crucial role of macro-

political forces in defining village identity, locating and recording village boundaries, appointing and legitimizing local officials, and influencing positions of informal authority (Ludden, 1993; Katten, 1999; Stein, 1989). Nor did earlier Indian rulers leave peasant society and villages untouched (Stein, 1980). It is the nature and forms of state-local interactions that are at stake, not whether they existed prior to colonial rule.

Statements such as those by Metcalfe and Monier-Williams certainly do not hold for Kumaon's villages in general. Where land revenue administration was concerned, the arrangements initiated by Traill in the 1820s sought to connect village elite squarely with the Company's employees. But village elite had also enjoyed ties with rulers before the British defeated the Gorkhas. Traill's measures innovated on earlier arrangements. He fixed the total land revenue assessment for a given area, and allocated it among different villages, instead of deciding upon the amount to be levied from each individual landowner and then aggregating these individual amounts for the village and the region (Tolia, 1994;16-20). In his system of revenue collection, the heads of villages became important intermediaries between the state and individual cultivator. The presumed antagonism that many historians of village political life have postulated between the state and the village in India thus seems to have little basis in Kumaon in the case of land revenue.

Forests had a different history. A system of state-initiated control and management relying on detailed plans and strategies was nowhere in evidence in Kumaon before the 1850s. As Baumann remarks, "there is little evidence to support the claim that prior to the British a culture existed wherein 'forest conservation was a social ethic' (Guha 1989), or indeed of any regular system of forest management in the Uttarakhand" (1995: 63). The need to rely on local level intermediaries was voiced by some colonial administrators, among them forest officials, all through the late nineteenth century. But the reliance on intermediary power-brokers did not become state policy before the 1920s. It was only after the 1930s that an organized system of localized decision-making for a significant proportion of Kumaon's forests began to be organized.

These differences between the government of agricultural land and forested land even within Kumaon point to the need for greater care rather than sweeping statements that are supposed to apply to village life generally, even within a region (cf Scott 1976, Farmer and Bates 1996). It is equally necessary to be circumspect in one's generalizations about political and economic relationships between village communities and state officials. These relationships changed in Kumaon, in many ways drastically, even over the course of British rule.

To conclude this section, the forest council rules and the regulatory effects they produced transformed the landscape of environmental protection in Kumaon. They did so by bringing on stage new actors and decision makers——with all their interests, alliances, and practices. The new rules changed the stakes that village communities and their decision-making elite had in forests. They facilitated the appointment of new state officials, and launched a long-lasting partnership between government officials and community-level elite. They also helped shift the balance of villager's actions in forests from an orientation toward infringing conservationist rules that were an emblem of state policies, toward enforcing forest protection rules that simultaneously came to stand as aspects of local control.

The Forest Council Rules of 1931

> When our council was formed, I was still a young boy. The collector saheb came and we had a big meeting. He decided who will be the head of the council. Then new councils got elected after the head died. Now there are many councils right here in our area. They help the government to save the forest. But we don't get much help from the government. They don't listen to our complaints.
>
> ——Forest Council Sarpanch, Sheshbani, Almora district, 1993.

The 1878 Indian forest Act, although it has often been seen as the source of centralized controls over forests, also contained provisions for the recognition and formation of village forests (GOI, 1890). In

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Kumaon, the first proposals for constituting community forests were put forward in 1895 by E. K. Pauw (Pearson, 1926). V. A. Stowell put up another proposal a decade later. He suggested that village communities should have at least some common land that would supply them grasses and firewood, and over which they could exercise proprietary rights. His proposal emphasized the importance of avoiding detailed interference. It did not travel far, however, because the forest department claimed it received little response from villagers. It is as likely that the proposal was not considered too seriously at a time when the department was contemplating taking over all the forests in Kumaon under its direct control.[14] Shrivastava (1996:256-57) suggests that the proposal also became too complicated because of the obsession of forest department officials with safeguarding state rights in land classified as forests. It required a "detailed count of trees and calculations of outturn on standard working-plan lines" (Pearson, 1926), activities impractical at the village level. Later proposals for village forests were often defeated because of fears that villagers might assert proprietary rights over the land they gained. The forest department was firmly against any such interpretation of forests. To get around these concerns of the forest department, the commissioner of Kumaon issued a new set of rules in 1924 for creating community forests through grants under land revenue laws (Srivastava 1996). By this time, many observers had come to believe that the involvement of localities in the government of forests was at least feasible. Localized government was also necessary to reconcile the interests of conservation and livelihood.

Kumaon is not unique in creating some form of community-based government of forests. Cooperatives in Punjab and present-day Himachal Pradesh, village fuelwood reserves in Bombay, forest councils in Madras, and some aspects of the Taungya system in Burma relied upon the active participation of rural residents in initiatives launched by forest and revenue department officials. Before forest council rules were prepared in Kumaon, the deputy commissioner studied the system as practiced in Madras and submitted a report on it (GOUP, 1927: 2). What does make Kumaon exceptional is the continued survival of localized government of forests, the relatively wider range of villager activities that the forest department

was forced to concede, and the autonomy in regulating local actions that the forest councils enjoyed in comparison to similar localized government in other parts of India.[15]

The new rules that initially formed the basis of the changing relationship between localities and the state were a compromise among conflicting interests and claims. Villagers' protests between 1900 and 1922 had convinced the colonial state that local residents would not be satisfied without a necessary set of forest rights. But the protests had also impressed the need for closer monitoring of what went on in forests. The necessary set of rights was to be such as not to infringe unduly on subsistence-related activities and harvests of villagers. But at the same time, the protection of subsistence should not threaten the pursuit of commercial interests by the forest department. The new rules should bind village communities closer to the government; they should also act as a wedge between the interests of different actors within the village. The rules should not turn villages into a strong enough locus of authority that competed with the state; but they should also lend clout to decision-makers within the locality -- so that residents' activities could effectively be shaped along directions preferred by the state.

As these concerns were solidified in written regulations, the necessity to create new centers of state-sanctioned authority was clear to most colonial administrators. Even the forest department, staunchly against the handing over of forests to district revenue authorities, felt that panchayat forests "promise to be locally of the greatest value to the villagers and generally an important factor in the preservation of the larger forests on which the future prosperity of Kumaun so much depends" (GOUP, 1931:1).

The Forest Council Rules of 1931 contained 22 provisions. Of these, eight concerned the formation of new loci of decision making in villages. Another nine defined the relationship of the forest councils to the provincial government and the limits within which the councils were to govern forests.[16] The remaining rules, the concern of the next chapter, described the powers forest councils could exercise over their members and their forests.[17] The provincial government modified the Forest Council Rules comprehensively in 1976.[18] By this time, the principle of local, community-level regulation of forests was

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no longer contested even by the forest department. It is interesting to note that the second set of rules was more explicit in comparison to the earlier rules in prescribing how the forest councils should govern their forests. The Rules of 1976 contained 49 provisions, more than double the number in the earlier rules. Of these 49 rules, more than 22 – nearly the total number of provisions in the first set of rules – sought to regulate the internal functioning of the councils (UPG, 1976). Table 4.1 describes and summarizes the main provisions of the Forest Council Rules and their 1976 modifications as these bear upon the relationship between the state and the locality.[19]

[Table 4.1 here]

Three aspects of the rules presented in the table are worth emphasizing. One, the revenue department exercised dominant control over the formation of the forest councils and the term of office of the council's governing committee. Although its control was supposed to be rule-bound, the rules gave mid-level officials significant discretionary powers. Two, the authority of the councils was tightly circumscribed where potential conflicts between the villagers' actions and state interests existed. In case revenue and forest department officials did not ensure the election of decision makers who would be sympathetic to the existing aims of governing forests, there were inbuilt safeguards in the rules that would restrict the extent to which community-level decision makers could stray from the prescribed path. And finally, the forest department retained its commercial interests in the land that came under council authority. That is to say, even if the safeguards failed, the forest department protected its major interests by not decentralizing its commercial rights in Kumaon forests.[20] These three features of the rules meant that the newly established relationship between state officials and community decision-making would evolve in ways that limited threats to state authority posed by the establishment of new loci of decision-making.

The control of the revenue department is most visible in the rules governing the formation and dissolution of the forest councils: these rules show the calculated care that went into granting villagers autonomy, and still keeping the council officials aware that their selection and status depended significantly on keeping senior officials in the revenue department satisfied. Residents of a settlement initiated the formation of their forest councils but by petitioning the revenue department. Only those villages would therefore come under the ambit of forest council rales where there was already some support for community forestry regulations. Within these villages, the revenue department could ensure the selection of appropriate office-bearers. The government created new official positions - forest council inspectors and officers - to facilitate the formation of councils in the 1930s. These officers worked under the supervision of the deputy commissioner. They explained to villagers how the forest councils worked and the advantages of constituting them.

To create their own community forest and forest council, any two residents in a village could submit a petition to the revenue department. The petition launched the processes that transferred land and formal rights to the village. The deputy commissioner ascertained that residents of other nearby villages did not contest the land claims made by the petitioning village. After ensuring that the petition for classifying a certain area of land as community forest was not contested, the deputy commissioner called a meeting of the village residents. Election of a three-to-nine-member governing committee took place during this meeting. Elections were mostly a formality in the initial years. The deputy commissioner selected the members of the governing committee from among the villagers who had assembled. He could dissolve this governing committee on evidence that they were not carrying out their duties well. The governing committee members could remove office-holders from powers, but the selection of new office-holders had to take place under the supervision of the deputy commissioner. The revenue department supervised the working of the forest councils, with the forest department assisting through its technical expertise. The deputy commissioner rendered the final decision on whether and to what extent the area of forests that the

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villagers desired was to be classified as their community forest. Forests for the councils had to be parceled out from the land classified as Class I forests and which was within the boundaries of the village. These three forms of control over the creation of councils and their forests - the constitution of the governing body of the forest councils, the term of its members in office, and the extent of area that the council was to govern - gave the revenue department a crucial role in the making of the forest councils and the territorial extent of their regulatory authority.

Come now to the set of rules that placed restrictions on the powers of decision-makers in the community. The first four rules from 1931 are clear in their intent. They restrain the forest councils from alienating their common land, clear-felling their trees, or appropriating the community good privately. The modifications introduced in 1976 make these intentions of the state clearer. To prevent unauthorized felling of trees, the provincial government introduced debilitating restrictions on the felling of even reasonable number of trees that the council members might need for domestic use. Villagers had to seek permission from three senior officials to meet their needs for construction timber. Any villager who has had the misfortune to try to extract a "yes" out of an Indian civil servant knows the sheer folly of imposing such requirements. Squeezing milk out of stones is seldom as difficult. Such a rule effectively annulled the ability of villagers to use timber legally. We can safely infer that in the absence of near-perfect enforcement, all such strict regulations accomplish are rule infractions and side payments.

Two of the rules under "limits on council authority" might seem strangely classified: that the councils should prepare a) regular records of their meetings and b) of their accounts. However, they indicate the premium that the colonial state placed on increasing the visibility of actions in the village and in village forests. Supervision of the forest councils was always sketchy of necessity. The presence of written records facilitated control and supervision over the activities of the councils. It meant that a visiting official could potentially avoid inspecting forests and interviews with villagers and simply inspect the records, making supervision less time-consuming. Of course the visiting official could always *choose* to

examine the condition of the forest or talk to villagers about the functioning of the council. This threat of cross checking the written word against actual observations ensured that council officials could not simply manufacture the written records. The 1976 requirement to prepare budgets and hold regular meetings was an effort in the same direction.[21]

Finally we come to rules that sought to protect the commercial interests of the forest department even if the first two sets of rules to secure conservationist objectives faltered. We need to keep in mind that the forest department had shielded its commercial interests even in the initial classification of lands that were transferred to the revenue department. As it slowly gave up control over some forests, the ones that found their way to the revenue department and to villagers were mainly the oak forests, or scattered pine forests that were more difficult to exploit commercially.[22] But even in the forests that councils came to regulate, their actions reduced the costs of enforcement and made commercial exploitation worthwhile. Thus, the forest council rules permitted a refinement of territorial regulation. The forest department (and later the forest corporation set up by the Uttar Pradesh government) continued to be the only agency empowered to harvest resin and timber from council-governed forests. Although the 1931 rules did not place very strict restrictions on timber harvests by the councils, the situation changed in 1976. Forest councils had to involve forest department officials if they wanted to harvest more than one tree in a year.

The forest department's hold on commercial benefits derived from the council forests was weakened of course by the stipulation that proceeds of timber and resin sales from council-governed forests should be shared with the council, typically to the extent of forty percent once the department had deducted its expenses. The share of the council is deposited with the deputy commissioner and held until councils need it. The ability of the councils to get these revenues depends on the energy they exercise to get the funds released from the district coffers. The records maintained by the forest councils indicate that getting the funds out of the deputy commissioner's office typically takes anywhere between two to three years.

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Collectively, the three types of rules listed in the table represent successive checks on the possibility of forest councils using their powers to exploit the forest in ways that went against expressed state policy. Their effectiveness, however, depended on a range of factors that could not all be controlled by the state. Social and economic differentiation, political tensions, conflicts and the nature of leadership, village size and economic status of village residents, dependence on forest products, levels of migration and population change, productivity of given patches of forests, and a host of other dimensions affected the extent to which villagers would be inclined or able to conform to rules. The ability of the forest and revenue department to monitor compliance across different villages also varied. All these factors combined to influence whether Forest Council Rules actually succeeded in shaping state-community relations and forest use patterns in intended ways. The flexibility in their internal decision-making that the forest council rules granted to villagers was no more than a recognition of the fact that the state could not ultimately control all interactions within the locality.

Effects of the Forest Council Rules

Since 1931, the forested landscape of Kumaon has become densely populated with councils formed under the provisions of the forest council rules, some extremely well managed, other more or less defunct. In the first decade that the rules were in existence, the rate of formation of new councils was still slow. After exclusionary expansion of forest department territories over the six decades between 1860 and 1920, the exact significance of the new legal framework that sought to generate and encompass localized regulation of forests was not entirely transparent. The appointment of forest panchayat inspectors, and forest panchayat officers on the one hand increased the intensity of supervision of councils; on the other hand, it also helped spread information about the benefits villagers could gain by forming formal, government-recognized, local bodies. From less than 400 in 1938, the number of councils increased to about one thousand in 1955, one thousand and five hundred by 1965, and nearly three thousand and five

hundred today.[23] Several forest councils cover more than one village - that is, the rightholders in the forests they govern reside in more than one village. With just around 12,500 villages in Kumaon, we can safely infer that forest councils exist in nearly a third of the villages.

A council in every third village: this is a vastly denser network of locally created and enforced regulations in comparison to the state of affairs under lattha panchayats, or the type of centralized government of forests that the forest department tried to achieve. The lattha panchayats were far fewer in number. The forest department had never reached so deep below the surface of village life nor shaped so intimately the activities of villagers in forests. Its clumsy efforts to extend the government of forests territorially had backfeed: they unleashed an orgy of what the Kumaon Forest Grievances Committee was to call "riots and bloodshed" (KFGC, 1921).

The involvement of a larger number of Kumaon's residents in the government of forests has produced new splits within the community so that a subgroup of the community has come to occupy the position of rule-makers and enforcers. Where the forest department and its officials stood as the visible symbols of restrictions and the target of villagers' ire, now it is no longer possible to consider only the forest department as the source of legal and official constraints upon what villagers wish to do in their forests. Villagers, if they wish to protest against restrictions must do so within the community. But even within communities regulation has many faces. Guards are one of them, perhaps the ones with whom ordinary villagers come into contact most often. Elected officials in the council are another symbol of regulation. But both guards and council officials are also village residents, and not always the richest or the most powerful ones. The new sources of regulation of forests constitute a different framework for the exercise of power that simultaneously produces different effects. It draws attention away from the forest department. It invites change through participation. It dims the possibilities of protests and rebellion. If community-based conservation is active and successful, the prospects of uniting against the forest department become bleak, even remote. Kumaon's colonial forest department succeeded at least in this:

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blunting the edge of direct protests against its regulatory actions. As Harrington Moore points out in his examination of the sources of agrarian protests, socially diffused organization of sanctions is nearly immune to protests in comparison to centrally administered extractive and sanctioning mechanisms (1966: 459).

The dispersal and increased density of forest government is strikingly obvious when compared with the past. But the real significance of this new government of forests is contained in three additional features: a) systematization and enhanced certainty, b) formalization of informal authority, and c) a certain harmonization of the interests and organization of state and community. These three aspects of the localization of governmentalized forests in Kumaon are likely present in other experiences of localized government as well

By systematization, I refer to the production of a set of overarching rules that guides the birth of environmental decision-making within each village, that streamlines the procedures through which these decision-makers are supposed to arrive at plans of actions, and that provides to decision-making bodies the same set of constraints within which they must operate. Decision-making, procedures, and constraints existed of course prior to the formation of forest councils.[24] But the forest council rules acted as "focal points" (Schilling 1980) for these activities and constraints. Because they had official recognition, conformity to these rules facilitated joint action within the village. Correspondence between these rules and joint action by villagers helped the revenue and forest departments by making it unnecessary to design different strategies to engage diverse local actions. Easier joint action was also in the interests of villagers because it gained them assured rights to a specific piece of land that could be counted as their common property. For both parties, uncertainties in interactions and outcomes were thus lowered.

But systematization had a different face also. At the same time as the forest department and the revenue department tried to streamline their interactions with local governments, they also crafted rules that would permit the local governments significant leeway in their internal decision-making and strategies. The

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new rules of government granted villagers flexibility in making decisions that addressed local social, ecological, economic, and political differences. As long as villagers did not contravene the limits within which they were supposed to function, they could craft specific responses to the fluctuations that beset their forests and lives. This dual strategy of standardization in external relationships but diversity in internal activities made for wide variations across councils, but limited the problems these variations might produce for the government of forests. There was a finer and more precise delineation of spheres of control and regulation, both territorially and in terms of regulatory authority.[23]

Systematization and standardization of external interactions was accompanied by a new formalization of council activities. Formalization refers to the use of prescribed processes, set routines, and predictable methods. It began to characterize many of the practices related to forests and their government. Leadership selection through majority rule elections, meetings of elected officials at prescribed intervals, and the official appointment of guards were some such practices. The use of written records is one of the most characteristic aspects of formalization, and forest councils began to produce these records of their activities throughout the length and breadth of Kumaon. These records made the internal processes of the councils more visible to outsiders. Greater visibility was a necessary condition of the appointment of a new class of officials who inspected council records and supervised their activities. Without formal records that each council maintained in the same format and for similar kinds of activities, forest council inspectors and officers would have spent far more time and energy keeping up with developments in the villages under their charge. Greater formalization, especially through the production of written documents, permitted diversity to flourish among the councils, but also tamed the effects of such diversity by letting government officials understand it more easily.

Formalization also characterizes the new relationship between state officials and community-level decision makers. Prior to the formation of the forest councils, village communities interacted with state officials mostly on an informal basis. There were no set channels for the flow of regulatory power. The

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creation of the councils made slate-locally relationships far more formal. At the same time, new procedures and routines help generate asymmetric flows of power between appointed government officials and elected council officials. Council officials approach government department typically when they need something: recovery of fines and dues, seeds or saplings for afforestation, permission to cut a tree, and so forth. By creating one-to-one relationship between each forest council and government officials, and by making no provision for interactions or alliances among the forest councils, the forest council rules consolidate the political inequalities between state and locality.

Although individual localities and the state are fixed in a structurally unequal relationship, the antagonisms between them have been radically reconfigured through the means of decentralized conservation. Under the new system of governing forests, state power is entrenched deeper at the same time as localized authority is made stronger. The two reinforce each other instead of being in a necessary opposition. Support from the state to local decision makers in the form of advice, in apprehending rule-breakers, in collecting fines, in planting new vegetation and in manifold other ways strengthens processes of enforcement and forest conservation - the common interests of both local and state officials. For state officials to weaken community-level decision makers by withholding such support only detracts from the objective of environmental protection.[26] For community leaders to organize protests against state officials only weakens the ability of both to enforce regulations.

The formation of the forest councils further extended the government of forests that the creation of provincial forest departments had initiated in the previous century. The forest departments facilitated what might be called "government at a distance" (Latour 1987; Miller and Rose, 1990) by increasingly adopting formal statutes and working plans to guide their activities, and statistical measures and monitoring mechanisms to evaluate the success of their plans and recalibrate them. The ability to transform the world of vegetation into numbers and the relationships between different features of the landscape into equations meant that superior officials could create numerical measures of performance and evaluation. By giving

subordinates numerical performance measures, forest department tried to reduce ambiguities in the tasks to be carried out and targets to be met. Efforts to exercise power from a distance and shape the actions of subordinates succeeded in part because of the acceptance of the goals of forestry as appropriate and in part because the interests of subordinates were linked to realization of their targets.

But these clear targets and unambiguous measures failed to accomplish the desired conversion of the landscape in the face of determined resistance by villagers. A recourse to brute enforcement proved ineffective. Villagers did not see why they had to change their activities in forests to conform to the objectives formulated by the forest department. The costs of monitoring and sanctioning villagers were high enough. But even more costly were the potential political effects of strict enforcement. Depriving villagers of the basic means of their livelihood is likely to have created a situation where villagers did not trust the entire colonial administration. Successful "government at a distance," required the restructuring of interests in forest conservation. Only when villagers saw forests as theirs and the condition of forests as dependent on their actions would they begin to follow protectionist strategies. The formation of forest councils and the handing over of forests to them were steps seeking to accomplish such a restructuring of villagers' interests. In the process, they also established complementary but asymmetric flows of support and dependence between as the chief characteristics of the political relationships between the forest councils and provincial government officials.

Conclusion

This chapter has examined the first of the three sets of changes in relationships and subjectivities that comprise the decentralization of environmental policies, and which are the subject of the second part of this book. I have suggested that the reconfiguration of interests in forests that accompanied the transformations described in this chapter was a result of two significant developments. The first were the concrete struggles that villagers waged in defense of continued rights over forests. The second was the

dawning realization among provincial government officials that centralized control over forests would prove prohibitively expensive to maintain. New technologies of government that bound localities to the defense of forests turned out to far less costly, both politically and economically. It is this recourse to localized government that resulted in greater predictability of environmental decision making through systematization and formalization.

One way to think about the changing environmental relationships between state officials and villages in Kumaon might be to call them state formation (Agrawal 2001). State formation in this context would correspond to activities that contribute to the formalization and systematization of social action and in so doing consolidate or complicate the division between states and societies.[27] Examples of such activities in Kumaon can be cited as the creation of new rules to define the limits of the permissible, the institution of new organizational structures to enforce such rules, and the incorporation, and thereby undermining, of alternative loci for the exercise of power. State officials, one might argue, increasingly become the interpreters and enforcers of what is permissible as state making proceeds apace.[28]

As descriptors of what happened in Kumaon, however, the idea of state formation needs further work. Two basic problems make the phrase inappropriate: a) the idea that it is something like a state that is being created and consolidated, together with the usual assumptions about states such as their monopoly of control over means of violence; and the notion that states and localities are opposed to each other and the power of the state is aimed at the control of localities. The second assumption also often involves the corollary suggestion that state formation involves a displacement of existing local relations and forms. Ferguson's study of development in Lesotho thus suggests that development is "not a machine for eliminating poverty that is [also] incidentally involved with the state bureaucracy; it is a machine for reinforcing and expanding the exercise of bureaucratic state power, a state strategy whose principal effect is expanding and entrenching state power" (1994: 255). Ferguson qualifies his arguments by drawing on Foucault and suggesting that the state is not a unitary actor, and that the expansion of state power implies

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that "specific bureaucratic knots of power are implanted [into society? community?], an infestation of petty bureaucrats wielding petty powers" (Ibid: 273).[29] But the idea of state formation and expansion ultimately underpins his critique of development.

The Kumaon case is different. For one, the forest council rules did not make localities into bureaucratic mini-images of the state. New technologies of environmental government, pursued by the local decision-makers and state officials jointly led to a greater systematization of rules and the production of written records, but they did not mean that localities turned into formal, impersonal social spaces. Rather, strategies of government relied upon existing forms of cooperation and joint action. New processes of government came to exist in conjunction with other social processes within the locality, and often drew strength from them. Indeed, the complementarity between the dispersal of protectionist strategies to the village level and the existing strengths of local governments is precisely the reason why forests councils were bora. As the previous section tried to establish, the strength of localities was linked to that of state officials in a positive manner. In the next chapter we shall see how villagers' actions in forests changed, and the differences in the responses and burdens on villagers that were a part of new forms of government of forests.

Instead of viewing forest councils as part of a process of state formation, it is perhaps more appropriate to see them as a form of government that encourages (and depends for its success on) the willing participation of those subject to rule and rules. Although strategies to force compliance are present in the repertoire of governmental mechanisms that forest councils can use, their deployment is rare at best. The dominant idioms to secure compliance within the community are those of cooperation, achievement of group interests, and safeguarding the future. In contrast, one might point out, almost all the definitions of the state typically draw attention to means of coercion and monopolies over violence. Government on the other hand shifts attention to the multiple other means of shaping behavior that are at the disposal of power.

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Table 4.1

The Forest Council Rules of 1931 and their 1976 Modifications
Changes in the Relationship between State and Communities in Kumaon

Subject	1931	1976
Formation	1.Two or more residents can propose that a council be formed. 2.The council will be formed under the supervision of the deputy commissioner of the district 3.The boundaries of the forest under the control of the council will be approved by the deputy commissioner.	Rules 2 and 3 remain the same. *Modifications* 1.One-third of the residents must propose the formation of the council.
Membership officials, and decision-making	1. All village residents and others possessing rights in the forest will be considered rightholders in the council-governed forest. 2. Rightholders will elect between 3 and 9 panches as officeholders in the council. 3. The panches will select the council head. 4. The quorum for holding a meeting of council officials is to be two-third. 5. All decisions are to be made by a simple majority. 6.Panches can force the removal of one of their members by a majority and a new member would be elected under the supervision of the deputy commissioner.	Rules 1, 3, 4, and 6 remain the same. *Modifications* 1. Five to nine members will be elected as panches. 2. The Deputy Commissioner can nominate one member as an official in the council. 3.The head of the council can be removed by one third of the members provided their action is approved by a two-third majority in the subsequent council meeting. 4. All decisions must be made by a two-thirds majority.
Dissolution	1.The term of the council will be three years, and at the end of that time new elections will be held for officeholders. 2.Ths deputy commissioner can dissolve a council in case of repeated mismanagement, and hold fresh elections.	Rule 2 remains the same. *Modifications* 1. The term of the council will be five years.

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Limits on Council's authority	1.Council-governed forest land cannot be sold, mortgaged, or subdivided. 2.The benefits from the sale of council-governed forests are to be used to improve and safeguard the forest, and any remaining amounts are to be used for the benefit of the village community. 3.The council is to demarcate and protect the forest, and conserve its trees. 4.The council is to prevent villagers from encroaching on or cultivating its forest. 5. The council is to maintain records of its meetings and accounts. 6. The council officials are to follow the instructions of higher level revenue officials.	Rules 1, 2,4, 5, and 6 remain the same. *Modifications* 1.The council officials must meet at least one every three months. Proceedmgs of the meeting to be recorded and a copy to be submitted to the deputy commissioner. 2.Harvesting of timber beyond one tree each year is to be approved by the deputy commissioner, divisional forest officer, and the conservator of forests. Sale of forest products must be in accordance with working plans that the forest department prepares for the council's forest. 3.For commercial sales of forest products, the permission of the divisional forest officer must be obtained. 4.The council must prepare annual budgets and submit a copy to the deputy commissioner. These records are to be audited wherever possible.
Supervisory role of state officials	1. All activities related to resin harvesting, except for domestic use of resin, must be carried out under the supervision of the forest department. Profits from the sale of resin are to be shared in a proportion to be determined by the Conservator of forests. 2. Special officials appointed by the provincial government, officials of the forest department, and other revenue department officials can inspect the working of the councils to ensure their proper functioning.	Rule 1 and 2 remain the same. Modifications 1. Special officers appointed to supervise the functioning of councils must inspect at least a one third of the councils under their jurisdiction each year.

Source: Agrawal (2000).

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Endnotes

1.This is not to suggest that Kumaon's residents were unique in forcing the state to concede some of then-demands in forests. Although colonial rulers were never an easy nut to crack, much recent research has documented the many forms their concessions in forests took. The variations in the form and substantive content of concessions depended on the rhythm and timing of governmental strategies, the value, significance, and strategic importance of forests involved, and the intensity, extent, and forms of conflicts. For some highly nuanced and careful studies of colonial environmental relationships around forests see Dangwal (1996), Saberwal (1999), Sivaramakrishnan (1999), Skaria (1999), and Sundar (19997).

2.For a close examination of this point see the review of the community-based conservation literature in Agrawal (1997). See also the careful review of the incentives of different actors involved in conservation programs in Wells (1998).

3.In 1917-18, for example, the annual report of the forest department argued that the actual burden of regulations and grazing dues was quite light. According to the report, "The feature of the rules which graziers object to is the restriction placed on their wandering with their cattle from block to block, but without this restriction proper regulation on grazing would be impossible, and as there is no question of inadequate supply of grazing the hardship is more imagined than real. The increase in the grazing rates does not appear to be considered a grievance and in fact the industry of professional grazier is so lucrative that it could afford to bear with impunity a much heavier tax than the present annual grazing fee of 8 annas per cow or bullock and Re. 1 per buffalo" (GOUP, 1917: 8). This was *in* a year when the forest department extracted an annual fee of Rs. 123,000 from cattle owners.

4.Baumann (1995) arrives at a similar inference after a review of evidence on precolonial communal management of forest resources. "Self-sufficient reliance on common property as an input into small holder subsistence agriculture that is suggested in the populist versions of the past was not a pre-British historic reality. The scarcities that arose through restrictions on forest use, as well as population growth under

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British rule, actually led to active management of village forests for the first time in many villages, and *a change in local norms and values relating to forests'"* (ibid: 56, emphasis added).

5.Lattha means "stick" and lattha panchayats literally means "councils based on the power of the stick." The name refers to the power the local community can exercise over members. References to lattha panchayats are available in several studies, but few of these studies provide in depth accounts of their origins or evidence that their origins predated British rule (Nagarkoti, 1997; Somanathan 1990, Somanathan 1991).

6.According to Baumann, (1995: 70), "Colonial rule in the early phase, rather than destroying indigenous systems of forest management, created the circumstances within which it was necessary for people to conserve resources... increase in subsistence demands on the forest, as well as the beginnings of unregulated commercial exploitation of the forests, drastically decreased the forest area available. The widespread reporting of collective action to conserve forests on village commons in the late nineteenth century and early twentieth century seems to be connected to this decline."

7.Nearly all temples in Kumaon have Deodar trees near them. Because deodar is not native to Kumaon but to the region west of the Alaknanda, it is likely most of these trees near temples had a sacred status and were planted (Atkinson, vol. 1,1882: 325).

8.Batten, Kumaon's Commissioner after Traill, remarked on the fact that "large portions of wastelands. including whole ranges and their vast forests, have been included from olden times in the boundaries of adjacent villages [as] such a division has been found useful in giving separate tracts of pasture for the cattle of different villages" (1878:124).

9.It is unclear whether contemporary studies of informal forest councils in Kumaon can be seen to be generating information about lattha panchayats as they historically existed prior to the formation of the forest councils under the rules of 1931. As the forest department pointed out in 1934, although only about 150 forest councils had been formed under official rules, "in certain parts of Kurnaun there are now a large

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number of village forests, which have been formed without official assistance on the lines of [official] Panchayat forests and as a result of the example given of the benefits of such forests" (GOUP, 1934:1).

10. Anthropological work in the 1950s and 1960s was beginning to cast doubts on some of these views of Indian villages. But its very focus on village India helped consolidate the categories it sought to question (Lewis, 1958; Marriott, 1955; Srinivas, 1960). Nor, it must be admitted, were writings during this period particularly careful in how they deployed categories such as village and caste.

11.Metcalfe's account is cited in Kessinger (1974: 25). "The village communities are little republics, having nearly everything they want within themselves, and almost independent of any foreign relations. They seem to last where nothing else lasts. Dynasty after dynasty tumbles down; revolution succeeds to revolution; Hindoo, Patan, Mogul, Mahratta, Silt, English are all masters in turn; but the village communities remain same... If a country remain for a series of years the scene of continued pillage and massacre, so that villages cannot be inhabited, the scattered villagers nevertheless return whenever the power of peaceable possession revives. A generation may pass away, but the succeeding generation will return. The sons will take the place of their fathers; the same site for the village, the same position for the houses, the same lands, will be occupied by the descendants of those who were driven out when the village was depopulated." I came across this reference in Ludden (1993). I am indebted to Inden (1990) for part of the discussion that ensues.

12.One of the reasons such visions of Indian villages became popular was how well they could be used to suggest that the "removal of the thin conquering strata of Europeans and the Pax Britannica enforced by them would open wide the life and death struggle of inimical castes and tribes" (Weber 1958: 325).

13.See on this score the criticisms offered by Katten (1999: 88-89) of scholars such as Washbrook and O'Hanlon (1992), Chatterjee (1993) and Prakash (1990), who have tended to take the ideas of nation and class for granted in their work. The problem, as he points out, is at least partly one of limited convenient historical categories. But the end result is that scholarship on India is left subject to the "set of meanings

and ideologies accompanying these basic and insufficient categories [such as nation, class, and village]" (Katten 1999: 89). Guha's arguments about "optics" (1983) and Chakrabarty's (1992:23) observations about "knowledge protocols of academic history" point toward similar limits of analysis. See also Stoler's (1989) valuable discussion of colonial analytical and political categories.

14. Even as the forest department was preparing plans to reclassify nearly all the non-agricultural land in Kumaon as reserved forest, it recognized "that the allowances made for right-holders [villagers] appear likely to prove so inadequate that the scheme must be completely revised when the schedules of rights are received from the Forest Settlement Officer" (GOUP, 1915: 9).

15. Forest department officials so disliked the recommendations proposed by the Kumaon Forest Grievances Committee that they even welcomed the formation of a permanent forest advisory committee in 1922. They argued that the remedies advanced by the Kumaon Forest Grievances Committee forced the department to release large areas of forests "before any alternative system had been developed... [and] to *meet* this defect the committee was considering measures for giving practical and general effect to the proposal put forward many years ago to form communal forests" (GOUP, 1925: 2).

16. The remaining provisions, discussed at length in the next chapter, were mostly guidelines about the internal functioning of the councils.

17. The last group of rules allowed the councils significant latitude in how they governed, given the externally prescribed limits on council authority (UPG, 1931).

18. The Rules of 1931 also underwent some changes in 1972, but these were relatively minor in comparison to what happened in 1976.

19. I defer until the next chapter the discussion of rales that impinge upon the relationships between the new decision-making units in the community and common village residents.

20. Rules listed under the heading of "membership, officials, and decision-making procedures" were mainly coordination rules, designed to facilitate the functioning of the councils, and I do not discuss them in any

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detail. But it might seem interesting that the modifications of 1976 made it more difficult for any decisions to be reached --by requiring a two-third majority for all decisions. I am unsure why this change was made, but in any event, it is unlikely that the change made much difference. In the records of more than 38 councils that I examined (on the average each council had records for at least ten years), most decisions of the governing committee were unanimous.

21. For a discussion of visibility and legibility, see Scott (1998).

22. Forest department officials explained in 1926 that although nearly 2000 square miles of Class I forests had been transferred to the district revenue authorities from the control of the forest department on the recommendations of the Kumaon Forest Grievances Committee, "The areas are mostly oak and miscelleneous forests, many of them covering hills the stability of which is of prime importance" (GOUP, 1926: 1).

23. The figures on the numerical strength of the forest councils for the mid-century are to be found in UPFD (1959, 1961). For more recent figures, I rely on fieldwork and data collection from 1995.

24. See Schelling 1980 for a lucid discussion of the idea of focal points.

25. Braddick notes the value of precision in the exercise of decentralized authority in his fine study of state formation in seventeenth century England: "By reducing the discretion available to specialized state functionaries, and by specifying their rewards more closely, the emphasis on precision and regularity helped to secure more ready consent..." (2000: 43).

26. As early as the 1930s, the forest department was already observing efforts to form forest councils; "The [forest council] movement still requires official guidance to obtain the best results by good organization, but it appears already to have become an established feature and one of the most remarkable developments of recent times in Kumauri" (GOUP. 1934: 1).

27. I do not enter into a discussion of the vast literature that engages the issue of state autonomy and state-society relations. Some representative accounts are available in Evans, Rueschemeyer, and Skoepol 1985,

Hall 1986, Jessop 1990, Migdal 1938, Migdal, Kohli, and State 1994. A thought-provoking and useful critique of the state-centric literature is available in Mitchell 1991.

28.The extension of rules, or the incorporation of territories through such rules into state formations is not necessarily a threat. But see Brow (1996) who argues that development in Sri Lanka incorporates villages into regional and national circuits of power and exchange: "Various social practices that had served to mark the inhabitants of the same village as members of a distinct community were under threat while others had already been abandoned" (p.6).

29 .Ferguson goes on to say that the growth of state power means the state "grabs onto and loops around existing power relations, not to rationalize or coordinate them, as much as to cinch them all together into a knot... it is involved in the distribution, multiplication, and intensification of these tangles and clots of power" (ibid: 274). Although it is not clear what exactly "knots, tangles, and clots of power" denote, it does seem that in saying "the state grabs onto," or "it is involved" Ferguson goes back to thinking of the state as a singular, unitary actor.

5. Inside the Regulatory Community

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Virtue regenerated - crime reduced - public safety enhanced - institutionalization banished - dependency transformed to activity... political alienation reduced... the Gordian knot of state versus individual not cut but untied, all by a simple idea in politics: community.

— Nikolas Rose, *Powers of Freedom,* 1999:187.

By the 1940s, community-based forest protection was firmly in place in Kumaon. Several colonial officials had had initial misgivings about the experiment and some continued to feel doubtful about its success. But events in the two decades prior to the 1940s had shown that local involvement was the tiger by the tail that the state could not let go. The immense difficulty of preventing forest fires had tested the repressive might of the colonial state to the limit. It had been found wanting. The specter of burning hillsides lived in the recent memory of many officials. Worries about the effectiveness of state regulation ensured that forest councils In Kumaon would not be dissolved even as the forest department disbanded similar councils in other parts of India such as Madras, and took over their village-managed forests.

The number of forest councils was still small in 1940. But as government officials and village leaders came to accept the permanence of this new form of regulation, thousands of councils were born. These new centers of governmental authority, environmental decision making, and social regulation came to be dispersed throughout Kumaon. Decision makers in communities became new agents of environmental regulation. Many of the processes that the forest department had tried to impose upon the social body of Kumaon and through which it had tried to shape ecological outcomes became part of the regulatory charge of communities. Support from the forest and the revenue departments helped strengthen the government of forests through community. The joint government of forests turned out to be more intimate, far reaching, penetrating, and effective than anticipated by the critics of community regulation, and even by many of its sympathizers.

The new forms of regulation that communities used in defense of forests were as diverse as the means villagers found to evade regulation. Some forms of environmental regulation were invented afresh in response to the new powers community decision makers gained. But often new regulations of villagers' activities in forests were drawn from existing practices used informally to curb deviance and promote compliance in other spheres of social interactions.[1] For example, informal village councils chastised community members in front of the entire settlement if they violated existing social norms. Such punishments could also easily be deployed to deter illegitimate actions in the forest. Prevailing forms of interactions could also assume new valence in the context of environmental regulation. The fact that villagers in a settlement could see each other in their fields and had intimate knowledge of the activities of other households made monitoring far less costly. For such reasons, community regulation could prove far more economical than strategies pursued by the central government.

Greater diversity and economy in comparison to centralized regulation were only two of the characteristics of community-based allocation, monitoring, and sanctioning. There were other aspects to local regulation. It was more autonomous and more legitimate. It was also more continuous and more moducated. Its autonomy and legitimacy derived at least in part from its closeness to the objects of regulation. Villagers themselves selected (or rejected) those who would regulate. The actions and decisions of regulators were less hidden from them than had been the case when forest department officials were exercising control. The continuity and modulation of local regulation stemmed from the better understanding that the new regulators possessed about their locality. After all, officials of the forest councils and those they sought to regulate both lived within the bosom of the same community.

The transformations of social relations within the community, the birth of new forms of environmental regulation, and the juxtaposition of new characteristics of these forms of regulation in the community can be seen to mark the constitution of a new instrument to produce environmental conformity: the regulatory community. The reconfiguration of the localized community in its regulatory form occurred

with the help of colonial state officials as a search for a new way to govern forests. The reconfiguration continues to unfold today.

This chapter explores the importance of localized regulation in Kumaon's forests by examining the principal features of the regulatory community that emerged in Kumaon. A study of approximately 275 different forest councils shows the extent to which regulation is more important in influencing the condition of forests in comparison to other forces such as market penetration and population levels. I then examine the nature of allocation, monitoring, and sanctioning: the set of processes that constitute environmental regulation through the community. I elaborate the differences between forms of monitoring, control, and enforcement as they are pursued by state officials and by decision-makers within the community. I show how these differences are foundational in constituting communities as the basis for a new form of regulation. The discussion in this chapter examines mainly the political and economic effects of regulation in Kumaoni villages. However, environmental government has an additional productive and positive effect on forms of subjectivity. The discussion prepares the stage to examine how communities serve as locations in which new sensibilities about forests and environmental conservation are born, and how regulations acts as the crucible in which environmental subjectivities are forged (Moore 1999).

The Crucial Role of Local Regulation in the Government of the Environment

The Hobbesian state of nature has often been taken to be a reasonable approximation of the obstacles facing those who seek to govern valuable environmental resources such as forests.[2] Under such conditions, proponents of Malthus would argue for the impossibility of successful, sustainable government of nature. Present day Kumaon contains all the ingredients that would have made Malthus shudder and throw up his hands in despair: increasing population pressures, a dense network of roads, significant articulation with market demand, and high levels of dependence on forests among local residents. In the face of these diverse pressures to consume fodder, firewood, timber, and non-timber forest products, the

need for regulatory regimes to restrict harvest and use may seem unexceptional. Indeed, the intensity of these pressures even raises questions about the extent to which localized, institutionalized regulations can be effective in the aim to protect and conserve. On the resolution of doubts about the efficacy of local regulation hinge the prospects of a vast number of national initiatives to protect resources through the means of community.[3]

Several competing explanations attempt to account for variations in local resource conditions. Among the most often cited factors are market demands and population pressures. These two forces have long enjoyed a favored status among those interested in understanding passages from antiquity. Marxist understandings of modernization, structuralist writings on agrarian transformations, and institutlonalist analyses of economic shifts have all looked to population increases and market integration as a motor of change. Even technological innovation, that engine of growth, is often traced to market competition. Necessity may be the mother of invention, but it may itself be engendered by population increases and greater market articulation.

Where resource use and regulation are concerned, the role of population is typically seen as negative. Higher levels of population are supposed to contribute to deforestation, soil degradation, loss of biodiversity, food scarcities, and global climate change. An immense and impressive scholarship thus explains how higher population pressures have contributed to environmental degradation.[4] Such conceptualizations of the links between population and environment, as Arizpe et. al. (1994:1) point out, pose a stark choice - between people's needs and conservation of the environment. They relate population pressures to environmental degradation in a rather straightforward fashion.[5] In so doing, they ignore the complexities that politics, regulations, and social interactions introduce in the use and government of resources (Geist and Lambin 2001, Ives and Pitt 1988, Tiffen et al. 1994).

Assessments of the relationship between market pressures and environmental change are also usually negative. In the context of Kumaon's forest councils the perspective of Neo-Smithian Marxists, to

use Brenner's (1977: 26-27) evocative phrase, holds obvious implications. As local economies are integrated into larger markets, greater market pressures are supposed to create higher rates of deforestation. Local users become more likely to increase their harvesting levels since they can now exploit resources for cash as well.[6] The role played by roads and better transportation links is viewed as critical in this regard.[7]

Many of these arguments about population and markets draw their inspiration from macro-structural relationships. They do not satisfactorily explain micro-level variations in how people protect, govern, and consume environmental resources. The question is whether different users have the same response to given changes in demands and other pressures irrespective of their contexts, institutions, histories, or beliefs, and whether increasing resource pressures reshape even institutions and beliefs in a converging fashion. It is certainly possible that human beings and their actions do not run "headlong into 'nature' or natural constraints" (Collins, 1992: 181). Rather, resource-related outcomes of all human actions are mediated by regulatory arrangements that soften, attenuate, structure, mold, or accentuate results.[8] Under their influence, users may forego cash incomes, divert their demands, reduce levels of exploitation, or begin to rely on substitutes. Community-level decision makers in Kumaon not only create and enforce regulations, but also demand support from government actors in the forest and revenue departments to deal with those who do not comply. Nor is Kumaon exceptional in formulating and enforcing regulatory rules as an immense literature on community-based conservation points out.[9] Those who believe in community argue that communities and similar small social formations can create and sustain institutionalized patterns of interactions to govern collectively owned resources successfully, even in the face of adverse pressures from states, demographic changes, and market forces.[10]

The forest councils in Kumaon form an ideal empirical instance to examine the extent to which localized regulation and variations in the nature of regulatory intensity affect resources in comparison to changes in population pressures and articulation with markets. The councils are located in a broadly similar cultural and technological environment. They face the same set of state institutions and actors - the forest

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councils rules, the forest department, and the revenue department. But they differ in levels of local

regulation and also in their size, population, social stratification, distance from markets, and the degree to

which their interactions with state officials have been formalized.

To examine the relative impact of regulation on the condition of forests, I studied 279 councils in

Kumaon. Information on such factors as population pressures, market forces, age of forest councils,

frequency of local meetings, and the length of time during the year for which councils guarded their forests

formed the basis for a statistical analysis. The results show the extremely important role of local regulation

in the government of forests and in variations in the condition of forests across the councils.[11] On the

average, councils and villagers held nearly seven meetings per year to discuss their forests, and used

different forms of monitoring and guarding their forests for more than half the year. Of the factors

mentioned above, per capita land availability, the age of a forest council, the subsistence value of the forest

for villagers, and the amount of time for which councils guarded the forest emerged as having a positive

relationship with the condition of council forests. As the value of these factors increased, the likelihood that

villagers' would assess their forests as being in a good condition also improved. But the most important

factor in affecting the condition of the forests turned out to be the length of time for which villagers guarded

forests. The magnitude of the effect of this aspect of regulation was larger and statistically more significant

than the effects of any of the other factors.

Indeed, this finding about the importance of regulation in localized community-level government of

forests is not surprising. Many studies of local use and control over environmental resources have reported

on the need for robust regulation to ensure continued survival or resources. Wade's work on village-level

irrigation institutions in south India ([1988] 1994), McKean's investigation of forest use in medieval Japan

(1992), Acheson's studies of lobster fisheries in North America, Ostrom's examination of a range of

resources around the world (1990), and Baland and Platteau's review of the case literature on commons

(1996) - all focus on regulation as a critical element for successful local government. These and other

studies also underline the importance of appropriate allocation, information collection and monitoring, and sanctions in making local government of resources effective.

Regulatory Strategies

Historians and anthropologists have long examined localized regulation of socio-economic and political dynamics in the context of land and resource use. But the regulatory regimes upon which they have focused have typically seemed antiquated, exotic, or both. Portrayals of the most famous example of community control over the use of land - -the English Commons (Ault, 1952; Baker and Butlin, 1973; Thirsk, 1966; Yelling 1977) suggest, often only by implication, that common property is a curious holdover from the past that was destined to disappear in the face of trends toward modernization. Even Netting's sterling work on community-based government of pastures in Switzerland makes the explicit argument that as resources become more scarce, community control is likely to be displaced by private ownership (1972, 1981).

The processes of social-ecological regulation that the Kumaon forest councils embody, however, seem thoroughly modern. They emerged as a result of intimate interactions between state officials and local residents. Today, communities have become popular with politicians and bureaucrats interested in controlling crime, pursuing development, and reversing urban decline. The increasing attention to civil society, social capital, and the "third way" highlights the important role communities have come to play in social policy.[12] In each of these instances, communities are viewed as an idiom and instrument of regulation, even if there are important variations in exactly how regulation is accomplished: in the actors involved, in the powers exercised, in the nature of decision making, and in the forms of monitoring and surveillance.

In Kumaon, the critical role of regulation in the government of forests makes it important to examine *how it* works and with what effects. The new regulatory charge of communities is not just a

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aegative force, preventing villagers from doing some things, constraining them to certain types of actions, and in general restricting their freedom in the forest. It does some of that of course, but it is simultaneously enormously productive.

The dispersal of regulation in the 1930s gave birth to a whole range of new forms of allocation, monitoring, sanctions, and adjudication. The forest department had at its service the powerful tools of science, hierarchy, and law. By combining them, it had tried to gain mastery over forests and their growth. But ultimately the instruments it used - statistics and numbers, rules and ordinances, fines and imprisonment - were blunt in comparison to the tremendous ecological and social diversity it sought to tame. Regulatory communities operate at a far finer level of social interactions. They deploy a more precise set of instruments that can be elaborated with much greater detail. The range of instruments and the means of their application that the community has at its disposal hint at a better understanding by community decision makers of the effects they produce. These instruments help make visible much that is hidden from the official eye of the state and transform residents' views about ecological practice.

The deployment of these new strategies of monitoring, sanctioning, and adjudication created additional and sometimes new splits in political relations within the community. When villagers constituted themselves into an organized body to protect forests with the help of state officials, they simultaneously created one social group comprising rule makers and rule enforcers, and another that included rule followers and rule-breakers. How these new groups in the village affected and aligned with existing social tensions has seldom been entirely predictable. But by setting one group of villagers against another, the creation of community-based regulation eased the enforcement burden of the forest department. Villagers could no longer view the colonial state as the unique source of regulation. Instead, different villagers struggled against each other as some tried to regulate how forests should be used, and other tried to resist new strategies of regulation. In the new alliances that came into being, villagers could neither rely upon their leaders to struggle against state-appointed officials or to contest control over forests. Their leaders had

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become representatives of ecological enforcement. Even existing factions and conflicts within the community came to be endowed with new significance related to control over forests. Indeed, many villagers themselves began to argue for the importance of regulation and enforcement in favor of protection of forests. As the burden of regulation fell unequally upon different groups within villages, they also began jockeying for the new positions of power and enforcement.

As pursued by the forest department, the regulation of human actions in forests had two major components: invasive and restrictive. By classifying selected areas into circles and compartments, department officials readied them for specific invasive regimes of treatment and transformation. Planting, thinning, clearing, and improvement-felling operations shaped the existing vegetation toward the desired end of higher and regular yields of wood volume. But even as these scientifically designed and statistically refined interventions helped shift the balance of vegetation toward a model forest, other human interventions had to be restricted or eliminated. Among these were grazing, firing, lopping, and fodder and firewood collection.[13] The forest department's standard means of coercive control - more guards, more stringent rules, more court cases, and higher fines and longer prison sentences - proved less than effective in Kumaon as chapter three showed. The department found it difficult enough to domesticate the volatility of climate, the variability of soils, the virulence of insects and pests, and the consequent unpredictability of vegetation growth. But despite difficulties, its efforts to produce normal forests at least found unprecedented success in financial terms. Its restrictive efforts to tame human actions only produced exceptional deviance and unparalleled illegality. As a result, the task of normalizing human actions in forests fell to the forest councils.

The councils faced the same dilemma as did the forest department, but with a twist: how to achieve effective regulation of actions that according to some department officials would wipe out all forests if unchecked; and yet do so without eroding existing relationships within the community. Further, regulation had to be accomplished in the aftermath of the failure of the forest department and without alienating its

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targets. Since the target and the source of regulation -- villagers and the forest councils -- were connected through a whole network of socio-economic and other relationships, strategies that would alienate targets of regulation from their neighbors could turn out to be socially extremely costly.

The important elements that comprised regulation in Kumaon - allocation, monitoring, and sanctioning - found practical expression in multiple forms. In each case, decision makers in communities took the provisions that the forest council rules of 1931 specified, and elaborated and adapted them to the particular social and ecological contexts of their forests.[14]

The set of codified rules that the central government created (see table 5.1) turned out only to be a basis for further experimentation. Government officials could not have anticipated the precise configuration of conjunctural factors that would influence the decision-making of council officials. This inability to anticipate the ultimate form of regulations was in no small measure responsible for their silence on the subject. Thus the written rules, instead of marking the end of local institutional innovation or an absolute limit on how local practices would evolve, worked in conjunction with local practices. They created a space for regulatory activity that the forest councils filled with their interpretations and decisions. Indeed, as Wittgenstein has demonstrated, all rules, however detailed, require interpretation in light of background understandings and practices that can never be embodied within the rules themselves.[15] In Kumaon, villagers' needs, social stratification, power relations in the community, levels of migration, and a whole host of other factors affected how councils could shape villagers' actions in forests.

[Table 5.1 here]

Allocation

The entries in table 5.1 under "allocation" show that the provincial government made few specific rules about how the forest councils were to allocate forest products. Forest councils gained the power to assess the condition of their forests and allocate forest products among their rightholder members.[16] Even

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the modifications in 1976 sought mainly to skim a share of commercial revenues from forests. They did not significantly alter the contractual nature of regulatory authority within the community and between community-level decision makers and village residents.

The significant discretion to forest councils in how they allocate resources has resulted in wide diversity in patterns of harvests and appropriation. Villagers have used the forest councils to create different institutional mechanisms that define who can take what from where at what time and for what purpose. The "who" refers to "rightholders in the forest." (Sarin 2002). They may be defined by gender, residency status, wealth, livestock ownership, or contributions to forming the forest council. The "what" includes fodder, grazing of livestock, firewood, timber, medicinal plants, mushrooms, edible berries and fruits, and construction stones. Allocation regimes vary by products. Some products can be harvested all year round, or whenever they are in season. Others are limited by size, amount, volume, types of harvesting tools, and species.

Diversity also characterizes the referents of "where," "when," and the uses to which harvested products are put. For example, many councils divide their forests into several different compartments. Villagers can harvest fodder or graze animals in a given compartment only in specified years. But because of limited regeneration, the amount of time for which villagers are free to extract fodder varies anywhere between two weeks to four months. Villagers can also cut leaves and lop small branches as tree fodder from certain species. In some cases, councils frame rules that prescribe whether rightholders can sell their share of forest products, the harvested products themselves, or even whether products can be used for a commercial venture. A large number of councils do not permit their rightholders to use firewood in tea shops or for smithing. In general, villagers use products from council-governed forests domestically.

Despite some broad similarities and constraints, there is tremendous variation in allocation rules. Different rules along various dimensions can combine to yield literally hundreds of feasible combinations.[17] Yet, we must acknowledge that creation of forest councils has actually led to the streamlining, regulation,

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and standardization of an even greater diversity of use patterns and everyday practices that must have existed. Consider spatial limits as example. One significant underpinning of all council actions is the territorialization of harvests from the forest. Clearly defined boundaries of forests belonging to a given village mean that village residents can legally harvest products only in fixed areas. A second form of reduction in diversity concerns how the council's executive committee documents its own decisions, villager actions, and the state of the forest. The legalization of councils' decision making goes hand in hand with formal documentation that makes rule design, rule enforcement, and rule infractions visible to powerful outsiders. A third example concerns the extent to which forest councils can market products such as timber and resin. Now they must involve the forest department as an intermediary.

Different forms of allocation result in varying ecological and distributive consequences. To gain a better sense of such differences, take fodder. The use of this specific example also clarifies some of the differences between community and forest department-based regimes of allocation. Fodder from forests, whether as grass or from trees, constitutes a renewable resource. To ensure regular annual supplies, therefore, it is necessary to match extraction to regeneration. Community officials in well-functioning forest councils try to do so by assessing fodder growth during the year, fixing extraction levels below the estimated annual regeneration, and metering fodder extraction using simple, easy-to-understand measures.

Under one procedure of allocation that is followed in a number of villages, fodder is distributed equally among all rightholding households in the village. Council officials make an eyeball estimate of all the fodder available in the forest compartments opened for harvesting or grazing in a given year. The total number of animals that can graze or bundles of fodder that can be harvested depends on this initial estimate of the council officials. This figure is divided among village households equally and each household receives a pass specifying the exact number of bundles or animals to which it is entitled. Forest guards or council officials monitor the actual extraction. Bundles of grass are measured with the help of a uniform length of rope that each harvesting household is expected to use after cutting its share of grass. Number of

animals is counted. Villagers cut fodder or graze their animals on days specified by the council. On these days council officials are present in the forest compartment to ensure no one harvests an amount greater than their share. A new compartment is opened when grass in the previous one is exhausted. These steps enhance uniformity and equality in allocation.

A second procedure in which the councils also make efforts to match withdrawal to regeneration involves the allocation of patches of forest floor to households. Villagers assemble on a specified day near the compartment that has been opened for harvesting. At the appointed time, they begin cutting grass from their assigned patch. Once they complete the harvesting, they are free to take their bundles home. This method is used more commonly for harvesting fodder than for grazing animals. It rewards those households that can cut more fodder in a given time.

Under a third scenario, grass or tree fodder in the community's forest is sold through an auction. This means of allocation does not lead to a close match between withdrawal and regeneration. The auction winner is free to harvest as much fodder as possible from the compartments for which he has made a winning bid. Cutting grass too close to the ground, grazing animals for too long a period, or lopping branches that are too large adversely affects future regeneration, but allows the winning bidder to gain a larger amount in the current year. This third allocation procedure has highly unequal distributive consequences.

Among the 38 Kumaon villages where I conducted research between 1989 and 1993, one or the other of these three forms of fodder allocation was commonly used. There were variations in timing, type of auction, openness of auctions, and the role of council officials but the three patterns held broadly. The greater majority of forest councils (26) allocated fodder equally. Allocation of fodder by space was the least common (3 councils). The remaining auctioned fodder (9 councils). In many cases councils had experimented with different procedures before settling upon their preference.

The Bhagartola and Majethi councils in Almora district are good examples of the two main forms of allocation: auctions vs equal number of bundles. The two councils are similar in size (population and forest area) and distance from roads. But they differ in the composition of the households and the amounts they spend on monitoring. Villagers formed the Bhagartola council in 1937. The settlement contains households belonging to three different castes: *brahmans, thakurs,* (upper castes) and *harijans* (lower castes). There are no obvious group conflicts in the village. The council spent 3,100 rupees a year on the average on guard salary between 1977 and 1992. The second village, Majefthi, comprises mainly brahman and harijan households. The lower castes are outnumbered and there is a long history of simmering hostility between the two groups. The five-member executive body of the Majethi forest council was formed at the initiative of the brahman leaders (1961), has only brahman members, and spends little on a guard.

The Bhagartola council allocates fodder equally among its members. Its forests are divided into three sections, and these sections are opened to fodder harvests in turn. Animals are not allowed to graze in the forest, but over the course of the year the council permits villagers to enter the forest and harvest bundles of fodder for six to twelve weeks. Villagers have equal rights to fodder bundles. Each household sends one person to cut fodder on a given day. Villagers congregate near the forest in the morning. After a council officials declares the forest open to harvesting, each villager harvests the allocated bundles of fodder. In Majethi, fodder from the forest is auctioned to the highest bidder. The forest is divided into four sections, and the grass from each section is auctioned separately. Between 1961 and 1991, brahmans bid successfully for the right to harvest fodder from every section of the council forest. The harijans in the village, if they wanted fodder, had to buy it from the individual who won the auction. Harijans in the village have recently tried to form coalitions to bid in the auctions, but none has yet bid successfully.

Auctions as a form of allocation are associated with unequal distribution and low enforcement costs. Once a council has auctioned its fodder, it need no longer worry about regulating the illegal extraction of fodder that year. It is in the winning bidder's interest to ensure that no one else cuts fodder or

grazes animals in his section. The council can wash its hands of the matter. But auctions also concentrate benefits. The villages that have adopted auctions as a form of allocation are typically polarized between different social groups, and tensions between groups are frequent. More equal allocation requires a correspondingly greater monitoring effort on the part of the council and the village community.

The diversity of allocation regimes at the community level distinguishes them from the forms of allocation that the forest department deployed For one, the department was interested mainly in products that yielded revenues. Timber was its main preoccupation, and the harvesting and removal of timber occurred through procedures that minimized monitoring and supervision costs. Villagers were typically not permitted to harvest timber in certain forests or of certain species. For grazing, they were charged a flat fee per animal. In contrast, community-based allocation is concerned with a greater range of products and produces a far larger variety of rules for each product The first corollary of such a diversity of rules is informational. Members of the community are aware of the many different rules and expectations that govern their activities in forests. The second corollary is related to monitoring. The enforcement of elaborate procedures and detailed rules is dependent upon the existence of equally sophisticated monitoring mechanisms. The third corollary concerns the economic implications of applying diverse rules to resources that do not have a high commercial value. The cost of monitoring and enforcement should not turn out to be high.

Centralized enforcement of proliferating and increasingly detailed rules, however, produces perverse effects. Either centralized supervisory and monitoring mechanisms are overwhelmed when required to demonstrate such fine discernment for low-valued goods. The returns from more precise monitoring are too low compared to the costs of such monitoring. Or, more likely, they become vulnerable to corruption. Those with the power to enforce exploit their command over detailed information and the means of enforcement to extract side payments from those who are subject to them. The political

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relationship between those who monitor, and those who are monitored needs then to be reciprocal rather than highly asymmetric.

Monitoring

The ability of the forest department to control its vast estate was translated into practice by the guards it hired. The effectiveness of its scrutiny was limited by the vast areas it controlled and problems in ensuring that the appointed guards followed the letter and the spirit of the allocation mechanisms it wanted to implement. In locations where there were no conflicts with existing users, the department only had to be concerned about whether its personnel were carrying out the assigned tasks of surveying the land and vegetation, and undertaking the required planting, thinning, felling, and transportation tasks. But where departmental operations were in tension with existing use patterns, the complexity of the monitoring task multiplied.

Recall from the discussion in the previous chapters the high levels of legal infractions that departmental staff detected in the forest. The detected cases concerned fires in the forest, illegal grazing, and removal of firewood, fodder, and timber without permission. For India, the total number of detected violations grew from around 5,000 cases at the beginning of the twentieth century to nearly 150,000 cases by the early 1940s. The rate of growth of violations was lower in Kumaon: their number increased from under 1,000 in the late nineteenth century to about 2,500 by 1920, and then remained at that level for the next two decades until the 1940s.

The department's options to address this increasing number and complexity of infractions were limited: it could increase the number of guards and/or increase their remuneration. The first option enhanced the supervisory burden. Who would monitor the monitor? The effectiveness of the second option—higher salaries—was also doubtful. In addition, it had a direct impact on the surplus of the forest department. Ultimately, neither of the two options did much to alter the nature of incentives related to monitoring.

In common with the forest department, the forest councils face tremendous problems in securing compliance from ordinary village residents. The councils draft the basic rules to govern the use of their forests within a year or two of formation and election. After that, their key activity is monitoring, and where possible, limiting violations of protective arrangements. But violations of the rules they create are common and frequent. Eight of the forest councils I researched had maintained detailed records of rule infractions. Villagers illegally entered the council-managed forests, cut grass and leaf fodder from trees, grazed their animals, gathered green manure from the forest floor, picked twigs and fallen branches, gathered construction stones, and more rarely, a tree or two. These activities were not permitted, and occurred despite the knowledge of villagers that if detected they could face a variety of sanctions.

Table 5.2 presents information on infractions committed by residents of the eight villages. It is culled from the written records maintained by the forest councils at the village level. The information in the table can be used to make several points; two deserve initial attention. One, the level of infractions within communities seems to be extremely high. And two, there is a close relationship between the effort councils devote to monitoring, and the level of detected infractions as listed in council records.

[Table 5.2 here]

The records show that many villagers violate existing arrangements to allocate forest products and that they commit violations often. Nonetheless, the written records almost certainly underestimate the extent of illegal grazing and cutting. To detect all violations, all behavior in the village must be monitored - a prohibitively expensive proposition. Persons who are supposed to monitor the forest are often not present at their task, or may be careless, or may not be able to cover all the compartments of the forest at the same time.

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The information in table 5.2 comes from a subset of the councils that maintained records from among the 381 studied. Several councils did not maintain careful records, nor hold regular meetings. But where records were kept, and where councils tried to enforce their rules, rule-breaking seemed endemic. The table suggests that in such cases, the average number of detected violations is nearly 90 per year. The councils use many different methods to monitor villagers' actions in the forest (see below), and the costs of the different mechanisms they deploy vary significantly. But whatever the mechanism, it is a safe assumption that most actions in the forest remain hidden from the official view even at the level of decision-makers within the community. The teashop owner in Bhagartola, who himself relies on firewood from the forest to keep his stove going, said as much when he described how the world works, "To what extent can you keep watch over the forest? Nowadays even one's own property is not safe if your eyes are not on it twenty-four hours. The forest is big, and there is just one guard.. How far can he make rounds of the forest?"[18]

Although there is no way to know for sure, conversations with the villagers left a general impression that even well-functioning councils detect only a small fraction of all rule-violating behavior. I interviewed more than 200 villagers in 38 councils. With remarkable regularity, they asserted that the council and its guards had been too hard on them, was not even aware of offenses by their neighbors and friends, and was too lax in controlling firewood and fodder theft by other villagers! Villagers who had not recently been caught breaking council rales also pointed the finger at numerous families whose rule infractions had gone undetected. These conversations suggest that councils and their officials uncover little more than a quarter to a fifth of all violations. The eight villages in table 5.2 vary in their size, in the amount of forest they manage, in their proximity to markets, and in their levels of out migration. As a group they are not visibly different from other villages in the hills. If the figures for these eight villages resemble what happens In villages in Kumaon in general, the total number of infractions/year in Kumaon seems strikingly high. For the 12,000 or so villages in the three districts of Kumaon, even the detected rule

violations will add up to more than a million instances of rule breaking each year. And this may be only a quarter of all rule violations.

Compare this figure with the performance of the forest department as revealed in chapters one and four. The forest department detected around 2,500 rule violations and convicted about 10,000 persons each year at the peak of protests by Kumaonis. Even if one takes into account the four-fold population increase that has occurred in Kumaon since the early part of this century, enforcement by the forest department is far more imperfect than that by the councils. To achieve even its imperfect regulation of environmental practices, the forest department had to increase its size and expenses significantly. The effect of this drastic increase in department efforts to protect and police forests were widespread protests throughout the region. It was this failed effort to extend direct control that led to the policy of indirect, internal policing by the community. Through community regulation, villagers took over the government of those more scattered forests that are also more critical for daily subsistence related to cooking, livestock raising, and agriculture. The costs of controlling these thousands of scattered pieces of vegetation were, are, and will be prohibitive for the forest department. The attenuation of forest department ownership has, however, reduced its costs. These costs have been displaced onto the villagers as they have begun policing themselves.

The second aspect of table 5.2 - higher the protection effort, higher the rule violations - requires a little explanation, but is easy to understand. Violations of existing regimes of allocation also occur in villages where there is no monitoring, or where councils do not appoint guards, or where guards do not report rule violations. But in these cases, council records contain little information about rule violations. Monitoring of ecological practices likely reduces the incidence of violations. But it also bring to light more violations that occur. Thus, it should not surprise that councils spending larger sums on monitoring also document more instances of illegal use. The lack of reported incidents only means that monitoring is lax or nonexistent, not that the villagers are more law abiding.

Although forest councils face similar kinds of infractions and rule violations as the forest department, they have recourse to a greater variety of monitoring options. The two broad categories into which their options fall are mutual monitoring and third party monitoring (see figure 5.1).

[Figure 5.1 here]

Third party monitoring refers to specialized positions for a guard that are filled by appointing specific persons to undertake that task. Under mutual monitoring, there are no specialised guard positions. Within these two broad categories, there can be additional refinements depending on the extent to which villagers are directly involved in monitoring. There is minimum direct involvement under the option in which specialized guards are paid through external funds. Villagers do not have to contribute any funds to support the monitor, and the guard depends for his remuneration on flows of funds from outside the village. The greatest direct involvement of village households occurs when there is no specialized guard position nor a specialized role for a monitor. Members from each household monitors all other households in the course of the day as they are doing their ordinary everyday tasks. Monitoring is almost a bye-product of daily life. This form of monitoring is most common in small, close-knit groups.

The other three forms of monitoring require intermediate levels of villager involvement. As figure 5.1 shows, mutual monitoring can occur in two forms. Under its second form, households are assigned monitoring responsibilities in rotation. The duration for which they act in the specialized role of a monitor can last anywhere between a day to a month, depending on the size of the village and the extent of its forests. Under third party monitoring, village residents can have a more immediate involvement. When the guard is paid directly by each households through contributions in cash or kind, each village household shows a clear commitment to the task of monitoring. Finally, the council can pay the guard from funds it

has under its control. Typically these funds are raised by sale of forest products to villagers, or accumulate when villagers have to pay monetary fines to the council upon breaking allocation rules.

These different forms of monitoring vary in their durability. Thus, the form of monitoring that is the most common and which seems to survive the best in Kumaon's forest councils is one where there is a specialised guard, and the council pays the guard from its own funds. Different forms of mutual monitoring are prevalent only in a small proportion of the surveyed villages. Table 5.3 provides the distribution of councils according to the forms of monitoring they have adopted.

[Table 5.3 here]

The different forms of monitoring are associated with strikingly different beliefs among villagers about forests and the environment. We shall see in the next chapter how they are implicated in the making of environmental subjects.

One of the most vexing problems in all attempts to monitor is the question of how to monitor the monitor.[19] The forest department could not solve it. The Kumaon councils have devised some provisional means to do so, especially in the case of third-party monitoring. Their solution depends on a circularity in the monitoring process. Under third-party monitoring, there is a guard who monitors the actions of villagers. The activities of the guard are monitored by the executive committee of the forest council. And the executive committee is itself monitored by villagers, thus closing the circle. The relatively small size of the settlements and constant interactions among settlement residents mean that the election of new office holders is as much about finding effective decision makers as it is about making sure that if existing office holders are ineffective they should not be reelected.[20]

Sanctioning

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In general, monitoring makes hidden actions of villagers more visible to power. Such visibility is the aim of all surveillance. It is also the foundation for subsequent steps to normalize social-ecological behavior. If new regimes of allocation laid down the paths that village residents had to traverse, and monitoring displayed for all the world the deviance and conformity to new paths, forms of sanctioning constituted a new structure of incentives to prompt recalcitrant villagers along desired paths. The forest council officials, blessed with legal authority to sanction villagers who did not comply, are a constant presence in the life of villagers in a manner that the forest department simply cannot parallel. Their decisions are a reminder to villagers about the need to conform to rules. They are also a reminder to protect forests. Allocation, monitoring, and sanctioning thus form a connected triad in the institutionalized government of forests. The precondition for the effectiveness of each is the effectiveness of the preceding steps.

Monitoring summarizes a number of steps that blend into sanctioning. It involves the patrolling of forests, recording of observed deviance, reporting of deviations to the forest councils, and on occasion, direct measures to correct deviance. During monitoring rounds, guards write down the names and actions of anyone they see harvesting products from the forest while prohibitions are in place. They also note evidence indicating fresh illegal harvesting even if no violator is present. Such instances may involve the presence of an animal in the forest, or the visual evidence of freshly cut trees, lopped branches, grazed grass, or abandoned cutting tools. Once a guard observes an actual incident of illegal harvesting, he has one of two options. He can either apprehend the culprit, confiscate their cutting implements, and report their infraction at the next meeting of the council. Or, if in doubt, he can simply report the culprit to the council. He maintains a diary in which the names and other particulars of offenders, their specific transgressions, and the details of the event are listed. This information is made available to the council in its meeting. When appropriate, the guard informs the rule-breaker(s) of the date of the next council meeting at which they must appear to recover their implements and pay the fine.

Upon being informed, the council decides upon the form of punishment. A variety of mechanisms are available. Offenders may be asked to appear at council meetings to explain their presence and actions in the forest. They can be issued a mild to severe reprimand. They may be asked to render written or public apologies. The council can confiscate cutting implements such as scythes, impound animals, require constructive activities in the forest such as planting or protection, strip offenders of all or some rights, and impose fines. Sometimes these sanctions can have a religious tinge as when a fine is in the form of an offering required for local deities or gods in the forest. In extreme cases, and if an individual is particularly defiant, the council can exclude offenders socially, report them to local government officials, invoke the help of higher level officials, or seek redress in formal courts.

These different forms of sanctions can be seen as an escalating series. For the most part, villagers find the authority of the council a compelling reason to conform. Although the previous section showed that the number of violations at the level of the community is very large, it is still minuscule in comparison to the incidence of compliance in well-functioning councils. When individual village residents violate existing arrangements for using and governing forests, the councils can use increasingly severe steps to ensure that they ultimate acquiesce to its authority. At each step, the stakes get higher and the number of individuals who need regulation becomes smaller. Most individuals follow rules. Of the ones whose names are reported by the guard to the council, most alter their actions after being summoned publicly to council meetings to explain why they had been in violation of existing rules. Reprimands, apologies, confiscation of harvesting equipment, requirements to undertake constructive activities or provide offerings to local deities reshapes the behavior of many others. The imposition of fines is accepted by almost all villagers as lying within the powers of the council, and most pay the relatively small fines that the council imposes within a short period of time. Of those who do not pay the fines initially, many do so after the council threatens them with action for recovery of dues. But there is a small proportion of villages that is obdurate. A few villagers do not pay their fines even after repeated reminders.[21]

To gain a more textured sense of these dynamics of sanctions, conformity, and noncompliance, consider the case of the Bhagartola forest council. This case also indicates how the burden of sanctions falls unequally upon different groups of villagers even when the form in which sanctions are imposed is literally in conformity with the idiom of equality.

Bhagartola lies in Almora district in the Middle Himalaya. It is located at an altitude of 1900 meters, and is just about one kilometer from a paved road. Its forest council was formed in 1937. With seventy households and a forest that is sixty-three hectares, Bhagartola residents have just about a hectare of forest per household on the average. The village population has not changed much over the past 40 years: from 1951 to 1991 it has grown from 297 to 328 individuals. The same is true of the goat and cattle population: between 1961 and 1991, the population of goats has remained around 150, and that of cattle has gone down from 279 to 206.[22] The slow growth of the village population is in part the result of high levels of migration to the plains. Table 5.4 provides some basic information on the village forest.

[Table 5.4 here]

The forest is densely vegetated with mixed hardwoods and broadleaved species such as Ainyar *(Andromeda ovalifolia),* Kaifal *(Myrica sapida),* Rhododendron *(Rhododendron arboreum),* Totmila *(Ficus oppositifolia),* and several species of oak *(Quercus sp.).* Villagers depend on the forest and its vegetation for close to 40 percent of their fuelwood needs and 20 percent of their fodder needs. These products are in short supply and the Bhagartola forest council has enacted a clear set of rules to limit extraction.

The forest council meets regularly, holding ten meetings a year on the average. In some years, this number goes up to fifteen when council members find more meetings necessary. The minutes of all meetings are recorded and are available to villagers. They are also available to outsiders who can get authorization from revenue or forest department officials. Meetings are devoted to discussions about the

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state of the forest, level of rule-following, specific infractions, and other details connected with the government of the council-managed forest. Two perennial topics of interest are how to raise revenues and enforce rules. The council is always short of funds and the guard detects villagers breaking rules constantly.

The council has several sources of revenues. The chief are payments by villagers for the fodder and fuelwood they harvest, the auction of minor forest products such as fungi and moss, and the sale of pine resin and timber through the Uttar Pradesh Forest Corporation. The revenues from all these sources except the last two is readily available to the council to meet its everyday expenses, especially those related to monitoring and protection of the forest. To ensure that rule-breaking and illegal harvesting does not reach epidemic proportions, the council summons specific violators to its meetings, strategizes about how to recover fines, and refines the application of rules about extraction of benefits from the forest.

In cases where individual households are unwilling to listen to the council officials or the council-appointed guard, the council has sought the services of village-level revenue officials *(patwaris)* to recover fines. In most instances the patwari, after some importuning, has proved amenable to appeals for help. The successive stages in the enforcement of rules, and the composition of the group of rule-violators at each stage is instructive (See tables 5.5 and 5.6).

[Table 5.5 here]

The table above contain information for only three years out of a forty-year time span. This renders conclusive statements about trends hazardous. Nonetheless, some important inferences can be made with respect to both tables. In each of the years, monitoring leads to the detection of a certain number of rule violations. That number seems more or less constant. Assuming a rough proportionality over the years between the number of times villagers break rules and the number of violations the guard detects, it would

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be fair to suggest that there is a "normal" level of rule violations that cannot be reduced much with existing

monitoring technologies and subsistence needs. This level of rule violations arises because there is a

mismatch between the significant dependence of villagers on the forest, and the desire of the council to

prevent forest products from being extracted. But it should be kept in mind that although villagers break

existing rules constantly, the forest is not in a "degraded" condition. That the forest has a reasonably dense

vegetation cover was evident in personal observations during the field research, and also in the

measurements of vegetation I report in table 5.5.

Two, the social identity of the offenders is not in proportion to their population in the village.

Consider column II in table 5.5, for instance. The figures in brackets represent the proportions of total rule

violations committed by men and women. The proportion of detected violations by women are far higher

than their proportion in the village population. This might, in part, reflect the fact that it is women who are

primarily responsible for collecting fodder and fuelwood for the household. One may expect therefore that

they are the ones who are caught breaking rules far more often than are men.

[Table 5.6 here]

Come now to table 5.6. Brahmans enjoy a higher ritual status that thakurs. The thakurs, or the

rajputs, are possibly stronger politically than the other two castes, but the harijans are socially inferior to

both brahmans and thakurs. In the absence of information on land holding and wealth, caste can be taken as

a proxy for social inferiority and lack of power. In table 6 there is a similar disproportionality for caste as

exists for gender in table 5.5. The number and proportion of detected offences by harijans are far higher

than those for brahmans and thakurs. The higher proportion can be explained by the common observation

that poorer villagers are often more dependent on common property resources than are those with higher

levels of private assets. It may be argued that in the Indian Middle hills, social stratification is less striking

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than in the plains. Nonetheless, it is entirely possible that harijans rely more on forests for their daily needs of fodder and fuelwood than do brahmans or thakurs. Therefore, the guard detects them breaking rules more often.

Consider columns III and IV in the two tables. The proportion of those who pay their fines is far higher for women and harijans than for men and upper caste individuals. It seems that the council is less able to enforce its writ among upper caste individuals and men than it is over women and the harijans. Far more of the women pay up the fines imposed on them than do men. And the proportion of brahmans who conform to the sanctions that are imposed on them is far smaller than for the harijans. The rules of the forest council apply to all village residents equally. But not all villagers follow them equally, nor can the council cannot enforce them equally. Women depend more on the forest because of the social norms that make them responsible for household chores. Women also feel compelled to a greater degree to pay up the fines. The point here is not just that guards are more strict in enforcing rules against women, although that may also be true.[23] It is also that those who have an inferior status in the village and who are not as strong politically or socially, including the harijans, feel forced to follow the rules crafted by the forest council

In reporting information on compliance and defiance by gender and caste, I do not mean to subscribe to any static or stable notion of these terms. Nor do I mean to read local politics off these categories directly. And finally, I do not mean to suggest that persons who today defy existing patterns of expectations and compliance will continue to do so. Indeed, the next chapter examines some of the conditions under which individuals and households come to accept and defend new forms of behavior and institutions. It also examines how a politics of subjecthood unfolds rather than taking membership in a social category to define the nature of the subject, I recognize that there are many local variations within the categories brahman, thakur, and harijan, or men and women. I also recognize that the political status of those belonging to particular categories is not necessarily determined by such belonging. It is crisscrossed by marriage and kinship relations, occupational status, relations to the state, and most importantly,

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involvement in different social practices. My use of these categories here serves a limited purpose, different from the larger questions of how to understand social categories such as caste and gender, or how people's understandings of the environment are formed. The point is simply that regulatory rules, even when they are seemingly equitable, can produce outcomes that are systematically biased against those who are marginal and less powerful. To understand the effects of regulation, therefore, it is important not just to focus on their formal-literal meaning but also the socio-cultural and the political-economic context in which they are (selectively) enforced. The point is similar to critiques of Habermas's faith in the emancipatory possibilities of the public sphere in capitalist societies.[24]

The forest council in Bhagartola, under the impetus of a community-based environmental government, created new arrangements to restrict harvest of firewood and fodder. The formal institutional mechanisms of allocation, monitoring, and sanctioning treat all village residents equally. But that does not lead to equal treatment of all villagers. Some villagers are more equal, and pay more as the cost of their social inequality or dependence. This social asymmetry is revealed in their everyday relations in the forest and with other villagers. Given the intra-household division of labor, women are more dependent on forests in comparison to men. They feel more constrained to follow the arrangements that the council has created. Harijans are less powerful than brahmans and thakurs. They also feel they must conform to council rules to ensure continued access to forest products.

If institutions are seen as rules that are aimed to generate particular patterns of behavior, then it is critical to pay attention to those unwritten norms that influence behavior implicitly and perhaps as systematically as the rules that are written and explicit. The character of sanctions in Bhagartola is determined by prevailing social norms. These norms are also an index to power. As the unwritten rules of the game, they permit upper-caste villagers to get away with far higher levels of non conformity in comparison to the lower-caste households. These unwritten rules are neither explicitly negotiated, nor equitable. They are, rather, the reflection of the structured deprivation from power to which some of the

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villagers are subject. In the Bhagartola example, lapses in rule enforcement have a particular bias against women and lower caste members. There is little reason to believe that Bhagartola is an exceptional case in Kumaon. The community that exists treats some of its members more equally than others, even as the contractual underpinnings of the regulatory community claims to cast them as formal equals. This is not of course to suggest that only the recent state-facilitated communities create unequal rules or unequal enforcement patterns. The lattha panchayats that predated the forest councils of today depended on more locally defined sources of power for their existence, but their power was likely also exercised unequally in allocating and regulating forests.[25]

Adjudication

If a local resident does not conform to council regulations regarding allocation, monitoring, and sanctioning, such challenges to the council's authority can be addressed in two ways. Councils can appeal to the local revenue official, the patwari, or petition higher level revenue department authorities. In extreme cases, the council can take the recalcitrant villager to court. Neither option is very satisfactory. Revenue officials are loaded with other tasks from their own departments that make them slow in responding to appeals from the councils. Trying to use the overburdened and cumbersome formal judicial system to recover the small sums that an offender typically owes the council is tantamount to spending a fortune to get back a nickel. Typically councils move the court system only in cases when a villager has encroached upon the forest land, or illegally felled a large number of trees.

The Bhagartola forest council has not had to appeal to the courts. In fact, few councils ever do. To some extent, their existing powers include some powers of adjudication. They decide upon the guilt of villagers that the guard detects, and pronounce some form of sanctions. Councils also act as the first rung of adjudication in situations where there are disagreements over the imposition of sanctions and interpretations of allocation and monitoring rules. In this capacity, they can reduce or excuse sanctions they

had imposed earlier, resolve disputes between villagers and guards, and change the dates and duration for which forest compartments are available for fodder or firewood collection.

Villagers are willing to accept these judgments because of a structural asymmetry in their power and that of the council. If the council does choose to take a villager to court, its word is likely to carry greater weight. The information about repeated violations as it would be available in the council's notes of its meetings, the testimony of a number of council officials against the recalcitrant villager, and the word of the guard are all likely to act in favor of the council's position. Further, the council will likely have more funds to contest a case in court. The weight of these facts suggests that almost all users are unwilling to test the resolve of a council to the point of going to court. It is in the villagers' interests not to have to go to coast It is this ultimate loading of the dice in favor of the council! that drives intermediate outcomes in favor of the council. Therefore, when villagers are apprehended in the forest by the guard, they are willing to appear before the council, render apologies, promise not to break rules again, and pay their fines.

The Characteristics of Regulatory strategies: Community vs. the Forest Department

We can conclude that the chief objective of regulation in Kumaon, as shaped by the means of community, was adjustment and guidance of villager actions in terms of quantity, force, space, time, and predictability. No more could villagers extract from their forests the products they needed, at the time they wanted, in the manner they considered appropriate, from the locations that proved convenient, or in the quantities that were necessary for the household. Councils created rules to cover all these contingencies and others. They enforced their regulations with all the resources they could muster. The new instrument of social-ecological engineering that the councils became was more intimate, more minute, more daring, more complete, and more comprehensive in contrast to the forest department. The department had tried to eliminate villager presence and actions in the village altogether. Although villagers could not be prevented

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completely from coming into and using fee forest, it was at least necessary to change the nature and character of their actions.

Decision-makers in the community used detailed regulations as the instrument to create a new economy of villager use of forests, one that for its effectiveness was dependent as much on the sociality that existed in the village as on the sheer calculus of gains and losses. The attempt to adjust and guide, one might say, was no more than a recognition of necessity. By trying to eliminate human interventions and their negative impact in the forest completely, the forest department had aimed at too broad a target Its severe actions missed their mark more often than they found it. They were inefficient in accomplishing their objective. By drawing back from such a large and encompassing goal and making communities the bearers of regulatory strategies, the state simultaneously redefined the objective of regulation: from exclusion and prohibition to normalization and adjustment.

The department itself was ill-suited to the achievement of such an objective. Its personnel were too small, the area under its control large, the organization of its activities too hierarchical, and the sources of resistance to its strategies too prolific. Attempts to normalize require a conception of the desirable, an intimate knowledge of the object of regulation, the ability to calculate the effects of policing strategies, the capacity to distinguish between human and other causes, and the flexibility to modulate the nature and force of interventions. The use of statistics and numbers permitted the department to subject vegetation to new regulatory strategies and learn the effects of its strategies over time, although even here its knowledge was no better than imperfect. But when it came to human actions and their modulation, the forest department discovered it had much less room to manoeuver.

In the realm of allocation of products, its hands were tied because of the overriding compulsion of profits. Timber was commercially the most valuable forest product, and it was at maximizing the production of saleable timber that the department aimed. It was too costly to devise allocation schemes for other products and enforce them. These relationships were visible in the annual reports the department

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published. Revenues from timber far exceeded those from all other products put together. No wonder that the department preferred to exclude rather than regulate, prohibit rather than modulate. The pursuit of higher revenues and profits led the department to proscribe villagers from using forests classified as reserves and prohibiting actions such as lopping, firing, and grazing.

A similar grossness characterized the department's abilities to gather information. Its knowledge of what villagers did in the forest was fated to be filtered through knowledge categories related to the production of timber. Did firs, grazing, firewood collection, and fodder harvests affect the production of wood adversely? Could villagers gather non-timber forest products without harming regeneration? Could the legal actions of villagers be separated from their illegal actions? Depending on the answers to these questions, the department would formulate its exclusionist strategies. It was easier to enact new prohibitions rather than to seek accurate answers to the above questions given the spatial patchiness and heterogeneity in the answers. The department's knowledge of what the villagers actually did in response, its ability to monitor and gather information on the effects of its actions, and its capacity to modulate its strategies were limited at best. An enormous quantity of illicit behavior went undetected; indeed, was undelectable. Questions about the effects of fire and lopping could not be settled in any satisfactory manner. They continue, even today, to be subjects of debate among silviculturists and ecologists.

Even when the department came to know what the effects of its proscriptions and interventions were, the range of instruments it could deploy as sanctions was minimal. To improve the effectiveness of monitoring, the only practical alternative for the department was to hire more guards. But guards were prone to intimidating poor villagers, and vulnerable to offers of bribes from bigger players such as timber merchants and contractors. The presence of more guards created the dilemma of how to monitor the monitor. And when it came to sanctions, the department's favored remedies were court cases, fines, and prison sentences. The conviction rate for cases that the department took to court was typically in excess of ninety percent. The department preferred prison sentences for those it apprehended in the forest. Villagers

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were usually too poor to pay fees that would offset the costs of monitoring and legal fees incurred in courts. Imprisonment at least removed the risk that the same person would break rules again.

These remedies were too sweeping and alienating, only confirming the cycle of rule violations, sanctions, resentment, and further violations. Where villagers and the department relied on the same resource - one for their livelihoods and the other to earn revenues - the ensuing conflicts were too widespread to be contained through existing strategies.

The strategies adopted by decision-makers in communities were different most obviously in the range they spanned. The forest councils are concerned not just with the extraction of timber, but also the harvesting of green manure, fodder, leaves, firewood, non-timber forest products, and construction materials. For each of these different products, they craft different regimes of harvesting and use. Their interest in shaping and regulating how villagers extract these goods is backed by the use of different forms of monitoring. Their monitoring mechanisms require varying levels of participation from the villagers and have different levels of associated costs.

Often, the council combines various monitoring mechanisms. Through assiduous and consistent monitoring, councils uncover a significant proportion of villagers' actions in the forest. If the forest department detected less than even one percent of what happened in the forests in violation of the use and management regimes it created, the councils detect closer to twenty percent of infractions. Their records and documentation make villagers" actions known to a larger audience, among them state officials and other villagers. In bringing visibility to actions hidden in the forest, the councils enlarge the sphere of what regulatory strategies can influence and adjust. One of the most important effects of the different monitoring strategies are changes in villagers' understandings of the environment and their relationship to environmental protection - a theme that the next chapter develops further.

The significant range of instruments to monitor is matched by the ability of the councils to choose different forms of punishments to suit the illicit actions they detect. Unlike the forest department, whose

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ability to deter unwanted actions in the forest rested upon the efficacy of the twin instruments of fines and imprisonment, the council can take recourse to a wider and finer gradation of sanctioning mechanisms. What Ostrom (1990: 94-100) calls "graduated sanctions" differ not only in their level and strength but also in their type. Councils use sanctions that can affect their targets socially, economically, and politically, or in some combination of these different dimensions. The choice of particular mode of penalty depends upon any number of factors, among them the Identity of the offender, the nature, seriousness, context, and frequency of the infraction, the history of interactions between the council and the offender, and the strength of the council. For the forest department it is well nigh impossible either to collect the information necessary to deploy these different types of sanctions at appropriate levels, or to decide when a particular form of sanction will have the greatest effect. The ability of the councils to detect a larger proportion, of infractions and apply penalties with finer discernment serves as a strong support for the arrangements they create to regulate the use of forests.

The consistent choice of forms of allocation that suit villagers' needs, mechanisms of monitoring that balance costs and participation, and types of sanctions that match the gravity of the villagers' actions grants the council's regulatory actions far greater acceptability than the forest department could gain. The councils' voluminous records on incomes and expenses, minutes of meetings, visits of forest council inspectors, means employed to protect forests and monitor use, rule infractions and the identity of those who break rules, sanctions imposed on villagers, and variations in these over time are powerful instruments to make local practices visible. Once brought into existence, these means of uncovering and exposing actions to the eye, even by themselves check forest users from harvesting fodder, firewood, or timber in violation of prescribed levels.

It would be only fair to point out that councils are not always an effective instrument of regulation. In the realm of allocation, their actions may remain far from successful especially when the community is extremely stratified, regeneration in the forest is meager, and the dependence of villagers on the forest is

limited. Their efforts to monitor effectively would be hindered in the absence of sufficient funds to hire monitors and pay their salaries. Their ability to sanction those who do not pay attention to rules depends significantly, even if only partially, on the extent to which government officials in the revenue and the forest department are willing to lend support.

Thus, to highlight the differences in the abilities of the forest department and those of the councils is not to suggest that the councils have displaced the forest department. Rather, it is to document the emergence and delineation of a new government of the environment. It is to show how the councils can undertake certain regulatory tasks more precisely, more directly, more economically, and more continuously. It is to highlight how the councils and state officials can work in tandem, the capacities of each being complementary. Debilities in certain arenas of allocation and enforcement led the forest department to decentralize some of its tasks to the community. But the forest councils sharpened and targeted those processes of regulation that had overwhelmed the forest department. Their empowerment permitted official power to penetrate locations that it had earlier been unable to colonize.

The 3,000 square kilometers of forests that Kumaon's villagers today have come to control are the basis of their livelihoods. For many villagers, survival would be a more difficult proposition in their absence. In the absence of massive protests at the beginning of the century, these forests would likely have been incorporated and consolidated into the centralized system of allocation, monitoring, and sanctions that the forest department represents. The new governing agency for this territory is a hybrid born of members of the state and the community. It comprises the forest councils and their leadership together with state officials such as the forest council officers and inspectors, the forest guards, patwaris, and the divisional forest officers. This new body of allocation and regulation can be seen as a mediating layer between more marginal villagers who interact with state officials relatively infrequently, and other, more powerful officials who visit villagers rarely if at all.

The efficacy of the new regulatory regime in Kumaon thus depends on a marriage between the diversity of the forest councils and the delegated power of state officials. The councils' monitoring and sanctioning abilities and the power of state officials combine to make the new regulatory regime in Kumaon a powerful instrument to reconfigure resource use and users' views. The foundation of this regime is the recognition of its members that they cannot by themselves accomplish the project of government. Its comprehensive reach stems from yoking together two social actors who had seen their interests as divergent, but who have now come to accept their mutuality and interdependence. The legitimacy of the regime derives not from collective visions of dazzling projects of sustainable development and large profits, but from the tempting promise that if only villagers restrain their current consumption levels, their needs will be met indefinitely into the future.

Regulatory Rule in Communities

At stake in the discussion of regulatory rule in Kumaon is the birth of a new form of government. This new form of government is based on strategies that redefine the interests of multiple actors, join them along new axes of common purpose, and enforce the protection of environment more economically in the process. Regulatory rule by communities is different from other familiar models of crime and sanction, infraction and deterrence, violations and punishments. For example, in exploring and explicating transformations in the nature and forms of penality, Foucault invokes two metaphors:- the punitive city and the more familiar mechanism of Bentham's panopticon. The punitive city for Foucault is a possibility that ultimately does not get realized. He describes it as follows: "This, then, is how one must imagine the punitive city. At the crossroads, in the gardens, at the side of roads being repaired or bridges built, in workshops open to all, in the depths of mines that may be visited, will be hundreds of tiny theatres of punishment. Each crime will have its law; each criminal his punishment. It will be a visible punishment, a punishment that tells all, that explains, justifies itself, convicts: placards, different coloured caps bearing

inscriptions, posters, symbols, texts read or printed, tirelessly repeat the code... the essential point, in all these real or imagined severities, is that they should all, according to a strict economy, teach a lesson: that each punishment should be a fable ...in counterpoint with all the direct examples of virtue, one may at each moment encounter, as a living spectacle, the misfortunes of vice... and popular memory will reproduce in rumour the austere discourse of law'" (1979;113).

The lessons of the punitive city operate in a quite specific fashion. They make the concrete relationship between a crime and its punishment obvious through public examples. They create in their beholders the awareness of what will happen *before* any crime is committed. They create and activate a mental relationship between criminality and its just desserts: so that the very thought of infringing rules may be vanquished. The discipline of the punitive city does not depend upon establishing relations of visibility between the criminal and the supervisor. Government does not require that sanctions be implemented consequent upon the committing of a crime. Rather, those who would engage in extra-legal acts ate given the knowledge of the effects of such acts, well in advance of the acts themselves. Through aversion to consequences does the punitive city function.

In contrast, the panopticon reverses the temporal relationship between criminality and its outcomes. The individual who would break the law must reckon with the consequences of his/her actions after committing the crime. Consider how Foucault describes this coercive institution with Bentham as his source: "at the periphery an annular building; at the centre, a tower with wide windows that open onto the inner side of the ring; the peripheric building is divided into cells, each of which extends the whole width of the building; they have two windows, one on the inside, corresponding to the windows of the tower; the other on the outside, allows the light to cross the cell... All that is needed, then, is to place a supervisor in a central tower and to shut up in each a madman, a patient, a condemned man, a worker or a schoolboy... The panoptic mechanism arranges spatial unities that make it possible to see constantly and recognize immediately... visibility is a trap... Hence the major effect of the Panopticon: to induce in the inmate a state

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of conscious and permanent visibility that assures the automatic functioning of power... It automatizes and disindividualizes power... [it] produces homogeneous effects of power... He who is subjected to a field of visibility, and who knows it... becomes the principle of his own subjection" (1979: 200-03).[26]

Whatever one might think of the automatic relation between visibility and normalization that Foucault asserts to be active in the panoptic mechanism, it is obvious that regulatory rule is different from the punitive city and the coercive institution in its operations as well as effects. The punitive city and the coercive institution both position the rule violator on the outside. Regulatory rule in Kumaon, at least in the first instance, appeals to the sense of membership within the community where rule violators reside. The temporal relationship between committing a rule infraction and suffering its consequences is also different under regulatory rule. Rather than producing discipline by invoking an *a priori* relationship between crime and sanctions, or by establishing an *a posteriori* connection between the gaze of power and the normalization of the individual, regulation works both before and after infractions. Members of a community are aware of the nature of sanctions and the quality of monitoring because they themselves participate in creating them.

Further, the forms of penality that Foucault discusses depend upon direct relations of visibility: the loud and spectacular displays of retribution under sovereignty, the observable relationship between crime and its return effects in the punitive city, and the relentless gaze of power associated with the panopticon. Power works through and along the lines of observation that are made possible by sight. It is absolute in its effects. Those who are exposed to the lessons of crime in theaters of punishment, learn the effects of deviance and are scared away from it. Those who are subjected to the gaze of power undergo changes in their subject positions. Those who are not a part of the audience in the theater or who are not subjected to the gaze continue to act in ways that power would sanction.

In comparison, regulatory rule creates awareness and knowledge through direct participation in the various elements and stages of regulation. Those who take part in allocating resources, in monitoring

actions in forests, and in implementing sanctions are more likely to come to appreciate the fragility of the environmental resources they are trying to conserve. Those who see the environment as requiring protection are more likely to put greater effort in their protectionist practices. Involvement in the practices of rule making and the conduct of rule enforcement becomes effective not just because of the presence of mechanisms of visibility and lines of observation. Involvement generates awareness and knowledge by confronting subjects with the effects of their actions as they undertake the act. The effects of this form of regulation are cumulative over time rather than absolute in the first instance. Discovery of deviance is uncertain in any given instance. But over time, the probability of being apprehended increases as those subject to governmental strategies of regulatory communities continue to violate prescribed norms. Transformations in subject positions, as the next chapter will describe, are similarly probabilistic. Involvement in regulatory practices, and awareness of collective decisions, contribute to shifts in environmental practices as well as beliefs. The regulatory community relies for its effectiveness on the rule of chance rather than the formal absolutism of vision. The shift from the dynamic of coercion and resistance toward one of involvement in regulatory practices and transformations in environmental subjectivities may be an uncertain process, but it is the goal toward which regulatory communities strive.

Table 5.1
The Forest Council Rules of Kumaon (1931 and 1976):
Relations between Communities and their Residents

Subject	1931	1976
Allocation	1. Councils can regulate grazing, collection of fodder, non-timber forest products, firewood, and construction stones in forests; 2. Councils have the power to distribute forest products to rightholders; 3. Councils have the power to distribute and sell forest products to non-right holders.	Rules 2 and 3 remain the same *Modifications* 1. At least 20 percent of the forest should be excluded from grazing each year; 2. Land may be leased for commercial purposes; 3. No more than one tree may be granted to a rightholder without the consent of more than half the members of the forest council executive
Monitoring	1. The council could appoint guards to monitor and enforce rules.	*Modifications* 1. Appointments of guards require approval from the deputy commissioner.
Sanctioning	1. The council could impose fines on rule violators upto Rs. five; 2. Fines imposed by the council were to be treated as government dues, and were recoverable using similar procedures; 3. The council could impound animals grazing without its permission; 4. The council could confiscate cutting implements from rightholders present in the forest illegally; 5. Council could restrict or suspend the rights of those who break rules regularly.	Rules 2, 3, 4, and 5 remain the same. *Modifications* 1. The council could impose fines up to Rs. 50 with the permission of rule violators, and up to Rs. 500 with the permission of the deputy commissioner.
Adjudication	1. Council could decide on the level of punishment of persons found to be breaking rules; 2. Council could file court cases in situations where it considered higher levels of fines necessary;	Rule 2 remains the same. *Modifications* 1. Court cases could be filed against habitual rule violators.

Income	1. All income from the sale of non-commercial forest products assigned to the council; 2. Income from the sale of resin and timber to be allocated to the council in a proportion determined by the Conservator of forests (In practice it was allocated fully to the councils); 3. Council could use its income to allocate it among rightholders	Rules 1 and 3 remain the same. *Modifications* 1. Forest Department to deduct ten percent of the gross commercial revenues of the councils to meet administrative expenses; 2. Net income from sale of timber and resin to be deposited in a Fund managed by the Deputy Commissioner; 3. Twenty percent of net income allocated to the District Council toward development expenditures; 4. Forty percent of net income allocated to Forest Department 5. Remaining forty percent managed by the Deputy Commissioner and allocated to councils for work of local public utility.

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Table 5.2

Detection of Rule Infractions by Forest Council Guards in Kumaon: 1977-1992[1]

Name of village	Number of meetings held per year	Average annual amount spent on protection (In Rs.)	Average annual number of detected rule infractions
Airadi	3	790	32
Banua	6	2835	156
Bhagartola	10	3100	192
Ladfoda	3	2840	121
Miraini	8	832	62
Lohathal	4	1850	109
Nagilagaon	5	2500	89
Tangnua	4	175	8

[1]The figures are for seven years selected at random from the records maintained by the forest councils.

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Table 5.3
Distribution of Forest Councils According to their Forms of Monitoring

Number of Councils	Monitoring Mechanisms				
	Mutual Monitoring		Third Party Monitoring		
	Random Monitoring	Assigned Households	Household Contributions	Local General Funds	External General Funds
	2	3	7	18	8

Table 5.4
Basic Statistics on Bhagartola Council Forest

Indicator

Trees per Hecatare	1826.0000
Mean Tree DBH (M)	0.1572
Mean tree height (M)	6.3000
Total Tree Biomass (CuM per Hectare)	205.0000
Number of major tree species	11.0000

Source: Field Survey, 1993.

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Table 5.5

Gender Composition of Village Population and Rule Violations[2]

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	I *Number of adult* *individuals in* *the village*	II *Offences* *reported to* *Council*	III *Cases where* *fines not* *paid initially*	IV *Cases where* *fines not paid* *for at least a year*
		1951		
Men	33 (49)	38 (19)	20 (36)	08 (58)
Women	35 (51)	163 (81)	38 (64)	06 (42)
Total	68	201	59	14
		1971		
Men	30 (48)	37 (17)	23 (47)	6 (67)
Women	33 (52)	181 (83)	25 (53)	3 (33)
Total	63	220	48	09
		1991		
Men	38 (47)	50 (27)	39 (65)	18 (78)
Women	41 (53)	135 (73)	21 (35)	5 (22)
Total	79	185	60	23

Source: Bhagartola forest council meeting records, for 1951, 1971, and 1991.

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[2]Figures in brackets are proportions of the total (population/rule-violations).

Table 5.6
Caste Composition of Village Population and Rule Violations[3]

	I Number of adult individuals in the village	II Offences reported to Council	III Cases where fines not paid initially	IV Cases where fines not paid for at least a year
		1951		
Brahmins	45 (66)	71 (35)	28 (49)	8 (57)
Thakur	05 (7)	10 (5)	11 (19)	4 (28)
Harijan	18 (27)	120 (60)	19 (32)	2 (15)
Total	68	201	58	14
		1971		
Brahmins	43 (68)	88 (40)	25 (52)	5 (55)
Thakur	05 (8)	16 (7)	14 (29)	3 (33)
Harijan	15 (24)	116 (53)	09 (19)	1 (11)
Total	63	220	48	09
		1991		
Brahmins	49 (60)	55 (30)	42 (71)	17 (73)
Thakur	06 (8)	16 (9)	10 (16)	05 (22)
Harijan	25 (32)	114 (62)	08 (13)	01 (5)
Total	79	185	60	23

Source: Bhagartola forest council meeting records for 1951, 1971, and 1991.

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[3]Figures in brackets are proportions of the total (population/rule-violations).

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Figure 5.1
Types of Monitoring Mechanisms in Kumaon Forest Councils
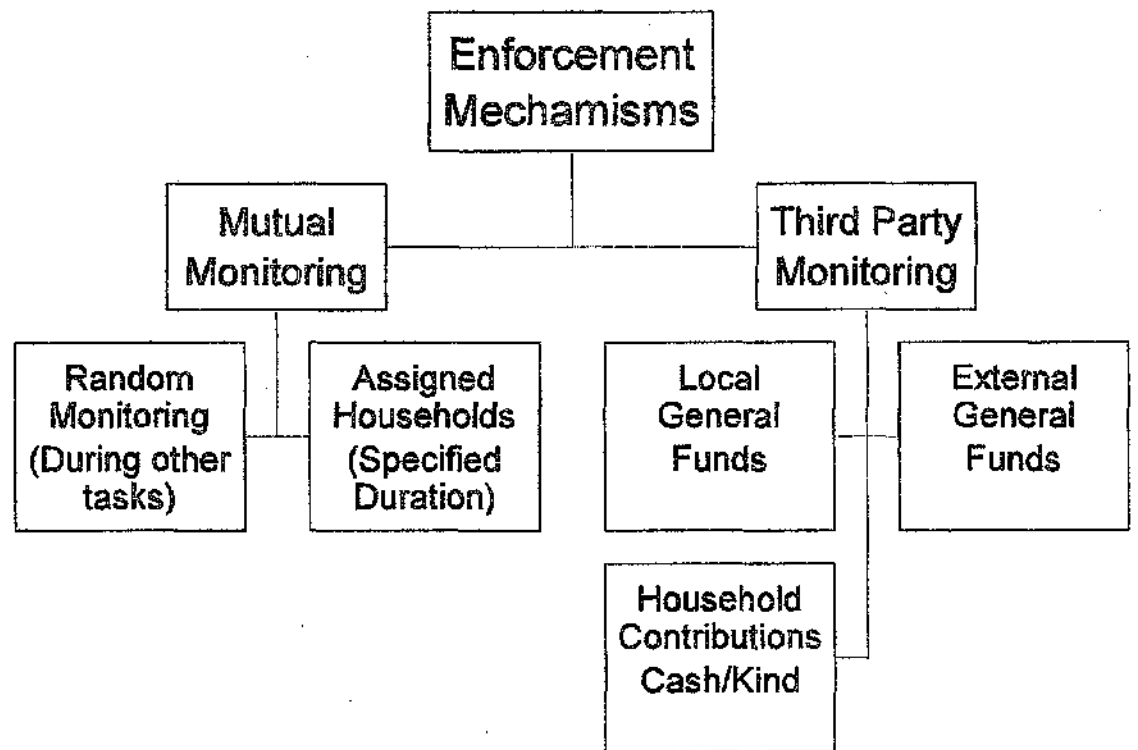
Endnotes:

1.See McKean's (2000:49) review of factors that are likely to promote successful common property regimes. She argues for building on existing institutions rather than trying to craft entirely new ones. Ostrom, Schroeder, and Wynne make a similar point in relation to development processes when they suggest that indigenous institutions can serve "as an important foundation upon which to construct a social infrastructure that [is] consistent with a modern democratic political economy" (1993: 7).

2. William Ophuls argued, for example, that the problems of environmental commons that Garrett Hardin (1968) discussed were a special case of the general political dynamic of Hobbes's state of nature. According to him, the political dilemma of ecological scarcity was "authoritative rule or ecological ruin" (1973:162). For a review of some of the evidence on this subject see Ostrom (1990) and Ostrom, Walker, and Gardner (1992:404-5).

3.The introduction mentioned the ubiquity of community-based programs to protect nature. See the discussion of more than 55 such programs from 30 different countries in Africa and Latin America in Agrawal 2001. See also Agrawal and Gibson 2001; Bryant and Bailey, 1997; Clay 1988; Ellen, Parkes, and Bicker, 2000; Gibson, McKean, and Ostrom 2000; Peluso, 1992; Poffenberger and McGean 1996; Western and Wright, 1994; and Wolverkamp, 1999. Many of these books and collections of studies present examples of the importance community and decentralized regulation have come to assume in environmental conservation.

4.See for example Ehrlich and Ehrlich, 1991; Meadows et al, 1992; Merle et al., 1993; Myers, 1991; Wilson, 1992. Indeed, concern with overpopulation comes to colonize even seemingly unrelated subjects: Levi-Strauss summarizing his views on race and culture (1985:21), Jack Nicholson talking about solar energy (1992:165),.or Crick and Watson explaining their discovery of the double helix structure the DNA (Jaroff, 1993: 59).

5. As one might suspect, they draw much of their inspiration from the well known work of Malthus ([1798,

1803] rpt. 1960). For some examples of modern day neo-Malthusian writings, see Avise 1994, Durning, 1989, Fischer 1993, Hardin 1993, Holdren 1992, Low and Heinen 1993, Ness et al. 1993, and Pimental et al. 1994.

6. See Carrier (1987) and Stocks (1987: 119-20). See also the arguments in Arizpe and Velazquez, 1994: 23).

7. See Chomitz, 1995; Fearnside, 1987; Verma and Partap, 1992; and Young, 1994.

8. In viewing regulations as institutional forms, I am drawing from the definition of institutions as proposed by Bates (1989) and North (1990).

9. Scholars of common property have played a significant role in bringing community-based conservation to the fore. Ostrom (1990) remains the central text in the field of common property. Baland and Platteau (1996) and Wade ([1989] 1994) constitute important supplementary texts. Agrawal (2001b) provides a useful summary and critical review of the literature. Political ecologists have also contributed a steady stream of writings that favor an important role for local populations in resource management. See Neumann (1992, 1998) Peluso (1992).

10. This literature has focusing more on relatively autonomous community-level governments, or at least on forms of community-based government that are not directly and formally affiliated with state actors. It blossomed into prominence with the publication of a collection of essays by the National Research Council in the United States (NRC 1986), and Ostrom's (1990) seminal work on the commons. A large number of essay collections, and significant empirical research spanning the globe has helped the scholars of commons make their point convincingly: community level governance of resources can be as effective as government through the state or through market-based mechanisms (see Acheson, 1989; Berkes, 1989; McCay and Acheson, 1987; McKean, 1992; Ostrom, Gardner, and Walker, 1994; Peters, 1987; Pinkerton, 1987; Sengupta, 1991).

11. The full analysis is available in Agrawal and Yadama (1997). The 1997 paper presents descriptive

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statistics, details on sampling and data collection, information about the model we used, procedures for estimating specific variables, and the numerical estimates of various relationships. Since the main point of the argument in this chapter is simply to indicate the importance of local regulation, I only report the findings of the previous study rather than undertake a full-blown repetition of the analysis.

12. Rose (1999) provides an incisive review of the place community has come to occupy in social policy in the last decade. See Li (1996) and Agrawal and Gibson (1999) for critical reviews of the relationship between community and conservation.

13.The use of fire to clear vegetation for agricultural purposes was widespread in many parts of British India, notably Burma, the Deccan, Central Provinces, and the northeast; and it attracted enormous criticism and restrictions from forest department officials (Stebbing 192. But in Kumaon the practice was uncommon at best by the early twentieth century.

i4.My discussion of the effects of the forest council rules is based on fieldwork conducted through different visits to 38 villages between 1989 and 1993. A research team helped collect the bulk of the research in the summer of 1993.I met several members of the research team and discussed some of our findings during a final revisit in the spring of 1997.

15.As Taylor remarks, in his interpretation of Wittgenstein's (1973) work, "following rules is a *social practice*" (emphasis in original, 1993: 48). See also Kripke (1972) for an alternative interpretation of Wittgenstein which emphasizes the difficulty of reasonably justifying why particular implications of rules are followed. But even these alternative interpretations accept that rules in themselves do not contain all of their possible meanings. Rule-following behavior accepts particular implications of rule-like statements even if they are not ultimately defensible.

16."Rightholder" is the literal translation of the local term "haqdar." Typically, all households belonging to a settlement hold formally equal rights to harvest forest products from the council-managed forests. The amount that can be harvested by each right-holding household is fixed by the forest council. The term

signifies the contractual nature of the relationship between the forest councils and village households.

17.Elinor Ostrom, Personal Communication, December 10, 2000.

18.Such sentiments stand in sharp contrast, of course, to other expressed idioms where villagers indicate that everyone knows what happens in a village. The point is that it is difficult to catch someone in the act as they are taking out fodder or firewood, even if there is a general awareness of how specific individuals act. In other studies of village life or life in small groups, it is a commonplace that members know a great deal about those with whom they interact frequently (Agrawal 1997). But general widespread awareness of others' reputation does not necessarily mean widespread knowledge of specific daily actions.

19.See Elster (1989: 40-41), and Ostrom, Gardner, and Walker (1994: Chapter 1).

20.See Fearon (1999) who suggests that at election time, voters are likely to vote in favor of those candidates they see as better performers than to sanction office-holders. The distinction dissolves when voters perceive a strong link between past decisions of office-holders and their likely future performance, or, when candidate behavior is widely known among voters as is likely in small settlements where forest council officials are elected.

21. The next chapter explores and explains why it is that some villagers conform to new forms of government through the community and others withstand the production of conformity. In both cases, changes in subjectivity occur as part of strategies of government.

22.Much of this basic information about Bhagartola was available in the records of the *patwari,* the local revenue department official.

23.Women" subordination is thus not simply the result of policies imposed by the state (Schmidt [1991] 1995:391). For excellent analyses of women's subordination through different strategies of control over property see Agarwal 1992, Agarwal 1994.

24.For a similar argument that uses gender theory to critique Habermas's emphasis on the emancipatory role of the public sphere in the emergence of liberal capitalism, see Fraser (1989:122-29).

25. In any case, the more important question is not whether power is exercised unequally now, and was more equal in a distant past when the government of environment was less influenced by powerful state officials. The more pressing question is *how* unequal power unfolds today in comparison to how it was exercised prior to the passage of the Forest Council Rules of 1931. The introduction of new institutions has made the exercise of unequal power more subtle. One aspect of this change is that politics can no longer be seen (if *it* ever was) to be a characteristic only of the relationships between the state and the community.

26. Of course, in his later work on governmentality, Foucault arrives at *very* different conclusions about the extent to which modern power disindividualizes or is homogeneous in its effects on humans ([1978] 1991),

6. Making Environmental Subjects:
Intimate Government

6. Making Environmental Subjects: Intimate Government

Honest, sober, frugal, patient under fatigue and privations, hospitable, good humored, open, and usually sincere in their address, [Kumaonis] are at the same time extremely indolent, fickle, easily led away by the counsel of others, hasty in pursuing the dictates of passion, envious of each other, jealous of strangers, capable of equivocation and petty cunning, and lastly, grossly superstitious.

— Raper, cited in Atkinson, *The Himalayan Gazetteer,* III: 454.

By definition, [the writer] cannot serve those who make history: he serves those who have to live it.

— Albert Camus, 1956 (Nobel Prize acceptance speech)

I first traveled to Kumaon in 1985. At that time, I met a number of leaders of the widely known Chipko movement including Sundar Lai Bahuguna and Chandi Prasad Bhatt.[1] But the meeting that left a longer-lasting impression was to occur in a small village by the name of Kotuli. I spent nearly a week there, investigating how villagers used their forests. Hukam Singh, a young man with a serious air, told me that it was futile to try to save forests. Too many villagers cut too many trees. Too many others did not care. He himself was no exception. He said, "What does it matter if all these trees are cut? There is always more forest." In fact, he judged that at best only a few villagers might be interested in what I was calling the environment. "Women are the worst. With a small hatchet, they can chop so many branches, you will not believe." He qualified himself somewhat. "Not because they want to, but they have to feed animals, get firewood to cook."

Hukam Singh's judgment is probably less important for what it says about processes of environmental conservation in Kotuli than for what it reflects of his own position. Talking with other people, I realized that the long periods Hukam Singh spent in the town of Almora prevented him from appreciating fully the efforts afoot to protect trees and forested environments. He was trying to get a job in

the Almora district court, and had stopped farming some of the family agricultural holdings. The meetings that the forest council called almost every other month were not just a sham. The eighty-five acres of village forest was more densely populated with trees and vegetation than several neighboring forests. Despite the numerous occasions when the village guard caught people illegally cutting tree branches or grazing animals, most villagers did not think of the forest as a freely available public good that could be used at will.

The reasons my conversations with Hukam Singh left a more lasting effect than those with well-known Chipko leaders were to become apparent during my return visits to Kotuli. I visited again in the fall of 1990 and the summer of 1993. In these intervening years, Hukam Singh had left Almora, settled in Kotuli, and married Sailadevi from Gunth (a nearby village). He had started growing two crops on his plots of irrigated land, and bought several cattle. He had also become a member of Kotuli's forest council. One of his uncles, who was a member of the council, had retired and Hukam Singh replaced him.

More surprisingly, Hukam Singh had become a convert to environmental conservation. Sitting on a woven cot, one sturdy leg tapping the ground impatiently, he explained one afternoon, "We protect our forests better than government can. We have to. Government employees don't really have any interest in forests. It is a job for them. For us, it is life." Feeling that he had not made his point sufficiently convincingly, he went on. "Just think of all the things we get from forests – fodder, wood, furniture, food, manure, soil, water, clean air. If we don't safeguard the forest, who else will? Some of the people in the village are ignorant and so they don't look after the forest. But sooner or later, they will all realize that this is very important work. It is important even for the country, not just for our village."

These different justifications of his own transformation into someone who cared about protecting trees are too resonant with prevailing rhetoric around environmental conservation to sound original. But to dismiss them because they are being repeated by many others would be to miss completely the enormously interesting, complex, and crucial, but understudied relationship between changes in government and related

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shifts in environmental practices and beliefs. After all, the officially introduced version of community regulation in Kumaon has proved so hegemonic that for Hukam and many of his fellow residents it is appropriately counterposed to state control over forests. Employees of the state are not interested in forests in the same way villagers are! Such distinctions between state and community, or outsider and local are rife in the literature on community-based regulation of natural resources.

The shifts in Hukam's beliefs hint at what is perhaps the most important and under-explored question in relation to environmental regulation. When and for what reason do socially situated actors come to care for, act, and to think of their actions in relation to something they define as the environment? Hukam Singh did not care much about the village forest in 1985, but came to defend the need for its regulation in 1993. Similarly, concern for the environment has not always existed in Kumaon. It has emerged in history and grown over time. Widespread involvement in specific regulatory practices is tightly linked with the emergence of a greater concern for the environment, and the creation of environmental subjects. I use the term "environmental subjects" to nominate those who thus care about the environment. More precisely, the environment constitutes for them a conceptual category organizing some of their thinking; it is also a domain in conscious relation to which they perform some of their actions. The practices and thoughts of environmental subjects, as I define the term, may not always lead to environmental conservation. But they are often undertaken in relation to the environment. I draw on evidence related to forests as an example of an environmental resource. Further, in considering an actor as an environmental subject I do not demand a purist's version of the environment: as being necessarily separate from and independent of concerns about material interests and everyday practices. A desire to protect commonly owned/managed trees and forests, even with the recognition that such protection could enhance one's material self interest, subscribes to environmental subjectivities. In such situations, self interest comes to be cognized and realized in terms of the environment.

If the environmental aspect of "environmental subjects" requires some boundary work,[2] so does the second part of the phrase. It should be evident that I do not use "subjects" in opposition either to citizens or objects. One commonsense meaning of subjects would be to see them as actors or agent. But when subjected, people are also subordinated. And the third obvious referent of the term is the notion of a theme, or a domain, as in the environment being the subject of my research (see also the next chapter for a discussion of Foucauldian meanings of subjection). I use subjects to think about Kumaon's residents and changes in their ways of looking at, thinking about, and acting in forested environments in part because of these productive ambiguities associated with "subject." Each of its referents is an important part of the explorations in this book.

Given the existence of environmental subjects in Kumaon, a second question can be asked. What distinguishes them from those who continue not to care nor act in relation to the environment? Of the various residents of Kotuli, only some have changed their beliefs about the need for forest protection. Others neither take an interest nor work in relation to protectionist regulations. They harvest forest products without attending to or caring about locally formulated enforcement. The story is more widely applicable in Kumaon - such examples of uncaring actions can be multiplied. Thus, to say that Kumaonis have come to care about their forests and the environment is only to suggest that some of them, in increasing numbers over the past few decades perhaps, have come so to care.

Answers to questions about who, when, how and why acts and thinks about the environment as a relevant referential category is the quarry that this chapter seeks to hunt. These answers are important because of both practical and theoretical reasons. Depending on the degree to which individuals care about the environment, the ease with which they would agree to contribute to environmental protection, and the costs of enforcing new environmental regulations may be lower. But equally important, and perhaps even more so, is the theoretical puzzle. What makes certain kinds of subjects, and what is the best way to understand the relationship between actions and subjectivities? Against the common presumption that

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actions follow belief, this chapter will present some evidence that people often first come to act in response to what they might see as compulsion or as their short-term interest, and only then develop beliefs that defend short term-oriented actions on other grounds as well. It will also show how residents of Kumaon differ in their beliefs about forest protection, and how these differences are related to their involvement in regulatory practices.

It can be argued that beliefs and thoughts are formulated in response to experiences and outcomes over many of which consciously formulated strategies by a single agent have little control. Individuals strategize about the future, and attempt to shape the contexts of their interactions. There can also be little doubt that one can change the some aspects of the world with which one is in direct interaction. But equally certainly, the number and types of forces that affect even one's daily experiences transcend one's own will and design. Much of what one encounters in the world is only partly a result of one's planned strategies undertaken in light of one's existing beliefs and preferences.

The underlying argument is straightforward. At any given moment, people may plan to act in accordance with their existing beliefs. But all plans are incomplete and imperfect, and none incorporate the entire contextual structure in which actions lead to consequences. For these and other reasons, actions lead to unanticipated outcomes. The experience of these unanticipated outcomes does not always harden actors in their existing beliefs. Some of these outcomes may show how earlier beliefs were inappropriate or how earlier subject positions were mistakenly held. In these situations, actors may have an incentive to work on their existing beliefs, preferences, and actions, incorporating into their mentalities new propensities to act and think about the world. Even if only a very small proportion of one's daily experiences serve to undermine existing beliefs, over a relatively short period such as a year or two, there can be ample opportunities to arrive at subject positions that are quite different from those held earlier.

In any event, persuasive answers about variations between subject positions and the making of subjects are likely to hinge on explanations that systematically connect policy with perceptions, government

with subjectivity, institutions with identities. Environmental practice, this chapter suggests, is the key link between the regulatory rule that government is all about and imaginations that characterize particular subjects. In contrast, social identities such as gender and caste play only a small role in shaping beliefs about what one considers to be appropriate environmental actions. This is not surprising. After all, the politics of identity considers significant the external signs of belonging rather than the tissue of contingent practices that may cross categorical affiliations. In the subsequent discussion, I hope to sketch the directions in which a satisfactory explanation needs to move analysis.

Producing Subjects

The description of my meetings and conversations with Hukam Singh, although it seems to be located quite firmly in an overall argument about the emergence of new subjectivities albeit in relation to the environment, resembles Geertz's idea of "a note in a bottle." It comes from "somewhere else," is empirical rather than a philosopher's "artificial" story, and yet has only a passing relationship to representativeness (Greenblatt 1999:14-16). Making it connect better to a social ground and to other roughly similar stories requires the development of some crucial terms and the presentation of additional evidence. Two such terms are "imagination" and "resistance."

In his seminal account of nationalism's origins, Anderson famously suggests that the nation is an imagined community ([1983] 1991). In a virtuoso performance, he strings together historical vignettes about the development of nationalisms in Russia, England, and Japan in the nineteenth century (83-111) to show how these cases offered models that could successfully be pirated by other states where "the ruling classes or leading elements in them felt threatened by the world-wide spread of the nationally-imagined *(sic)* community" (1991: 99). The model that according to Anderson comes to triumph is that of "official nationalism."[3] He suggests that official nationalisms were :

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"responses by power groups... [who were] threatened with exclusion from, or marginalization in, popularly imagined communities... Such official nationalisms were conservative, not to say reactionary,*policies*... very similar policies were pursued by the same sorts of groups in the vast Asian and African territories subjected in the course of the nineteenth century... they were [also] picked up and imitated by indigenous ruling groups in those few zones (among them Japan and Siam) which escaped direct subjection" (emphasis in original, 1991:110).

It is an interesting and disturbing fact that for Anderson the successful adoption, superimposition, and spread of official nationalisms as a substitute for popular nationalisms lay well within the capacities of ruling groups to accomplish, despite the imagined nature of nationalism. A number of scholars have elaborated the term "imagination," well imaginatively, in talking about the nation (Appadurai 1996:114-15, Cliakrabarti 2000: ch. 6). But in *Imagined Communities* itself, the subsequent analysis gives relatively short shrift to several aspects of imagination. The successful imposition of an official version of nationalism around the globe, coupled with the imagined quality of national emergence that is the core of Anderson's intervention, implies that power groups were able to colonize the very imagination of the masses over whom they sought to continue their rule. They did so in the face of already-existing popular nationalisms. How they overcame, even for a few decades and certainly only patchily, the resistance that existing senses of "imagined belonging" posed to their efforts required further elaboration than Anderson provides. The politics at the level of the subject that is likely involved in the struggle between official and popular nationalisms needs additional work to be compellingly articulated.[4] National subjects, to use a shorthand to refer to the colonization of political imagination by official nationalizing policies, emerged in history. A history of nationalism needs therefore a politics of the subject.[5]

The question about when, why, and how some subjects rather than others come to have an environmental consciousness in comparison to others is precisely similar to what Anderson leaves out when

considering the nation. Similar judgments about the transformation of the consciousness of those who are less powerful can also be found in the work of other scholars. Consider Barrrington Moore. "People are evidently inclined to grant legitimacy to anything that is or seems inevitable no matter how painful it may be. Otherwise the pain might be intolerable" (1978: 459). One might ask Moore, "All people?" If not all, then surely we are forced to consider the questions of which ones, when, why, and how? The same motivation to account for social and political acquiescence impels Gaventa's brilliant study of power and quiescence in Appalachia (1982). But his analysis of the third face of power can be supplemented by the examination of mechanisms that would explain when and how it is that some people come to accept the interests of dominant classes as their own *and others do not.*

In contrast to Anderson for whom the imagination of the less powerful subject is problematically appropriable by official policies, scholars of resistance have often assumed the opposite. For them, the resisting subject is able to protect her consciousness from the colonizing effects of elite policies, dominant cultures, and hegemonic ideologies. This ground truth forms both their starting assumption and their object of demonstration. Scott's path-breaking study of peasant resistance (1985), his more general reflections on the relationship between domination and resistance (1989), and the work on resistance that emerged as a cross-disciplinary subfield in the wake of his interventions have helped make familiar the idea that people can resist state policies, elite power, and dominant ideologies. Scott assertively advances the thesis that the weak withstand the powerful, perhaps always, at least in the realm of ideas and beliefs. He also suggests that when signs of their autonomous views about the prevailing social order are invisible, it is because of material constraints and their fear of reprisal upon discovery, not because they have come wholeheartedly to acquiesce in their own domination, let alone because their consciousness has been incorporated into a hegemonic ideology.

Scott articulates this position most fully, perhaps. But a similar understanding of peasants and their interests was also complicit in the early efforts of subaltern studies scholars to identify an autonomous

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consciousness for the excluded agents of history.[6] Consider for example Ranajit Guha's (1982a) seminal statement on the historiography of colonial India. This powerful manifesto against elitist history writing, in calling for a more serious consideration of the *"politics of the people,"* portrays the subaltern as *"autonomous'"* and subaltern politics as structurally and qualitatively different from elite politics in the sense that "vast areas in the life and consciousness of the people were never integrated into [bourgeois] hegemony."[7] Even those who note that the opposition between domination and resistance is too mechanical to capture how consciousness of those subject to power changes in their experience of power go on basically to note that the process Is "murky" (Comaroff and Comaroff 1989:269,290). But for scholars of resistance and subalternity, the autonomous consciousness of peasants, the subaltern, and other marginalized groups endures in the face of dominant elite pressures operating in a spectrum of domains, not just in the domain of policy. It Is reasonable to infer that if for these scholars, the weak and the powerless can resist the panoply of instruments available *to* dominant groups, policy by itself is even less likely to affect the consciousness of the subject.[8]

It is clear that works discussed above present two aspects of the puzzle about the relationship between government and subjectivity. Each of these aspects comprises strong arguments in favor of a particular tendency: in the one case, the tendency toward the colonization of the imagination by powerful political beliefs, and in the other case, the tendency toward durability of a sovereign consciousness founded upon the bedrock of individual or class interest. Within themselves, these arguments are at least consistent. Considered jointly, as a potential guide to the relationship between the subject and the social, they lead to conflicting conclusions. It is crucial to account not just for the persistence of a certain conception of interests among a group of people, nor just to assume the straightforward transformation of one conception of interests into another, but to explore more fully the mechanisms that can account for both possible effects on people's conceptions of their interests.

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I weave a path through the opposed conclusions of two different streams of scholarship by suggesting that technologies of government produce their effects by generating a politics of the subject that can be understood and analyzed better by considering both practice and imagination as critical. The reliance on imagination by some scholars (Appadurai 1996, Chakrabarty 2000a) to think about the emergence of different kinds of subjects is a step in the right direction. But closer attention to social practices can lead to a species of theorizing that would be more tightly connected to the social ground where imagination is always born, and reciprocally, which imagination always influences. A more direct examination of the heterogeneous practices that policy produces, and their relationship with varying social locations, has the potential to lead analysis toward the mechanisms involved in producing differences in how subjects imagine themselves. My interest is to highlight how it might be possible and why it is necessary to politicize both community and imagination in the search for a better way to think about environmental politics.

Foucault's insights on the "subject" form a crucial point of reference but also a point of departure in considering the political that is silenced in Anderson's vision of the imagined community. In *Discipline and Punish,* Foucault elaborates a particular model of subject making in which "bodies, surfaces, lights" are so arranged as to facilitate the application of power in the form of a gaze. "He who is subjected to a field of visibility, and who knows it, assumes responsibility for the constraints of power; he makes them play spontaneously upon himself; he inscribes in himself the power relation in which he simultaneously plays both roles; he becomes the principle of his own subjection" ([1975] 1979:202-3). The panopticon, standing for such arrangements of bodies, surfaces, and lights does not just create lines of visibility; it can also be used as a machine "to train or correct individuals," as a laboratory "to perfect the exercise of power" (1979:205-6). Here then is a mechanism - the gaze - that acts as a sorting device. Those subject to the gaze become subject to power; examples of the effects it can produce. Those who escape the gaze escape also the effects of power.

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Although this example introduces political practice into the process by which subjects make themselves, it will obviously not do. By itself, the model needs more work for any number of reasons, among them its absence even in total institutions[9] and the infeasibility of applying its principles outside such total institutions. Nor is it the case that visibility in asymmetric political relationships necessarily produces subjects who make themselves in ways desired by the gaze of power. And although Foucault does not elaborate on the specific mechanisms that are implicated in the making of subjects (Butler 1997: 2), he recognizes the indeterminacy inherent in the making of subjects when he suggests that mechanisms of repression can produce both subjugation and resistance (1978:115). It is this recognition of contingency that introduces the register of the political in the creation of the subject. It is also precisely what Appadurai has in mind when he suggests that colonial technologies left an indelible mark on Indian political consciousness but that there is no easy generalization about how and the extent to which they "made inroads into the practical consciousness of colonial subjects in India." Among the dimensions he mentions as important are gender, distance from the colonial gaze, involvement with various policies, and distance from the bureaucratic apparatus (1996:134).

These factors are important of course. But it is necessary to make a distinction between the politics generated by involvement in different kinds of practices, and the politics that depends on stable interests presumed to flow from belonging to particular identity categories. Much analysis of social phenomena takes interests as naturally related to particular social groupings: ethnic formations, gendered divisions, class-based stratification, caste-categories, and so forth. Imputing interests in this fashion to members of a particular group is common to streams of scholarship that are often seen as belonging to opposed camps (Bates 1981, Ferguson 1994). But doing so is especially problematic when one wants to investigate how people come to hold particular views of themselves. Categorization of persons on the basis of an externally observable difference underplays how subjects make themselves, and leaves alone the effects that those persons' actions might have on their senses of themselves. Using social identities as the

basis for analysis may be useful as a first step; a sort of gross attempt to make sense of a bewildering array of beliefs and actions that people always hold (see the analysis in chapter five, for example). But to end analysis there is to fail to attend to the many different ways in which people constitute themselves.

Focusing attention on specific social practices relevant to subject formation along a given dimension or facet of identity creates the space for learning more about how actions are connected with beliefs and subject formation. Undoubtedly, practices are always undertaken in the context of institutionalized structures of expectations and obligations, asymmetric political relations, and existing views people have of themselves. But to point to the situatedness of practices and beliefs is not to grant social context a deterministic influence on practice and subjectivity. Rather, it is to ground the relationship between structure, practice, and subjectivity on evidence and investigative possibilities.

Variations in Environmental Subjectivities in Kumaon

I consider two forms of variations in the nature of environmental subjectivity in Kumaon — those that have unfolded over time, and others that are geographically distributed across villages. The first set of changes are the puzzle that began this book. From being persons who opposed efforts to protect the forested environment, Kumaonis became persons who undertook the task of protection upon themselves. Instead of protesting the governmentalization of nature, Kumaonis became active partners in such governmentalization as described in the preceding chapters. I describe below the alchemical shift in interests, beliefs, and actions for which the move toward the community partially stands. But equally important to understand are the differences in relation to environmental practices and beliefs among Kumaonis today, and how these differences affect the costs of environmental regulation.

My examination of changes over time, and social-spatial variations in how Kumaon's residents see themselves and their forests draws on three bodies of evidence. The first set of observations are from archival materials about Kumaonis' actions in forests in the first three decades of the twentieth century, and

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then a survey of forest council headmen in the early 1990s - sixty years after forest council regulations became the basis for local forest related practices.

The second type of evidence comes from two rounds of interviews I conducted with 35 Kumaon residents in seven villages. The first interviews occurred in 1989. I conducted the second round of interviews in 1993.[10] Of the seven villages, four had formed councils either just around 1989, or in the years between 1989 and 1993. In the interviews, I collected information on villagers' social and economic background, their practices in relation to their forests, and their views about forests and the environment.

Finally, I use evidence from 244 interviews that I carried out in 1993 in 46 villages. Of these villages, 38 have forest councils. The councils have adopted varying monitoring and enforcement practices. In the remaining 8 villages, there are no forest councils, and villagers' relationship to environmental enforcement is restricted to infrequent interactions with forest department guards who are only infrequently seen in the forests that villagers use. Villagers prefer not to see a forest department guard, but even more do they prefer that the guard not see them! All 244 observations of people's beliefs about the environment, forests, and trees, and their involvement in practices of environmental government date from 1993.

Historical changes in environmental subjectivities

Hukam Singh's personal example illustrates what has obviously been a much larger and more comprehensive process of social environmental change in Kumaon. Recall from the introduction to the book the recalcitrant acts of rebellion that hillmen performed at the beginning of the century. Unwilling, often because they were unable, to accede to the demands made by the colonial forest department, Kumaonis ignored new forestry rules that limited their activities in forests that the state claimed as its own. They also protested more actively. They grazed their animals, cut trees, and more obstreperously, set fires in forests that had been classified as reserved. Forest department officials found it next to impossible to enforce the restrictive rules in the areas they had tried to turn into forests.

Law enforcement was especially difficult because of the unwillingness of villagers to cooperate with government officials. The department staff was small, the area it sought to police was immense, and the supervisory burden was immense. Decrying the lopping for fodder by villagers and the difficulty of apprehending those who cut fodder, E. C. Allen, the Deputy Commissioner of Garhwal wrote to the Commissioner of Kumaur, "Such loppings are seldom detected at once and the offenders are still more seldom caught red-handed; the patrol with his present enormous beat being probably 10 miles away at the time... it is very difficult to bring an offence, perhaps discovered a week or more after its occurrence, home to any particular village much less individual" (1904: 9). Demarcation of the forest boundaries, prevention of fires, and implementation of working plans meant an impossibly large work load for forest department guards and employees even in the absence of villager protests. When the number of protests was high and villagers set fires often, the normal tasks of foresters could become impossible to perform. One forest department officials was told by the Deputy Commissioner of Kumaon that "the present intensive management of the forest department cannot continue without importation into Kumaon of regular police..." (Turner 1924).

After the stricter controls of 1893, the Settlement Officer, J. E. Goudge, wrote about how difficult it was to detect offenders in instances of firing:

> "In the vast area of forests under protection by the district authorities the difficulty of preventing fires and of punishing offenders who wilfully fire for grazing is due to the expense of any system of fire protection. Where forests are unprotected by firelines, and there is no special patrol agency during the dangerous season, it is next to impossible to find out who the offenders are and to determine whether the fire is caused by negligence, accident, or intention... The difficulty of making villagers collectively responsible for all fires occurring within their limits in unsurrnountable, because the same belt of forest will

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touch a large number of villages, and how could we make them all responsible in any

effective manner? (1901:10).

In a similar vein, the Forest Administration Report of the United Province in 1923 said about a fire in the

valley of the Pindar river:

During the year, the inhabitants of the Pindar valley showed their appreciation of the

leniency granted by Government after the 1921 fire outbreak when a number of fire cases

were dropped, by burning some of the fire protected areas which had escaped in 1921 ...

These fires are known to be due to direct incitement by the non-cooperating fraternity"

(Anon 1924:266).

The sarcasm is clumsily wielded. But its import is obvious all the same. Villagers could not be trusted

because ungratefulness was their response to leniency. Other annual reports of the forest department from

around this period provide similar claims about the lack of cooperation from villagers, about the

irresponsibility of villagers, and about the inadvisability of any attempt to cooperate with them over

protectionist goals. At the same time, government officials also underlined the importance of cooperation

from villagers. Percy Wyndham, asked to assess the impact of forest settlements, said in 1916, "it must be

remembered that in the tracts administration is largely dependent on the goodwill of the people and the

personal influence of the officials [on the people]." (Cited in Baumann, 1995: 84).

Other reports reveal continuing difficulties in apprehending those who broke government rules.

Names of people who set fees could not be identified. Even more unfortunately from the forest

department's point of view, it were not only the common hill residents but also the heads of villages who

were unreliable. Village heads at this time, *padhans,* were paid by the government, and were often expected

to carry out the work of revenue collection. Their defiance, therefore, was even more a cause for alarm. As

early as 1904, the Deputy Commissioner of Almora, C. A. Sherring remarked on the heavy work burden

that patwaris carried out for the forest department and argued for increasing their number substantially since the padhans were unreliable. He wrote to the Commissioner,

> It is certain that very little assistance can be expected from the padhans, who are in my experience only too often the leaders of the village in the commission of offences and in the shielding of offenders.... If the control of open civil forests is to be anything more than nominal we really must have the full complement of patwaris... A large forest staff of foresters and guards is also required (1904:2).

The Deputy Conservator of forests similarly complained that villagers refused to reveal the culprit in investigations concerning forest-related offences. According to him,

> "[i]t is far too common an occurrence for wholesale damage to be done by some particular village... often nothing approaching the proof required for conviction can be obtained... there is too much of this popular form of wanton destruction, the whole village subsequently combining to screen the offenders" (Burke 1911:44, cited in Shrivastava 1996:185).

These reports and complaints by colonial officials in Kumaon make clear the enormous difficulties the forest department faced in realizing its ambition to control villagers' action on land made into forest. The collective actions of villagers in setting fees, lopping trees, and their unwillingness to turn informants against their "fraternity" is a clear indication of strands of solidarity that connected them in their work against the colonial state. With unreliable villagers, limited resources, and few trained staff, it is not surprising that the forest department found it hard to rely only on those processes of forest-making that it had initiated and implemented in other parts of India - processes that relied mainly on exclusion of people, demarcation of landscapes, creation of new restrictions, and fines and imprisonment.[11]

The response of the state, in the shape of an agreement with Kumaon residents to create community-managed forests, was an uneasy collaboration between the revenue department, foresters, and

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villagers that I traced in chapters three to five. This form of regulatory rule has also gone together with shifts in how Kumaon's villagers today regard forests, trees, and the environment. Colonial forest administrators of the 1900s would have found many of the present-day Kumaon villagers far more interested in forest protection than their counterparts in the early twentieth century. Some indication of the extent to which contemporary Kumaonis have changed in their beliefs, not just their actions, about forest regulation is evident from the results of a survey of forest council headmen I conducted in the early 1990s.

The introduction described the context of that survey. Table 6.1 summarizes its results. The council headmen in Kumaon have come to occupy an intermediate place in the regulatory apparatus for the environment. On the one hand, they are the instrument of environment-related regulatory authority. At the same time, they represent villagers' interests in the forests, the most visible face of environment in Kumaon.

[Table 6.1 here]

The aggregate numbers in the survey underscore the inferences in the introduction. The greatest proportion of responses from the headmen concern the inadequate enforcement support they get from forest and revenue department officials. The government of forests at the level of the community is hampered by the unwillingness or the inability of state officials to buttress attempts by villagers to prevent rule infractions. A rough calculation shows that nearly two thirds of the total responses are directly related to headmen's concerns about the importance of and difficulties in enforcing regulatory rule (rows 1, 2, 5, 6, 7, and part of 9). Admittedly, the council headmen are the persons most likely to be concerned about forests and the environment among all the residents of Kumaon. But the point to note is that even when presented with an opportunity to freely voice the problems that they face and potential ways of addressing them, only a very small proportion of the responses from the headmen, less than 4 percent, are complaints about the low

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levels of remuneration that they receive (row 8). The headmen evidently put their own interest aside as they tried to grapple with the question of what problems characterized government by communities.

The figures in the table are no more than an abstract, numerical summation of many specific statements that the survey also elicited. The plethora of these specific statements calls for a tabular representation. But the sentiments behind the numbers in the table come from actual words. "I have tries give up being the head of our committee so many times. But even those who don't agree with me don't want me to leave," observed one of the headmen. Another said, "I have given years of my life patrolling forest. Yes. There were days when my own fields had a ripening crop [and needed a watchman]. I am losing my eyesight from straining to look in the dark of the jungle. And my knees can no longer support steps as I walk in the forest. But I keep going because I worry that the forest will no longer survive if I retired." One's own life in exchange for the life of the forest! Sukh Mohan's views about the making an maintaining of his village's forests are centered around his personal contribution, but his commitment to forest protection also matches objectives that the forest department started pursuing more than a hundred and fifty years ago. Puran Ram gave a reason for his conservationist practice. "We suffered a lot from having too many trees in our forest. Our women didn't have even enough wood to cook. But after we banned cattle and goats from the forest, it [the forest] has come back. Now we don't even have to keep full time guard. Villagers are becoming more aware."

Puran Ram and Hukam Singh both thus expressed a hope for a connection between their effort conserve the forest and the actions of other villagers. This common hope that I encountered in other conversations as well is an important indication of the relationship between actions and beliefs. It signals that in many of the villages, a new form of government frames and enacts reasonable guidelines for villagers' practices in the expectation that over time practice will lead to new beliefs. Villagers subject regulations crafted and enacted by the councils will come to see that the stinting prompted by regulations in their own interest. The forest belongs to the collective defined as the village, and when an individual

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harvests resources illegally, the action adversely affects all members of the collective. The examples of both Puran Ram and Hukam Singh, as indeed those of more than two thirds of the headmen in my survey, suggests that the expectation is not just a fantasy.

The differences in the voice and tenor of archival and more recent statements I collected offer a basis for making the judgment that the practices and views of many of Kumaon's residents about their forests have changed substantially. These changes have occurred after the passage of the Forest Council Rules in 1931. Partly responsible for these changes is the idea that Kumaonis can consider the region's forests their own once again. Although I do not report statements and actions of the same individual persons who lived in the early 1900s and whom I met in the 1980s and 1990s, they belong to the same social groups, although they are involved in different environmental practices (see below).[12] But within this shift in ownership by the collective, there are many variations. Not all villagers have come to see Kumaon's forests as their own. Variations in their beliefs about forests and in their practices around regulation of forest protection are not systematically connected to the benefits they receive from forests, however. Benefits from forests are formally equitably allocated, and this equitable allocation is reflected in the actual harvests by most villagers. But even within villages there is significant variation in how villagers see forests and or try to protect them.

It may be argued that appropriations by the colonial state in the early twentieth century drove a wedge between forests and villagers. Subsequently, the rules that led to community-owned and managed forests reaffirmed the propriety and legality of villagers' possession of forests. They recognized that villagers have a stake in what happens to forests and expressed some faith in their ability to take reasonable measures for protection, especially so with guidance. These institutional changes go together with changes in villagers' actions and beliefs about forests. One way to explain this change in villagers' actions and beliefs is to suggest that the observed shift in policy and the subsequent changes in beliefs and actions are unrelated. They are sufficiently separated in time that a causal connection can only tenuously be drawn.

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This is frankly unsatisfactory. At best it is a strategy of denial. It is also incapable of explaining the evidence that follows in the next section. A more careful argument would at least suggest that shifts in villagers' actions and statements in the later part of the twentieth century are no more than a response to changes in interests that the new policy naturally generated. The transfer of large areas of land to villagers in the form of community forests has created in them a greater concern to protect the forests, and to care for vegetation that they control.

This is an important part of the explanation. It usefully suggests that how social groups perceive their interests is significantly dependent on policy and government instead of being constant and immutable. But it is still inadequate in two ways. It collapses the distinction between interests of a group as perceived by an observer-analyst and the actions and beliefs of members of that group. In this explanation, interests, actions, and beliefs are of a piece, and any changes in them take place all at once. This assertion of an identity among various aspects of what makes a subject, and the simultaneity of change in all of these aspects is at best a difficult proposition to swallow. The difficulty of this proposition can in part be illustrated by one's own experience. We often arrive at a new sense of what is in our interests but continue to hold contradictory beliefs and act in ways that match more the historical sense of our interests. Many of the headmen I interviewed in Kumaon, or who were a part of my survey, tried to enforce rules that they knew were not in the interests of their own households. Their wives and children were often apprehended by the forest guards they appointed. Yet, they defended their actions in the name of the collective need to protect forests, and expressed the hope that over time villagers would come around to their view and change their practices in forests. As the next section makes clear their hopes were not in vain. Many villagers proved susceptible to these shifting strategies of government.

A second problem with the explanation that headmen care for forests because they have the rights to manage them is that it confuses the private interests and actions of the headmen with their public office and interests. The forests that have been transferred to village communities are managed by collective

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bodies of anywhere between 20 to 200 villagers who are represented by the forest councils and their headmen (Agrawal 2000). To attribute a collective interest to these bodies and to explain what the headmen of these councils say in terms of that interest is to elide all distinctions between specific, individual actors and the organizations they lead. A more intimate and careful exploration of other actors in Kumaon who are involved with the local use and protection of forests is necessary. Only then can be begin to make sense of the changes indicated by the survey of headmen summarized in table 5.1, and the information below about beliefs of Kumaonis about their forested environments.

Recent changes in environmental subjects

When I went to Kumaon and Garhwal in 1989, I traveled there as a student interested in eavirorunental institutions and their effects on the actions and beliefs of their members. My main interest was to show that environmental institutions - the forest councils - had a significant mediating impact on the condition of forests (Agrawal and Yadama 1997). Not all villages had created local institutions to govern their forests. Of the thirteen that I visited, only six had forest councils. The ones that did, varied in the means they used to protect and guard forests. Since my interest was primarily to understand institutional effects on forests, I focused on gathering archival data from records created and maintained locally by village councils (Agrawal 1994).

My conversations with village residents were aimed chiefly to gain a sense of their views about forests and the benefits they provided to residents. I found that villagers who had forest councils were typically more interested in forest protection. They tried to defend their forests against harvesting pressures from other residents within the same village, but especially from those who did not live in their village. They also stated clear justifications of the need to protect forests, even if their efforts were not always successful. In one village near the border between Almora and Nainital districts, a villager used the heavy monsoons to make the point.

"Do you see this rain? Do you see the crops in the fields? The rain can destroy the standing crop. But even if the weather were good, thieves can destroy the crop if there are no guards. It is the same with the forest. You plant a shrub, you give it water, you take care of it. But if you don't protect it, cattle can eat it. The forest is for us, but we have to take care of it, if we want it to be there for us."[13]

Another villager pointed to the difficulties of enforcement in a council meeting I attended by saying,

"Until we get maps, legal recognition, and marked boundaries (of the local forest), council cannot work properly. People from Dhar (a neighboring village) tell us that the forest is theirs. We cannot enter it. So we can guard part of the forest, and we don't know which part (to guard). Since 1984 when the panchayat was formed, we have been requesting the papers that show the proper limits so we can manage properly, protect our forest. But what can one do if the government does not even provide us the necessary papers."[14]

A second villager in the same meeting added, "Mister, this is Kaljug.[55] No one listens to authority. So we must get support from the forest officers and revenue officers to make sure that no one just chops down whatever he wants."

On the other hand, residents of the seven villages that did not have forest councils scarcely attempted any environmental regulation - no doubt because the forests around their village were owned and managed by either the forest department or the revenue department. Villagers perceived regulation as the responsibility of the state, and as a constraint on their actions in the forest – to gather firewood, graze animals, harvest trees and non-timber forest produce, and collect fodder. There were thus clear differences in the actions and statements of villagers who had created forest councils and brought local forests under their control as compared to villagers who relied on government forests to satisfy their requirements for fodder and firewood.

During my return visits in 1993, I realized that four of the seven villages (Pokhri, Tangnua, Toli, and Nanauli) without forest councils in 1989 had formed their own councils in the intervening years. They had drafted constitutions modeled on others in the region. Under the provisions of the Forest Council Rules, they had brought under their own control the local forests that had been managed by departments of revenue or forests. A series of resolutions created new rules that became the basis to govern forests. These resolutions prescribed how (and how often) to hold meetings, elect new officials, allocate fodder and grazing benefits, levels of payments by villagers in exchange for the right to use forests, monitor forests conditions and use, and sanction rale breakers. The exposure to these new institutional constraints, council members hoped, would lead villagers to more conservationist practices in the forest.

In these four villages, I had talked with twenty residents in 1989. At that time, their statements did not suggest they felt any pressing need for conserving the environment. Little distinguished their actions and views from those of the fifteen residents with whom I had talked in the other three villages (Darman, Gogta, and Barora). I had asked my thirty-five respondents three questions about their views on the environment. Table 6.2 below reports the responses of the villagers to these three question in summary form.[16]

I. Do you agree with the statement, "Forests should be protected," Please indicate the extent of your agreement by using any number between 1 and 5 where 1 indicates a low degree of agreement, and 5 indicates strong agreement.

II. If forests are to be protected, should they be protected for 1) economic reasons or for 2) other non-economic benefits they provide including cleaner air, soil conservation, and water retention.

III. Do you agree with the statement, "To protect forests, my family and I are willing to reduce our consumption of resources from the local forests." Please indicate the extent of

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your agreement by using any number between 1 and 5 where 1 indicates a low degree of agreement, and 5 indicates strong agreement.

[Table 6.2 here]

The first question tries to elicit villagers' responses to a very general statement about forest protection. The second question examines the extent to which villagers see forests as an environmental vs primarily an economic resource. And, the third question inquires into the willingness of villagers to experience some constraints so as to meet the objective of forest conservation. The figures in the table indicate that the differences among the residents of the seven villages are relatively minor. All villagers expressed limited agreement with the idea that forests should be protected. Their reasons were mainly economic. And they were relatively unwilling to place any constraints on the consumption of their families to ensure forest conservation.

Although there is little basis to differentiate among the responses of both sets of villagers in 1989, changes became evident in 1993 when I talked again with the same villagers. In the case of the four villages that had created forest councils, the differences were obvious both in their actions and in what they said about forests and the environment. Some of them had come to participate actively in their new forest councils. They attended council meetings. A few had limited their use of the village forest. Some acted as guards. They even reported on neighbors who had broken the council's rules. The similarities in their changed behavior, and the changed behavior of forest council headmen that I briefly described above (and also in the introduction) are quite striking. Those who had come to have a forest council in their villages, or perhaps more accurately those whose councils had come to have them, had begun to view their and others' actions in forests differently.

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Of course, there were others in these four villages who had not changed much. Those with whom I talked were especially likely to continue to say and do similar things that they said and did in 1989 if they had not participated in any way in the formation of the forest councils, or in the suite of strategies forest councils used to try to protect forests. If they had become involved in the efforts to create a council or protect the forest that came to be managed by the council, they were far more likely to suggest that the forest requires protection. They were also more likely to say that they were willing to be personally invested in protection. This is certainly not to claim that participation in council activities is a magic bullet that necessarily leads to transformation of subject positions. And yet, the testimony of these twenty residents, by no means a representative sample in a statistical sense, constitutes a valuable window on the changing beliefs of those who come to be involved in practices of environmental regulation (see table 6.3)

[Table 6.3 here]

The first two rows of the table makes clear that on the average, residents in the four villages expressed greater agreement with the idea of forest protection, and a greater willingness to reduce their own consumption of forest products from local forests when compared to their expressed sentiments in 1989. Of the twenty individuals, 13 had participated in monitoring or enforcement of forest council rules in some form and the shifts in their environmental beliefs turned to be stronger than those who did not get involved in any forest council initiated actions.

The information from interviews in these four villages is especially useful in comparison to the fifteen interviews in, the three villages where no councils had emerged in the intervening years. In these other three villages, where I also conducted a second round of interview in 1993, there had been little change in the environment-related practices of local residents. They still regarded, and often rightly so, the presence of government guards to be a veritable curse. Many of them, usually after looking around to make

sure no officials were present, roundly abused the forest department. Indeed, this is a practice that villagers in other parts of rural India may also find a terrifying pleasure. But even when my interviewees agreed that it was necessary to protect trees because of the many benefits trees provide, they were unwilling to do anything themselves toward such a goal. For the most part, their beliefs about forests and the environment had also changed little (see table 6.3 above). The last two rows of the table suggest that there have been only very minor shifts in villagers' perceptions about the need to protect forests and in their willingness to work toward that goal at any cost to themselves.

Variations in environmental subjectivities: The place of regulation

The practices and perceptions associated with the emergence of forest councils in Kumaon contain many variations. The preceding discussion contains some important clues as to the sources of these variations. But the information in tables 6.2 and 6.3 is highly aggregated, and does not have sufficient texture to provide much insight into how practices related to environmental regulations affect the way villagers think about their actions in forests. Further, it is not just the historical dimension of the production of different forms of environmental subjects that needs attention, it is also important to explore the contemporary differences in the making of environmental subjects.

To examine how and to what extent regulatory practices relate to environmental imaginations of Kumaonis, I report on the responses of more than 200 persons I met and interviewed in 1993.[17] Since the number of people I interviewed is much larger in 1993 compared to 1989, it is possible to examine how different forms of monitoring and enforcement relate to my respondents' beliefs about the environment. Recall from the previous chapter that the forest councils in Kumaon use five different forms of monitoring and enforcement in their forests (see figure 5.1 in the previous chapter). Two of these fall under mutual monitoring. In one, each village resident can monitor all the others and report illegal actions in the forest to the council. In the second, households are assigned monitoring duties in turn. Under mutual monitoring, there is little specialization in the task of monitoring, and none of the monitors are paid for the services they

perform. Three forms of third party monitoring exist and in all of them there is a specialized monitor who is appointed for specific durations and is paid for the work performed. Forms of third party monitoring are distinguished by the mode of payment to the guard: direct payments by households in cash or kind, salary payments by the council but from funds raised locally, and salary payments from funds made available through commercial sales of forest products or transfers received from the state. Table 6.4 summarizes the responses for different forms of monitoring, and shows the extent to which participation in monitoring and enforcement are connected to respondents' beliefs about forests and the environment.

[Table 6.4 here]

Table 6.4 provides information on the same three questions as did tables 6.2 and 6.3, but probes deeper. Instead of simply reporting the averages response of all interviewed individuals, the table presents the answers of respondents by separating them out according to the monitoring regulations adopted by forest councils, and their involvement in monitoring practices. Thus the table relates the participation in particular forms of environmental enforcement to villagers' reported beliefs about the environment. To interpret the table, consider row 1. It provides information on a total often respondents, only eight of whom participated in mutual monitoring (all villagers monitor all other villagers). The answers of these respondents to the three questions above are arranged according to whether they participated or abstained in mutual monitoring. Rows 1-5 follow this pattern. The last row is for villages that did not have their own council-governed forest, and therefore their residents had no opportunity to participate in environmental monitoring.

It is striking that for all forms of monitoring, respondents expressed a greater need to protect forests if they participated in monitoring than if they did not. But the difference between participants and nonparticipants in more striking as enforcement and monitoring become more specialized and when

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villagers participate directly in enforcement. So, when we move to rows 2, 3, and 4, where monitoring is a specialized role for assigned households or for an assigned individual who acts as guard and whom villagers pay from their own funds, then participation in monitoring is positively related to both a greater appreciation of the need to protect the environment and a greater willingness to undergo some limits on personal consumption to protect the environment. The table thus suggests that the difference between those who participate in monitoring and those who do not is greatest in those forms of monitoring where there is role specialization and villagers directly invest labor or money in monitoring.

This inference is in line with the expectation that villagers' beliefs about the environment are likely to be in accord with their practices. The table shows that the choice of monitoring by a forest council does not affect all villagers in the same manner. It is those villagers who take direct part in monitoring activities or in funding monitoring who express the greater interest in forest protection. These villagers are also far more invested than nonparticipants in seeing forest protection as an important goal even if no economic benefits are expected. The responses of nonparticipants in each type of monitoring are close to those of villagers who do not have a forest council in their village at all.

Further, it is in villages where there is the greatest participation in monitoring and enforcement that councils have the greater ability to raise resources to protect forests. Both in those villages where the most basic form of mutual monitoring is in force, and in villages where resources for monitoring are primarily secured from outside sources, the ability of the council to gain participation is limited. As table 6.4 shows, forest councils represented in row 5 secure the lowest levels of participation from their villagers. It is also in villages represented in rows 2, 3, and 4 that residents express the greatest desire to protect forests and undergo some personal hardship to accomplish forest protection.

Note that I am not using the evidence in table 6.4 to theorize a causal-sequential relationship between participation in monitoring and the development of environmental subjectivities. Such an inference would only be possible by interviewing the same respondents before and after their participation in

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enforcement The information in table 6.3 comes closest to such before and after evidence. The figures in table 6.4 only show variations in subjectivities across different forms of monitoring, and participation in monitoring. It would be reasonable to suggest that it is differences in beliefs that prompts my respondents to participate in monitoring rather than participation that leads them to different beliefs. It is when we consider together the evidence in table 6.3 and 6.4 that it becomes at all justifiable to suggest that there are variations in the environmental sensibilities of Kumaon residents that are systematically related to their participation in environmental enforcement, and that these differences stem at least to some extent from such participation. But in any case, even table 6.4 shows important differences in how villagers in Kumaon think of their forests, and of their relationship with the environment

The importance of participation in different monitoring mechanisms becomes evident also in comparison to social identity categories such as gender and caste. Consider the information in table 6.5. It shows the difference between, environment-related beliefs of interviewed villagers by their gender (women vs. men), caste (high vs. low), and participation in different forms of monitoring. There is scarcely any difference between men and women or higher and lower caste respondents. They seem equally (un)likely to want to protect forests, or reduce their own household's consumption to conserve forests. On the other hand, those who are involved in some form of monitoring and environmental enforcement are more likely to agree with the need to protect forests, to say that forests need to be protected for environmental rather than economic reasons, and to accept some reduction in their own use so as to ensure forest protection.

[Table 6.5 here]

It is reasonable to conclude that when villagers participate in monitoring and enforcement they come to realize at a personal level the social costs generated by those who do not adhere to the practices and expectations that have been collectively chosen. They confront more directly those who act illegally in

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the forest, and then must decide whether to ignore such confrontations, choose mote carefully to enforce what they had agreed collectively to do, or join others who are violating socially constructed norms and expectations. Opting for the first two options is also to opt for what I am nominating an environmental subjectivity. Similarly, those who in their actions violate collectively generated guidelines to regulate practice can often continue to do so when it is individually expedient and there is no mechanism to regulate them. But when enforcement is commonplace, they are more often confronted with the knowledge of their own deviations from what they had agreed to do. When their actions are met with direct challenges that they count as appropriately advanced, it becomes far more difficult to continue to act and believe in a divergent manner. It is in examining practices of villagers closely that it thus becomes possible to trace the links between politics, institutional rales, and subject formation.

The effects of more widespread participation are also visible in the resources that councils are able to raise for protecting forests. Consider table 6.6. It presents the per household contributions that forest councils are able to use in a year.

[Table €.6 here]

The form of monitoring that leads to the highest levels of contributions is the where villagers pay the guard directly. Mutual monitoring produces the lowest levels of contributions. This should not surprise because councils resorting to this form of forest protection have been unable to gain the agreement of their members to spend any monetary or material resources on monitoring. The "contributions" mentioned under option 5 (third party monitoring where the guard is paid from external funds) are misleading because these are, strictly speaking, the resources available for monitoring from all sources, not just the contributions from village households toward monitoring.

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Clearly, engagement with the regulatory practices of monitoring and enforcement is positively connected both to the existence of environmental orientations among Kumaon's residents, and higher monetary and material contribution toward enforcement per household. The inference important for policy is that certain forms of environmental enforcement are simultaneously associated with higher levels of involvement by villagers and the generation of environmental subjectivities.

Intimate Government

...power had to be able to gain access to the bodies of individuals, to their acts, attitudes, and modes of everyday behavior... But at the same time, these new techniques of power needed to grapple with the phenomena of population, in short to undertake the administration, control, and direction of the accumulation of men..."

— Michel Foucault, 1977.

A useful metaphor that helps to think about the mechanisms that underpin the production of various forms of subjectivity in Kumaon is what Latour (1987) has called "action at a distance" and following him, Miller and Rose have termed "government at a distance" (1990). Latour answers how it might be that intentional causes operate at a distance to effect particular kinds of actions in places and by people that are not directly controlled. Examining the work of scientists, Gallon and Latour (1981), and Latour (1986) describe the affiliations and networks that help establish links between calculations at one place and actions in another. The crucial element in their argument is the "construction of allied interests through persuasion, intrigue, calculation, or rhetoric" (Miller and Rose 1990:10). It is not that any one of the actors involved appeals to already existing common interests. Rather, one set of actors, by deploying a combination of resources, convinces another group that the goals and problems of the two are linked and can be addressed by using joint strategies.[18]

In Kumaon, two crucial types of resources that the forest and revenue departments combined and deployed in the 1920s-30s were information and forests. Information about the adverse effects of central government of forests in Kumaon during 1910s and about already existing government of forests by communities in the region prepared the grounds for the argument that regulatory control over forests could be decentralized to positive effect. The experience of decentralized government of forests in Burma and Madras and the investigation of these experiences first hand by departmental officials in the 1920s helped produce the design of Forest Councils Rules of 1931. The gradual return of the very same forested lands that villagers had used until the 1890s (and which the Kumaon forest department appropriated between 1893 and 1916) provided the material basis to forge the idea of a common interest in forest protection between village communities in Kumaon and the forest department. Forest councils became the institutional means to pursue this common interest over long geographical distances.

In the formulation, "action at a distance," or "government at a distance," it is geographical distance that action and government overcome. In an important sense, these formulations are about the uncoupling of geographical distance from social and political distance that forms of modern government accomplish. By clarifying and specifying the relationship between particular practices in forested spaces, and the sanctions that would follow those particular practices, government encourages new kinds of actions among those who are to be governed. Action at a distance thus overcomes the effects of physical separation by creating regulations known to those located at a distance. Officials who oversee the translation of these regulations onto a social ground succeed in their charge because of the presence of a desire among environmental subjects to follow new pathways of practice.

One can well argue that government of environment in Kumaon conformed to this logic of action at a distance in its earlier phases - before the institution of community-based government. However, in this earlier phase, the effort to induce a change in the actions of villagers failed because of the inability of government to constitute a vision of joint interests in forests with which Kumaonis could identify. The

forest councils created the potential for villagers and state officials to come together in a new form of government through which a compelling vision of joint interests could be manufactured. Not all villagers created forest councils however and even in villagers where forest councils came into being, not all were equally successful. An additional development was necessary to make government at a distance symbolized by forest councils succeed. Once Kumaon's villagers had crafted highly dispersed centers of environmental authority for and by themselves, processes of government at a distance came simultaneously to be supplemented by what might be called "intimate government."[19]

In contrast to government at a distance that presupposes centers of calculation, constant overseeing, continuous collection of information, unceasing crunching of numbers, and imposition of intellectual dominance through expertise (Miller and Rose 1990:9-10), intimate government in Kumaon works by dispersing rule and scattering involvement in government more widely. In consequence, there are numerous locations of decision making in each of which there are actors who work in different ways and to different degrees to protect forests. Homogeneity across these locations is difficult to accomplish for a variety of reasons, among them, differences in levels of migration, histories of cooperation, social stratification, occupational distribution, resource endowments and so forth.. Monitoring of villagers' actions is patchy and unpredictable. Councils collect information but it is available only locally, seldom processed and presented in a way that may be useful for policy elsewhere. Practice and sociality rather than expertise form the basis of intimate government to regulate villagers' actions. The ability of regulation to make itself felt in the realm of everyday practice is dependent upon channeling existing flows of power within village communities toward new ends related to the environment. The joint production of interests is based on multiple, daily interactions within the community. As community becomes the referential locus of environmental actions, it comes also to be the arena where intimate government unfolds.

Intimate government shapes practice, and helps to knit together individuals in villages, their leaders, state officials stationed in rural administrative centers, and politicians interested in classifying

existing ecological practices. Intimate government is about the creation and deployment of links of influence between a group of decision-makers within the village and the common villagers whose practices these decision-makers seek to shape. Institutional changes in the exercise of power are the instruments through which these links between decision makers and the practices of villagers are made real. When successful, it is closely tied to processes of environmental enforcement as the evidence in this chapter suggests. Variation in institutional forms of enforcement connects to the participation that villagers are willing to provide and forest council decision-makers try to elicit. Specialization of enforcement roles and direct participation in enforcement seem to create the greatest willingness on the part of villagers to contribute to environmental enforcement as well as to express an interest in environmental protection as tables 6.2 to 6.5 make clear.

But not all forms of institutional enforcement are equally available to all forest councils as chapter five discussed. If the number of households in a village is small and the households are relatively poor, the ability of villagers to contribute toward the payment of a salary gets limited. If a village is highly stratified or if there are many disagreements among the villagers, they are also less able to enact environmental enforcement sustainably. These variations in village-level processes influence the extent to which different village communities are able successfully to take advantage of the state's willingness to disperse rule and decentralize control over forests.

Intimate government is also about the ways villagers themselves try to shape their conduct in forests. Government at a distance works in Kumaon only in conjunction with intimate government – because villagers get involved in regulatory practices that they see as important to their own long-term interests. With the redefinition of interests that exposure to scarcities and regulations make explicit, a calculation of the costs and benefits of illegal harvests from their own forests vs. those from government forests, or other communities" forests has now come to pervade the environmental practices of households. Instead simply of harvesting the fodder or the firewood or the timber they need from forests near their

homes, Kumaon's residents now reckon carefully before deciding where, how, how much, and when to harvest what they need. Experiences of scarcity make such reckoning unavoidable.

At the same time, it is not simply constraint that new forms of community-based government embody.[20] If regulations necessitate careful estimations of availability and scarcity, they also go together with possibilities for other kinds of corrective action against decision makers. If villagers do not favor how their forest is being governed by their councils, they can attempt to change the regulations adopted by their council members, or even change who sits in the councils. Channels that affect what happens in forests allow influence to flow in multiple directions rather than only one way. And the everyday regulation of what happens in forests is influenced far more directly by villagers' links with officials in their forest councils than with state officials in the forest and revenue departments.

Although intimate government in Kumaon's communities has helped efforts by the state to govern at a distance, it has done so in ways that local residents believe to be defined locally. Villagers may protect forests and control illegal practices of harvesting and extraction. They may also use the language of regulation and many of the same idioms of protection that state officials deploy. But they do so in pursuit of goals that they imagine as their own, and in which they often construct state officials as inefficient, unsupportive, or corrupt. This imagined autonomy, stemming out of precisely the practices of conservation encouraged by state officials, is crucial to the success of decentralized protection in no small measure.

My focus on how variations in practices of participation relate to variations in subjectivities tries to move away from abstract, static categories of social classification based on caste, gender, or territorial location. There are too many variations in the nature of regulatory practices within villages, among men and women, and in upper and lower castes that render such classifications only partially useful at best. Terms such as "cultural forms" and "symbolic systems, central to Paul Willis's penetrating study of the reproduction of the difference between capitalists and workers, seem equally distant from the process of subject-making. Willis is concerned with similar questions about the "construction of subjectivities and the

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confirmation of identity" (1981:173). But it is in the examination of the actual practices of schooling among "working class kids," rather than in its abstract cultural-Marxist theoretical structure that his study finds its most compelling insights.

The previous section, in focusing on the aggregate environmental responses of Kumaon's residents, suggested that using social categories such as gender and caste to try to understand subject formation serves precisely to *obscure* the processes through which subjects are made. These categories are useful only as proxies, hinting at a small fraction of the interactions that go into the making of environmental subjects. A shift away from categorical relations and toward villagers' involvement in practices of socio-ecological regulation helps to uncover the frame that holds together the three conceptual units of analysis in this book: politics, institutions, and subjectivities.[21] The focus on practice shows that these seemingly different concepts are linked together in the everyday lives of Kumaon's villagers. It is in the investigation of the texture of social practice, simplified analytically by a focus on forms of monitoring and enforcement, that it becomes possible to see how environmental politics is lived by those subject to it.

Cultivating Environmental Subjects

The argument that there is a relationship between government and subject formation, between policy and subjectivity (Foucault 1982: 212), has come to be well rehearsed in the wake of Foucault's original insights (Cruikshank 1994, Hannah 2000, Mitchell 2000, Rose 1991, Tully 1988). This relationship can be traced especially by examining technologies of power that form subjects and encourage them to define themselves in particular ways, and technologies of the self that individuals apply to themselves to transform their own conditions (Miller 1993: xiii-xiv). Both these technologies are united in the idea of government based on knowledge, and are visible in the processes that unfolded in the making of environmental subjects in Kumaon. My discussion of these processes shows that the relationship between

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government and subject formation is one of mutuality and dependency rather than one of agonism and autonomy.

This chapter has chosen not to engage the friction and heat that discussions about Foucault's ethics often generate. Although it is surely important to examine whether Foucault's concept of power and the subject lead to an inability to criticize social phenomena,[22] what is more interesting for my purposes is the extent to which some of Foucault's later ideas about government and its relationship to subject formation can be investigated on an evidentiary basis in the context of variations in environmental subjecthood in Kumaon. Foucault is often taken as making provocative conceptual innovations that cannot be deployed in relation to evidence generated from a social ground. Similarly, much political-philosophical debate on subject formation proceeds as if subjects emerge and exist independently of a historical, political, and social ground. It thus constantly runs the risk of becoming irrelevant to actual processes of subject formation. This chapter has undertaken both to examine Foucault's ideas about subject formation against a social and political context, and to think about subject formation concretely rather than abstractly. Although I have in the process simplified the conceptual architecture of philosophical discussions about the subject, I have done so with a view to focusing carefully on a dilemma that divides much social-theoretical discussion about the subject. More concretely, this chapter has tried to show what differentiates various kinds of subjects by viewing practice as the crucial link between power and imagination. It has examined how close attention to practice can permit the joint examination of seemingly different, abstract constructs such as politics, institutions, and subjectivities.

In this context, Butler's (1997: 10) caution against using "subject" interchangeably with "person" or "individual" needs to be taken seriously. Her caution is most useful for the recognition that the relations of power within which subjects are formed are not necessarily the ones they enact upon formation. The temporal sequentiality she introduces in the relationship between subjects and power helps underline the fact that the conditions of origins of a subject need have no more than a tenuous impact upon the continuing

existence of and actions by the same subject.[23] In Kumaon, the production of environmental subjects in the early twentieth century within the forest department, one might note, led to a cascading series of changes in institutional, political, and social domains connected to the idea of community. It is in this realm of the community that new environmental subjects have emerged.

The making of environmental subjects in Kumaon is thus part of a broader dynamic that new forms of government unleashed in Kumaon. In tracing the making of environmental subjects, the earlier sections in this chapter examined how variations in subjectivities relate to participatory practices around different forms of environmental monitoring and enforcement The question of subject formation, implicit in most studies of environmental government, is crucially connected to participation and practice. The practices of enforcement and regulation in which villagers have come to participate are about a more careful government of environment, and of their own actions and selves.

Thus the emergence of environmental subjects in Kumaon's villages has been as much a consequence of processes marked by government at a distance as it has been about intimate government, The state's efforts to govern at a distance made available to villagers the possibility of forming forest councils. The recognition of a mutual interest in forests that was brought into existence by the seeming concessions from the state led some village communities to constitute themselves as creators of forest councils. Simultaneously, willingness of the forest councils to initiate various processes of intimate government in their own communities has affected how successfully they could gain villagers' participation and the extent to which village residents would turn into environmental subjects.

Table 6.1: Complaints by Forest Council Headmen in Kumaon, 1993, (n=324)

Complaints mentioned by headmen (in order of frequency)	Number of headmen listing the complaint
1. Inadequate support from forest and revenue department officials	203 (.63)
2. Limited powers of council officials for environmental enforcement	185 (.57)
3. Insufficient resources in forests for the needs of village residents	141 (.44)
4. Low income of the council	130 (.40)
5. Inadequate demarcation of council-governed forests	61 (.19)
6. Villagers do not respect the authority of the council	42 (.13)
7. Land encroachment on council managed forests	36 (.11)
8. Headmen do not receive any remuneration	31 (.10)
9. Other (e.g. forest boundaries incorrectly mapped; court cases take a long time; residents from other villages break council rules; too much interference in the day-to-day working of the council, lack of information about forest council rules)	64 (.20)

Source: Council Headmen survey by author, 1993.
Notes: Figures in brackets indicate the proportion of headmen mentioning that complaint. Each headman could list up to three complaints.

Table 6.2
Environmental Beliefs of Villagers in Kumaon in 1989 (n=35)
(Village Names = Pokhri, Tangnua, Toli, Nanauli, Darman, Gogta, Barora)

	Agreement with the statement "Forests should be protected" (1 = low, 5 = high)	Reason to Protect Forest: (Economic or Environmental)	"Willingness to reduce family consumption of forest products" (1 = low, 5= high)
Residents of villages that had created forest councils (Pokhri, Tangnua, Toli Nanauli). (n=20)	2.35	Economic = 16 Environmental = 4	1.45
Residents of villages that had continued not to have a forest council (Darman, Gogta, Barora). (n=15)	2.47	Economic = 11 Environmental = 4	1.73

Table 6.3
Changing Beliefs of Kumaon's Villagers about the Environment: 1989-1993 (n=35)
(All Villages: Pokhri, Tangnua, Toli, Nanauli, Darman, Gogta, Barora)

	Agreement with the statement "Forests should be protected" (1 = low, 5 = high)	Reason to Protect Forest: (Economic or Environmental)	"Willingness to reduce family consumption of forest products" (1 = low, 5= high)
Residents of villages with forest councils in 1989 (Pokhri, Tangnua, Toli, and Nanauli)	2.35	Economic = 16 Environmental = 4	1.45
Residents of Pokhri, Tangnua, Toli, and Nanauli in 1993	3.65	Economic =12 Environmental = 8	3.00
Residents of villages without forest councils in 1989 (Darman, Gogta, Barora)	2.47	Economic = 11 Environmental = 4	1.73
Residents of Darman, Gogta, Barora in 1993	2.27	Economic = 12 Environmental = 3	1.87

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Table 6.4
Participatory Practices and Environmental Beliefs of Kumaon's Villagers, 1993
(n=244)

Monitoring strategy used by the forest council (figures in parentheses indicate number of councils)	Number of villagers (Figures in parentheses indicate number of respondents)	Agreement with the statement "Forests should be protected" (1 = low, 5 = high)	Reason to protect Forest: (Economic/ Environmental)	"Willingness to reduce family consumption of forest products" (1 = low, 5= high)
Mutual Monitoring				
1. All households monitor all the time (2)	Total = 10 Participant (8) Nonparticipant (2)	3.25 3.00	Eco=4/ Env=4 Eco=2/Env=0	2.63 2.00
2. Households assigned in rotation (3)	Total = 17 Participant (12) Nonparticipant (5)	4.25 2.80	Eco=4/Env=8 Eco=4/Env=1	3.42 2.40
Third Party Monitoring				
3. Households make direct payments to monitor (7)	Total = 39 Participant (32) Nonparticipant (7)	4.00 2.86	Eco=20/Env=12 Eco=6/Env=1	3.06 2.29
4. Monitor's salary paid from locally raised funds (18)	Total = 98 Participant (55) Nonparticipant (43)	3.98 2.81	Eco=36/env=19 Eco=38/Env=5	2.80 1.72
5. Monitor's salary paid from external funds (8)	Total = 41 Participant (9) Nonparticipant (32)	3.66 2.31	Eco=6/Env=3 Eco=30/Env=2	2.66 1.53
No forest council, no Monitoring (8) Total = 39		2.33	Eco=31/Env=8	1.74

Table 6.5
Gender, Caste, Participation, and their Relationship with Beliefs Concerning the Environment (n=205)

Monitoring strategy used by the forest council ==> Dimension of difference (Figures in parentheses indicate number of respondents)	Agreement with the statement "Forests should be protected" (1 = low, 5 = high)	Reason to protect Forest (Figures in parentheses indicate percentage of respondents)	"Willingness to reduce family consumption of forest products" (1 = low, 5= high)
Gender			
Women (95)	3.38	Economic = 69 (73) Environmental = 26 (27)	2.45
Men (110)	3.36	Economic = 80 (72) Environmental = 30 (28)	2.34
Caste			
High (106)	3.44	Economic = 78 (74) Environmental = 28 (26)	2.44
Low (99)	3.30	Economic = 71 (71) Environmental = 28 (29)	2.42
Participation			
Yes (116)	3.92	Economic = 70 (60) Environmental = 46 (40)	2.97
No (89)	2.66	Economic = 79 (89) Environmental = 10 (11)	1.74

Table 6.6

Contributions per Household Toward Enforcement by Forest Councils (n=205)

Form of monitoring	Number of respondents	Contributions per household (in rupees)
Mutual monitoring (each household monitors all others)	10 (2 villages)	9.33
Mutual monitoring (households assigned monitoring duty in rotation)	17 (3 villages)	11.44
Third party monitoring (households pay monitors directly)	39(7 villages)	36.61
Third party monitoring (salary paid out of locally raised funds)	98(18 villages)	19.98
Third party monitoring (salary paid out of external transfers)	41(8 villages)	16.22

Endnotes

1. For a recent careful study of the Chipko movement, its leadership, and the different strategies of the movement, see Rangan (2000). See Mawdsley (1998) for a thoughtful reflection on how Chipko has become an idiom in conservationist arguments.

2. I owe the expression "boundary work" to Donald Moore and Tania Li. Personal communication, 1998.

S.Anderson borrows the term from Seton-Watson, but gives it a bite all his own (Anderson 1991: 86).

4. It is precisely to this politics that Chakrabarfy (2000a), indebted no doubt in important ways to Chatterjee (1986,1993), draws attention when he seeks to "make visible the heterogeneous practices of seeing" that often go under the name of imagination. Chakrabarty careful traces out the differences among the many ways of imagining the nation by talking about peasants and a literate middle class.

5.The inattention to this politics in Anderson's account is signaled of course at the very beginning of his cultural analysis of nationalism. Alter defining the nation as "an imagined political community - and imagined as both inherently limited and sovereign," (1991: 6, 7) he intimately examines each term in the definition - except "political.'[5] It is not only Anderson's history of nationalism that can be enriched by attending to the politics of subjecthood, but also his view of culture more generally.

6.The essays in Guha and Spivak (1988) constitute among the best introductory texts about subaltern studies. See Guha (1982b, 1997), and Chatterjee and Jeganathan (2000) for a sense of the different moments in the life of a collective. Ludden's (2001) collection of papers constitutes a fine example of some of the more careful critical engagements with the work of subaltern studies authors.

7.Guha (1982a: 4-6), emphasis in original. For a more recent consideration, see Guha 1997.

8.At the same time, it is fair to observe that more recent scholarship in a subalternist mode has begun to use more seriously Foucault's ideas about power and subject formation, and examined carefully how different kinds of subjects came into being, both under colonialism and in modernity (Arnold 1993, Chakrabarty 2000b, Prakash 2000).

9. By total institutions, I have in mind what Foucault refers to as "complete and austere institutions": prisons, concentration camps and insane asylums are prime examples (Foucault [1975] 1979:233).

10. During my first visit, I had talked with a total of 43 villagers. I could not meet and talk with eight on them in 1993 for a variety of reasons. Some had moved out of the village, I could not locate some, and one had died.

11. The inability of the state to protect property in the face of concerted resistance is of course not a feature of peasant collective action in Kumaon alone. The threat to established relations of use and livelihood that the new regulations posed are similar the kinds of threats that new technologies and new institutions have posed in other regions as well. For example, the invention of mechanized implements have often sparked such responses from peasants and agrarian labor, and found some success precisely because of the inability of the government to detect (Street 1998:587).

12. I have reported statements and actions by various persons as being representative of the groups to which they belong, a common strategy for scholars belonging to fields as different in their assumptions as cultural anthropologists and rational choice political scientists. See Bates (1981,1989); and Bates, Rui and Weingast (1998) as rational choice exemplars of this strategy, and Ferguson (1994) and Gupta (1998) as counterpart examples from cultural anthropology.

13. Interview #2 with Shankar Ram, Tape 1, translated by Kiran Asher.

14. 1nterview #13 with Bachi Singh, tape 5, translated by Kiran Asher.

15. In Indian mythology, Kaljug is the fourth and the final era before time resumes again to proceed through the same sequence of eras: Satjug, Ttreta, Dwapar, and then Kaljug. It is the time when "dharma" gives way to "adharma" and established authority fails.

16. See Appendix 6.1 for a complete listing of the responses of the 35 persons I interviewed in 1989.

17. See Appendix 6.2 for a complete listing of the respondents, their characteristics, and their answers.

18. Miller and Rose (1990) follow this argument closely in elaborating the concept of "government at a

distance," and examining how modern government overcomes the natural diluting effects of distance in the exercise of power.

19. In coining the phrase "intimate government" I would like to acknowledge a debt to Hugh Raffles (2002) who uses the idea of intimate knowledge in talking about indigenous knowledges and their circulation in the corridors of policy making.

20. Much of the literature on environmental politics that uses an analytic of domination/power and resistance/marginality remains encoded within this structural division between freedom and constraint as well. See for example, Brosius (1997) and Fairhead and Leach (2000). More general studies of domination/resistance are also subject to the same tendency (Kaplan and Kelly 1994, Lichbach 1998).

21. See Latour (1999:15,294) for a thought-provoking examination of scientific practice.

22. Rorty complains that Foucault is a cynical observer of the current social order rather than one to whom that order is important (1984). Dews (1984), calling Foucault a Nietzschean naturalist, asserts that his insights cannot be a substitute for the normative foundations of political critique. For Fraser (1989: 33), Foucault adopts a concept of power that "permits him no condemnation of any objectionable feature of modern societies... [but] his rhetoric betrays the conviction that modern societies are utterly without redeeming features." Taylor (1984). advances perhaps the strongest argument in this vein, arguing that Foucault's account of the modern world as a series of hermetically sealed monolithic truth regimes is as far from reality as the blandest whig perspective of progress. See also Philp 1983. For close and persuasive arguments that engage these critiques of Foucault's ethics and go a long way toward showing their logical and interpretive gaps, see Dreyfus and Rabinow (1983), Miller (1993), and especially Patton (1989).

23. Butler also emphasizes the linguistic and psychic aspects of the constitution of the subject. Given my interest in locating the social mechanisms through which subjects come into being, a focus on psyche and language would lead far astray. As Rose ([1989] 1999: xix) argues, language is only one of the elements in how one's relationship to oneself is shaped and reshaped historically.

Num	village	year	dist	hhold	area/hhold	contrib/hhold	meet	gender	caste	guard-type	partcpn	mem-ship	edu	Forests should be protected	Reason to protect forests	to protect forest, willing to reduce consumption
														Appendix 6.1		
1	Pokhri	0	1	12	0	0	0	0	0	0	0	0	9	2	0	1
2	Pokhri	0	1	12	0	0	0	0	1	0	0	0	3	3	0	2
3	Pokhri	0	1	12	0	0	0	1	0	0	0	0	4	2	0	1
4	Pokhri	0	1	12	0	0	0	1	1	0	0	0	3	1	0	1
5	Pokhri	0	1	12	0	0	0	1	0	0	0	0	6	2	0	1
6	Tangnua	1	0	21	0	0	0	0	1	0	0	0	2	3	1	2
7	Tangnua	1	0	21	0	0	0	0	0	0	0	0	10	2	0	1
8	Tangnua	1	0	21	0	0	0	0	1	0	0	0	4	2	1	1
9	Tangnua	1	0	21	0	0	0	1	0	0	0	0	5	4	0	2
10	Tangnua	1	0	21	0	0	0	1	1	0	0	0	0	1	0	1
11	Tangnua	1	0	21	0	0	0	1	0	0	0	0	0	2	0	2
12	Tangnua	1	0	21	0	0	0	1	1	0	0	0	3	3	1	4
13	Toli	0	1	41	0	0	0	0	0	0	0	0	10	4	1	2
14	Toli	0	1	41	0	0	0	0	1	0	0	0	5	2	0	1
15	Toli	0	1	41	0	0	0	1	1	0	0	0	0	1	0	1
16	Toli	0	1	41	0	0	0	1	0	0	0	0	5	3	0	1
17	Nanauli	0	3	90	0	0	0	0	1	0	0	0	6	3	0	1
18	Nanauli	0	3	90	0	0	0	0	0	0	0	0	8	2	0	1
19	Nanauli	0	3	90	0	0	0	0	0	0	0	0	9	2	0	1
20	Nanauli	0	3	90	0	0	0	1	1	0	0	0	2	3	0	2
21	Darman	0	3	21	0	0	0	0	0	0	0	0	9	2	0	2
22	Darman	0	3	21	0	0	0	0	1	0	0	0	6	2	1	2
23	Darman	0	3	21	0	0	0	0	0	0	0	0	12	4	1	2
24	Darman	0	3	21	0	0	0	1	1	0	0	0	3	2	0	1
25	Darman	0	3	21	0	0	0	1	0	0	0	0	10	1	0	1
26	Gogta	0	1	20	0	0	0	0	1	0	0	0	8	1	0	2
27	Gogta	0	1	20	0	0	0	0	1	0	0	0	8	4	0	2
28	Gogta	0	1	20	0	0	0	0	0	0	0	0	10	4	0	2
29	Gogta	0	1	20	0	0	0	1	1	0	0	0	3	3	0	1
30	Gogta	0	1	20	0	0	0	1	0	0	0	0	7	1	1	3
31	Barora	0	1	14	0	0	0	0	1	0	0	0	0	2	1	1
32	Barora	0	1	14	0	0	0	0	0	0	0	0	6	3	0	1
33	Barora	0	1	14	0	0	0	0	1	0	0	0	2	3	0	2
34	Barora	0	1	14	0	0	0	1	0	0	0	0	5	3	0	3
35	Barora	0	1	14	0	0	0	1	0	0	0	0	5	2	0	1

No.	village	year	rd-dist	hhold	area/ hhold	contrib/ hhold	meet	gender	caste	guard-type	particpn	mem-ship	edu	Forests should be protected	Reason to protect forest	To protect forest, willing to reduce consumption
1	Airadi	32	2	35	0.66	22.6	3	0	0	4	1	0	12	4	0	1
2	Airadi	32	2	35	0.66	22.6	3	1	0	4	1	1	10	5	1	3
3	Airadi	32	2	35	0.66	22.6	3	0	1	4	0	0	6	3	0	2
4	Airadi	32	2	35	0.66	22.6	3	0	1	4	0	0	8	3	1	2
5	Airadi	32	2	35	0.66	22.6	3	1	0	4	1	0	7	2	0	2
6	Airadi	32	2	35	0.66	22.6	3	1	1	4	0	0	0	4	0	2
7	Bajgaon	41	1	70	0.57	74.3	12	0	0	4	1	1	4	5	0	2
8	Bajgaon	41	1	70	0.57	74.3	12	0	1	4	1	1	6	4	1	3
9	Bajgaon	41	1	70	0.57	74.3	12	0	0	4	1	0	8	3	0	3
10	Bajgaon	41	1	70	0.57	74.3	12	0	1	4	1	0	12	5	0	3
11	Bajgaon	41	1	70	0.57	74.3	12	0	0	4	1	1	9	4	0	2
12	Bajgaon	41	1	70	0.57	74.3	12	1	1	4	1	0	4	3	1	3
13	Bajgaon	41	1	70	0.57	74.3	12	1	0	4	1	0	8	4	0	2
14	Barakon	30	3	25	3.28	16	4	0	1	5	0	0	5	3	0	1
15	Barakon	30	3	25	3.28	16	4	0	0	5	1	0	6	2	0	1
16	Barakon	30	3	25	3.28	16	4	0	1	5	0	1	0	1	0	1
17	Barakon	30	3	25	3.28	16	4	1	0	5	0	0	0	3	0	1
18	Barakon	30	3	25	3.28	16	4	1	1	5	0	0	3	2	1	2
19	Batula	42	1	40	0.2	13.4	1	0	0	4	0	0	10	3	0	3
20	Batula	42	1	40	0.2	13.4	1	0	0	4	0	0	7	4	1	2
21	Batula	42	1	40	0.2	13.4	1	0	1	4	1	0	7	5	0	2
22	Batula	42	1	40	0.2	13.4	1	1	0	4	1	0	7	4	1	3
23	Batula	42	1	40	0.2	13.4	1	1	1	4	0	0	0	3	0	1
24	Batula	42	1	40	0.2	13.4	1	1	0	4	0	0	8	5	0	2
25	Bhagar	63	1	70	0.9	44.3	10	0	0	4	1	1	2	5	1	5
26	Bhagar	63	1	70	0.9	44.3	10	0	1	4	1	0	3	4	0	3
27	Bhagar	63	1	70	0.9	44.3	10	1	1	4	1	0	12	5	1	5
28	Bhagar	63	1	70	0.9	44.3	10	0	0	4	1	1	4	4	0	3
29	Bhagar	63	1	70	0.9	44.3	10	0	0	4	1	0	5	1	0	1
30	Bhagar	63	1	70	0.9	44.3	10	1	0	4	1	0	2	4	0	2
31	Bhagar	63	1	70	0.9	44.3	10	1	1	4	0	0	0	4	0	2
32	Bhagar	63	1	70	0.9	44.3	10	1	0	4	1	0	6	3	0	2
33	Bigrakot	41	1	75	2.93	49.5	8	0	0	4	1	1	12	5	1	4
34	Bigrakot	41	1	75	2.93	49.5	8	0	1	4	0	0	10	2	0	1
35	Bigrakot	41	1	75	2.93	49.5	8	0	1	4	1	0	10	3	0	2

Appendix 6.2

36	Bigrakot	41	1	75	2.93	49.5	8	1	0	4	1	1	7	5	1	4
37	Bigrakot	41	1	75	2.93	49.5	8	1	1	4	1	0	7	5	0	2
38	Gadsari	25	1	70	0.8	20.4	6	0	0	3	1	1	0	4	0	3
39	Gadsari	25	1	70	0.8	20.4	6	0	1	3	1	0	6	5	0	3
40	Gadsari	25	1	70	0.8	20.4	6	1	0	3	1	1	4	3	0	3
41	Gadsari	25	1	70	0.8	20.4	6	0	1	3	1	1	3	4	1	4
42	Gadsari	25	1	70	0.8	20.4	6	1	0	3	0	0	9	2	0	1
43	Gadsari	25	1	70	0.8	20.4	6	1	1	3	1	0	2	5	1	5
44	Gadsari	25	1	70	0.8	20.4	6	1	0	3	1	0	11	4	0	2
45	Goom	38	1	75	1.06	21.9	6	0	1	5	1	1	4	4	0	2
46	Goom	38	1	75	1.06	21.9	6	0	0	5	0	0	9	2	0	2
47	Goom	38	1	75	1.06	21.9	6	0	1	5	0	0	4	2	0	1
48	Goom	38	1	75	1.06	21.9	6	1	0	5	0	0	5	3	0	1
49	Guna	62	2	22	1.23	6.82	4	0	0	5	0	1	7	4	1	2
50	Guna	62	2	22	1.23	6.82	4	0	0	5	0	1	10	3	0	3
51	Guna	62	2	22	1.23	6.82	4	0	1	5	1	0	5	3	0	1
52	Guna	62	2	22	1.23	6.82	4	0	1	5	0	0	3	2	0	1
53	Guna	62	2	22	1.23	6.82	4	1	0	5	0	0	0	3	0	2
54	Guna	62	2	22	1.23	6.82	4	0	1	5	0	0	0	1	0	1
55	Gunia	16	3	105	3.3	2.86	4	0	0	5	1	0	4	4	1	3
56	Gunia	16	3	105	3.3	2.86	4	0	1	5	0	1	8	3	0	3
57	Gunia	16	3	105	3.3	2.86	4	0	0	5	0	0	2	3	0	1
58	Gunia	16	3	105	3.3	2.86	4	1	1	5	0	0	6	2	0	2
59	Gunia	16	3	105	3.3	2.86	4	1	0	5	0	0	5	4	0	2
60	Gunia	16	3	105	3.3	2.86	4	1	0	5	0	0	7	1	0	2
61	Joga	38	1	15	4.93	3.3	7	0	1	2	1	1	0	4	0	3
62	Joga	38	1	15	4.93	3.3	7	0	0	2	1	1	6	4	1	3
63	Joga	38	1	15	4.93	3.3	7	1	1	2	1	0	11	5	1	5
64	Joga	38	1	15	4.93	3.3	7	1	0	2	0	0	7	3	0	3
65	Joga	38	1	15	4.93	3.3	7	1	1	2	1	0	8	3	0	3
66	Joga	38	1	15	4.93	3.3	7	1	0	2	1	0	5	4	0	4
67	Kadwal	37	0	15	1.4	7.3	4	0	1	4	0	0	5	3	1	4
68	Kadwal	37	0	15	1.4	7.3	4	0	0	4	0	0	8	2	0	1
69	Kadwal	37	0	15	1.4	7.3	4	0	0	4	1	0	12	4	1	4
70	Kadwal	37	0	15	1.4	7.3	4	1	1	4	1	1	7	5	1	4
71	Kadwal	37	0	15	1.4	7.3	4	1	1	4	0	1	2	3	0	2
72	Kadwal	37	0	15	1.4	7.3	4	1	1	4	0	0	3	2	0	1
73	Kalauta	42	1	30	1.5	N	3	0	0	4	0	0	10	3	0	2
74	Kalauta	42	1	30	1.5	N	3	0	1	4	0	0	5	2	0	1

75	Kalauta	42	1	30	1.5	N		3	,0	0	4	1	1	15	5	1	5
76	Kalauta	42	1	30	1.5	N		3	0	1	4	1	0	7	4	0	3
77	Kalauta	42	1	30	1.5	N		3	1	0	4	1	0	4	4	0	3
78	Kalauta	42	1	30	1.5	N		3	1	1	4	0	0	6	2	0	1
79	Kalauta	42	1	30	1.5	N		3	1	0	4	0	0	10	5	1	1
80	Kana	9	0	25	1.5	16.4	4	0	1	5	0	0	3	1	0	1
81	Kana	9	0	25	1.5	16.4	4	0	0	5	1	1	12	4	0	3
82	Kana	9	0	25	1.5	16.4	4	0	1	5	0	0	10	3	0	2
83	Kana	9	0	25	1.5	16.4	4	1	0	5	0	0	8	1	0	1
84	Kana	9	0	25	1.5	16.4	4	1	1	5	0	0	10	2	0	1
85	Khaudi	20	1	32	0.28	4.69	6	0	0	4	0	0	0	2	0	2
86	Khaudi	20	1	32	0.28	4.69	6	0	0	4	1	0	2	4	0	3
87	Khaudi	20	1	32	0.28	4.69	6	0	0	4	1	1	10	5	1	4
88	Khaudi	20	1	32	0.28	4.69	6	1	1	4	0	0	3	4	0	1
89	Khaudi	20	1	32	0.28	4.69	6	1	1	4	1	0	7	4	0	1
90	Khaudi	20	1	32	0.28	4.69	6	1	0	4	0	0	5	3	0	3
91	Khola	40	1	95	0.9	23.1	6	0	1	4	1	0	12	5	1	4
92	Khola	40	1	95	0.9	23.1	6	0	0	4	0	0	5	3	0	2
93	Khola	40	1	95	0.9	23.1	6	0	1	4	1	1	7	4	0	3
94	Khola	40	1	95	0.9	23.1	6	0	0	4	1	0	8	2	0	1
95	Khola	40	1	95	0.9	23.1	6	1	1	4	1	0	5	4	0	3
96	Khola	40	1	95	0.9	23.1	6	1	0	4	0	0	4	3	1	3
97	Kotuli	38	1	50	0.7	35	8	0	1	3	1	0	10	3	0	3
98	Kotuli	38	1	50	0.7	35	8	0	0	3	0	0	8	2	0	1
99	Kotuli	38	1	50	0.7	35	8	0	1	3	1	1	13	5	1	5
0	Kotuli	38	1	50	0.7	35	8	1	0	3	1	0	7	4	0	3
1	Kotuli	38	1	50	0.7	35	8	1	1	3	1	1	8	5	1	4
2	Lada	47	1	30	1.1	11.67	5	0	0	4	1	0	2	4	0	3
3	Lada	47	1	30	1.1	11.67	5	0	1	4	0	0	11	1	0	1
4	Lada	47	1	30	1.1	11.67	5	0	1	4	1	1	0	4	1	4
5	Lada	47	1	30	1.1	11.67	5	1	0	4	0	0	7	3	0	2
6	Lada	47	1	30	1.1	11.67	5	1	0	4	0	0	0	2	0	1
7	Lada	47	1	30	1.1	11.67	5	1	1	4	0	0	0	2	0	1
8	Ladfoda	30	1	60	0.83	47.3	3	0	0	5	1	0	10	4	1	4
9	Ladfoda	30	1	60	0.83	47.3	3	0	1	5	0	0	5	3	0	1
10	Ladfoda	30	1	60	0.83	47.3	3	1	0	5	1	1	0	5	1	5
11	Ladfoda	30	1	60	0.83	47.3	3	0	1	5	0	0	0	2	0	2
12	Ladfoda	30	1	60	0.83	47.3	3	1	1	5	1	0	0	5	0	3
13	Ladfoda	30	1	60	0.83	47.3	3	1	0	·5	0	0	2	3	0	2

14	Lohatha	55	0	175	0.51	10.57	4	0	1	4	1	0	8	4	0	3
15	Lohatha	55	0	175	0.51	10.57	4	1	0	4	1	1	5	5	1	4
16	Lohatha	55	0	175	0.51	10.57	4	0	1	4	0	0	7	2	0	1
17	Lohatha	55	0	175	0.51	10.57	4	0	0	4	1	0	9	4	0	3
18	Lohatha	55	0	175	0.51	10.57	4	1	1	4	0	0	6	2	0	2
19	Lohatha	55	0	175	0.51	10.57	4	1	0	4	0	0	5	3	0	1
20	Malta	15	1	15	2.07	8.33	2	0	1	4	0	0	7	2	0	2
21	Malta	15	1	15	2.07	8.33	2	0	0	4	1	1	8	5	1	5
22	Malta	15	1	15	2.07	8.33	2	0	1	4	0	0	3	4	0	2
23	Malta	15	1	15	2.07	8.33	2	1	0	4	0	0	4	3	0	2
24	Munauli	58	1	43	0.88	32.33	8	0	1	3	0	0	12	3	0	3
25	Munauli	58	1	43	0.88	32.33	8	0	0	3	1	1	0	5	1	5
26	Munauli	58	1	43	0.88	32.33	8	0	1	3	1	1	0	5	1	4
27	Munauli	58	1	43	0.88	32.33	8	1	1	3	1	0	0	3	0	1
28	Munauli	58	1	43	0.88	32.33	8	1	0	3	1	0	0	4	0	4
29	Nagila	58	3	75	0.69	33.33	5	0	1	3	1	0	10	2	0	2
30	Nagila	58	3	75	0.69	33.33	5	0	0	3	1	1	4	4	0	2
31	Nagila	58	3	75	0.69	33.33	5	0	1	3	1	0	6	5	1	3
32	Nagila	58	3	75	0.69	33.33	5	1	0	3	1	0	7	3	0	1
33	Nagila	58	3	75	0.69	33.33	5	1	1	3	0	0	4	4	1	5
34	Nanauli	10	3	95	0.32	11.37	8	0	1	4	1	0	6	5	1	2
35	Nanauli	10	3	95	0.32	11.37	8	0	0	4	1	1	8	4	0	4
36	Nanauli	10	3	95	0.32	11.37	8	0	0	4	0	1	13	3	0	2
37	Nanauli	10	3	95	0.32	11.37	8	1	1	4	0	0	2	3	0	1
38	Pokhri	11	1	10	2	20	2	1	0	2	1	1	11	5	1	4
39	Pokhri	11	1	10	2	20	2	0	1	2	1	1	3	5	1	5
40	Pokhri	11	1	10	2	20	2	1	0	2	0	0	4	3	0	2
41	Pokhri	11	1	10	2	20	2	1	1	2	1	0	3	4	1	5
42	Pokhri	11	1	10	2	20	2	1	0	2	0	0	7	3	0	2
43	Rauljan	43	1	120	0.58	3.33	1	0	1	4	0	0	7	4	0	2
44	Rauljan	43	1	120	0.58	3.33	1	0	0	4	0	0	10	1	0	3
45	Rauljan	43	1	120	0.58	3.33	1	0	1	4	0	0	12	2	0	1
46	Rauljan	43	1	120	0.58	3.33	1	1	1	4	0	0	4	2	0	1
47	Sujan	41	1	70	0.57	42.86	6	0	0	3	1	1	5	5	1	3
48	Sujan	41	1	70	0.57	42.86	6	0	1	3	1	0	7	2	0	2
49	Sujan	41	1	70	0.57	42.86	6	1	0	3	0	0	5	4	0	2
50	Sujan	41	1	70	0.57	42.86	6	1	0	3	1	0	7	3	0	1
51	Sujan	41	1	70	0.57	42.86	6	1	1	3	0	0	6	5	1	5
52	Sujan	41	1	70	0.57	42.86	6	1	0	3	1	0	3	4	0	4

92	Palna	21	1	24	1.4	12.96	2	1	0	2	1	0	4	4	0	4
93	Palna	21	1	24	1.4	12.96	2	1	1	2	0	0	4	3	1	2
94	Sheshba	60	2	73	0.85	23.33	8	0	1	4	1	0	0	3	0	1
95	Sheshba	60	2	73	0.85	23.33	8	0	1	4	1	0	6	3	0	2
96	Sheshba	60	2	73	0.85	23.33	8	1	0	4	1	1	0	4	0	2
97	Sheshba	60	2	73	0.85	23.33	8	1	1	4	1	1	6	5	1	5
98	Sheshba	60	2	73	0.85	23.33	8	1	0	4	0	0	10	4	0	2
99	Thapla	23	1	27	2.8	10.1	2	0	1	1	1	0	0	2	0	1
0	Thapla	23	1	27	2.8	10.1	2	0	0	1	1	1	8	4	1	3
1	Thapla	23	1	27	2.8	10.1	2	1	0	1	1	0	5	2	0	2
2	Toli	10	1	43	1.5	23.66	5	1	0	4	1	1	10	5	1	4
3	Toli	10	1	43	1.5	23.66	5	0	1	4	1	1	5	4	0	2
4	Toli	10	1	43	1.5	23.66	5	1	1	4	1	0	0	2	0	3
5	Toli	10	1	43	1.5	23.66	5	1	0	4	0	0	5	3	0	1
6	Basar	0	2	79	0	0	0	0	0	0	0	0	6	3	1	2
7	Basar	0	2	79	0	0	0	0	1	0	0	0	3	2	0	1
8	Basar	0	2	79	0	0	0	0	1	0	0	0	10	2	0	1
9	Basar	0	2	79	0	0	0	1	0	0	0	0	0	1	0	1
10	Basar	0	2	79	0	0	0	1	0	0	0	0	8	3	0	2
11	Basar	0	2	79	0	0	0	1	1	0	0	0	0	2	0	1
12	Darman	0	3	20	0	0	0	0	0	0	0	0	9	2	0	2
13	Darman	0	3	20	0	0	0	0	1	0	0	0	6	2	1	2
14	Darman	0	3	20	0	0	0	0	0	0	0	0	12	3	1	4
15	Darman	0	3	20	0	0	0	1	1	0	0	0	3	2	0	1
16	Darman	0	3	20	0	0	0	1	0	0	0	0	10	1	0	1
17	Pattalna	0	1	7	0	0	0	0	1	0	0	0	0	1	0	2
18	Pattalna	0	1	7	0	0	0	0	0	0	0	0	8	4	1	4
19	Pattalna	0	1	7	0	0	0	0	1	0	0	0	5	3	0	1
20	Pattalna	0	1	7	0	0	0	1	0	0	0	0	3	3	1	2
21	Pattalna	0	1	7	0	0	0	1	0	0	0	0	0	2	0	2
22	Gogta	0	1	23	0	0	0	0	1	0	0	0	11	1	0	2
23	Gogta	0	1	23	0	0	0	0	1	0	0	0	8	4	0	2
24	Gogta	0	1	23	0	0	0	0	0	0	0	0	12	3	0	3
25	Gogta	0	1	23	0	0	0	1	1	0	0	0	3	3	0	1
26	Gogta	0	1	23	0	0	0	1	0	0	0	0	7	1	1	3
27	Barora	0	1	16	0	0	0	0	1	0	0	0	0	2	1	1
28	Barora	0	1	16	0	0	0	0	0	0	0	0	6	2	0	2
29	Barora	0	1	16	0	0	0	0	1	0	0	0	2	3	0	1
30	Barora	0	1	16	0	0	0	1	0	0	0	0	5	3	0	2

31	Barora	0	1	16	0	0	0	1	0	0	0	0	5	2	0	1
32	Seema	0	2	61	0	0	0	0	1	0	0	0	5	1	0	1
33	Seema	0	2	61	0	0	0	0	0	0	0	0	9	1	0	1
34	Seema	0	2	61	0	0	0	0	1	0	0	0	12	3	0	2
35	Seema	0	2	61	0	0	0	1	0	0	0	0	3	1	0	1
36	Seema	0	2	61	0	0	0	1	1	0	0	0	6	2	0	1
37	Seema	0	2	61	0	0	0	1	0	0	0	0	10	3	0	1
38	Kalacha	0	1	103	0	0	0	0	1	0	0	0	8	4	1	4
39	Kalacha	0	1	103	0	0	0	0	0	0	0	0	6	2	0	1
40	Kalacha	0	1	103	0	0	0	0	1	0	0	0	0	2	0	1
41	Talla Mo	0	1	14	0	0	0	0	0	0	0	0	15	5	0	3
42	Talla Mo	0	1	14	0	0	0	0	1	0	0	0	7	2	0	1
43	Talla Mo	0	1	14	0	0	0	1	0	0	0	0	5	2	0	2
44	Talla Mo	0	1	14	0	0	0	1	1	0	0	0	7	3	0	2

7. Conclusion:
The Analytics of Environmentality
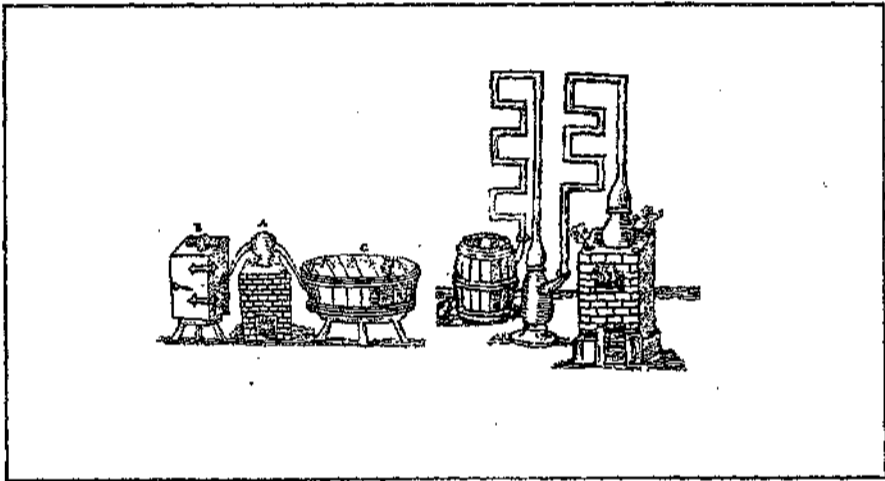
7. Conclusion: The Analytics of Environmentality

A steam-engine moves. The question is asked, How is it moved? A peasant answers, It is the devil moving it. Another man says, The steam-engine moves because the wheels are going round. A third maintains that the cause of the motion is to be found in the smoke floated from it by the wind.

— Leo Tolstoy, *War and Peace,* 1352.

The preceding chapters documented and analyzed some remarkable shifts in environmental government, sociality, and subjectivities that have occurred in Kumaon over the last century and a half. I suggested in part I of the book that the transformations I have examined can be rooted in the emergence of two underlying discursive beliefs about the natural world: a) nature is an entity discrete from humans and endangered by reckless human actions, and b) this endangered nature needs protection that can be generated in the form of careful government.[1] With increasing knowledge of the natural world and the awareness that humans can affect natural processes in an unprecedented fashion, social pressures in favor of protecting nature have grown. But with each additional piece of evidence suggesting the pervasive impact of humans on their world, Utopian and romantic visions of an unsullied nature have given way to pragmatic programs for protecting the environment

I have argued, thus, that in Kumaon the government of nature led to the birth of the environment. Indeed, one of the implicit points that helped frame the discussion in part one of the book is that the increasing intensity of care for and government of nature helped the idea of environment to emerge. The use of numbers and statistics helped refine how the government of nature would work. My discussion has focused on vegetation and forests to think about the strategies through which environmental government remakes nature. But the use of statistics and numbers to shape the making of forests in India and Kumaon, discussed in chapters two and three, occurred together with other far-reaching changes. The political relationships between what might broadly be called the state and the local came to be redefined as new

technologies of government brought into being dispersed centers of environmental management and ecological decision making throughout the region (chapter four). A more intimate and precise regulatory rule took shape as villagers began to take care of their forests in collaboration with state officials (chapter five). Kumaon also witnessed the making of new environmental subjects whose variable relationships with forests depends on their existing social locations and networks of personal relations, the nature and extent of their dependence on forests, and most importantly, their involvement in different regulatory practices (chapter six). The emergence of environmental subjects in Kumaon has thus involved a complex interaction between how local residents have understood their relationship with forests, and the contexts within which their understandings have become possible. Transformations in knowledges, politics, institutions, and subjectivities, thus, have been crucial to the character of environmental politics as it has emerged over the last century and a half in Kumaon.

The centrality of knowledges, politics, institutions, and subjectivities to changing aspects of environmental politics in Kumaon provides a foundation from which to examine recent shifts in the nature of environmental politics elsewhere, and attempts by scholars to theorize this field of study. Since especially the early 1980s, the nature of environmental politics has shifted as global geopolitical circumstances have changed and nation states have come to recognize the limitations of centralized forms of government. (Bates 2001, Herbst 2000).

As a result, more than fifty developing countries have have moved toward environmental regimes similar in their general outline to the kind of local-council based government of forests in Kumaon that this book examines (Agrawal 2001a, FAO 1999). The central feature of these new environmental regimes is a closer involvement of those who depend upon various environmental goods - forests, fisheries, pastures, irrigation waters among others - in the government of environment. Those whose ecological practices and livelihoods are at stake have become involved in and responsible for some aspects of their own government once again, but through reorganization of their institutionalized practices and environmental relationships.

Such ongoing changes in environmental regimes have enabled many theoretical innovations and given birth to complex narratives of environmental change. In significant part, existing narratives of environmental political change are framed in terms of loss and recuperation, appropriation and resistance, ignorance and enlightenment. Instead of local populations losing control over their resources as a result of central state policies, they can now be seen as recuperating at least part of that lost control. Rather than the state being victorious in its efforts to expropriate valuable resources of indigenous populations, the resistance of marginalized populations can now be valorized as successful in stemming the tide of centralization. Whereas top-down policies of control and exclusion were portrayed as a product of greed and ignorance, new decentralization of environmental policies can be attributed to a greater awareness of the need to pay attention to local variations and knowledges. Similar stories about a shift from bureaucracy to democracy, colonization to freedom, and state to community can be told. The title of a recent work, "from exclusion to participation,"[2] referring to the involvement of local communities in environmental control, provides one way of viewing changes in environmental politics in the 1980s.

But these ways to understand and analyze the nature of environmental politics can be enriched and supplemented. Processes around the environment always involve power/knowledges and subjectivities, and are always mediated by institutions. Instead of a selective conceptual focus on "politics," or "institutions," or "subjectivities" as *the* foundation upon which to build an analysis of changing environmental relations, it can be more fruitful to examine how these concepts shape each other and are themselves constituted.

Indeed, each of the chapters in this book has shown the articulation among these concepts in environmental change. Application of new statistical, botanical, taxonomic, and silvicultural knowledges in the late nineteenth and early twentieth centuries made possible representations of forests that persist even today. But the use of new knowledges was closely tied to the recognition of the value of certain kinds of timber, formulation of new institutional regimes, and exclusion of existing social actors such as swidden cultivators and timber merchants. Similarly, exigencies related to a better bottom line for the colonial

eater prise, control over the Indian territories through secure and fast transportation, crucial raw materials needed in the first World War, and bureaucratic politics within the colonial state combined in unexpected ways to lay the groundwork for the forest councils in Kumaon, The invention of these new institutional forms changed the nature and possibilities of control in Kumaon by introducing dispersed but coordinated regimes of regulation throughout the region. And the birth of environmental subjects in Kumaon rested in no small measure upon changing forms of institutions and knowledges, and the widespread possibilities for regulatory participation that these new institutions opened. These examples demonstrate that the seemingly diverse fields of social action and change denoted by knowledge, politics, institutions, and subjectivities in reality ran through each other. In treating them as separable domains of human practices and scholarly analyses, we are constrained to consider their articulation only inadequately at best. But it is precisely in examining how these concepts and their referents make each other that it becomes possible to imagine what a new environmental politics might look like.

If it is possible to posit a great divide - a divide in which the 1980s serve as a transitional period - *in* the recent scholarship on environmental politics and how it has identified problems, causes, and solutions, it is also necessary to recognize a significant and somewhat ironic continuity across this divide. This continuity comes into sharper focus if one considers a missing theme in writings on the environment. In different ways, scholarly contributions to environmental politics, whether before the 1970s or during and after the 1980s, are not really about environmental politics. In each period, those observing environmental politics have written, often brilliantly, either about the environment, or about politics, but less often about environmental politics. Paraphrasing Richard White, one might say, "it is as if trying to write the history of a marriage, one produces a biography of the wife, and placing it next to the biography of the husband calls it the history of the relationship itself!"[3]

In this final, concluding chapter of the book, I begin by looking at a select set of writings on environmental politics that have attempted to make sense of governmental strategies aimed at

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environmental protection, and the enactment of such strategies. My discussion examines in particular on three interdisciplinary fields: common property, political ecology, and feminist environmentalism. It is by necessity in the nature of a critical review, but it helps prepare the ground for an argument about what an engaged environmental political analysis must include. My own position on the nature of environmental politics is based as much on my understanding of the unfolding of environmental processes in Kumaon and elsewhere, as it is on some of the more influential recent writings about the environment. But most importantly, it is articulated as an effort to craft an investigative framework that can synthesize insights from a range of environmental writings, especially as they illuminate historical-political changes In Kumaon's forests. Rather than view institutions, or political forces, or subject-related transformations as *the* effective and sufficient locus of environmental political analysis or action, I examine how these concepts relate to and produce each other.

Environmental Political Analyses since the 1980s

The noted feminist economist, Bina Agarwal, suggests that "we are seeing an emerging consensus, both among scholars and among government and non-governmental agencies, that local resources should be managed by village communities" (1998:60). Agarwal is referring to the changes in state policies and scholarly writings all through the late 1980s and the 1990s that saw communities and local management of resources as critical, necessary foundations in the government of nature. The consensus toward which she points may not ever actually emerge, but its makings are partly visible in the explosion of studies on the local government of resources, especially those concentrating on the role of communities and communal institutions.[4] It is even more evident in the increasing number of national governments that have now started to eschew their reliance purely on coercive, top-down, centrally directed conservation policies.[5] In the past two decades, governments in more than 50 countries have begun to claim that they are pursuing conservation policies thoroughly at odds with centuries of earlier efforts (FAO 1999). The failure of earlier

efforts at exclusionist environmental control,[6] fiscal crises of the state in the wake of the debt crises of the late 1970s and the early 1980s, the collapse of state socialism and the subsequent hegemonic status of a neoliberal orthodoxy in economic policy circles, and the availability of international aid funds for pursuing programs of decentralized governance are in no small measure responsible.

Concrete efforts to involve new actors in the government of nature have received attention from a number of scholars. I find useful the alternative routes mapped by the scholarship on the commons, writings on political ecology, and feminist environmentalists. These three approaches to environmental politics can be seen as more or less directly examining how institutions, politics, and identities affect environmental processes and outcomes. Coming into being and gathering force roughly around the same junctures in the 1980s, these cross-disciplinary approaches to environmental politics differ in important ways from their many disciplinary cousins - among them, conservation biology, environmental anthropology, environmental ethics, environmental history, environmental sociology, historical ecology, social ecology. For one, in comparison to environmentalist scholarship that has as its objective a new niche within the discipline, these three approaches to environmentally concerned scholarship focus on specific problems and conceptual foundations as their markers. Rather than try to find a basis for inclusion within an originating discipline and show how more mainstream historians, or political scientists, or sociologists, or anthropologists would benefit from a greater focus on environmental issues, these cross-disciplinary orientations attempt to examine environmental problems and politics more directly.

Further, common property theory, political ecology, and feminist environmentalism have also been insistently problem driven, and oriented to transformations in existing forms of government of the environment.[7] Undoubtedly, environmental research that owes its primary allegiance to disciplinary formations has contributed significantly and enduringly to the insights that common property theorists, political ecologists, and feminist environmentalists have used and often built upon. But equally certainly, political ecologists, feminist environmentalists, and scholars of common property speak with a more

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engaged voice in discussions on forms of environmental governance, and how to change exclusionary, centralized, non-democratic control over resources. Given the overarching concerns of this book - how institutions, politics, and identities shape each other at the same time as they influence new knowledges and practices around the environment - it is fruitful and necessary to build upon these interdisciplinary sites of knowledge production about the environment.

The Fields of Common Property

Writings by scholars of common property provide some of the earliest and among the better known arguments in favor of self-organized government of resources.[8] Ostrom's (1990) path-breaking synthesis of the importance of common property resource regimes built upon at least a decade of earlier studies (Alexander 1982, McCay and Acheson 1987, Netting 1981, NRG 1986). In beginning with a review and critique of environmentalist writings that saw the "gross concepts" (Shapiro 1989) of states and markets as the appropriate institutional solutions to address conservation failures, *Governing the Commons* articulated the stakes involved in focusing analytical attention down to micro-institutional regulation of the environment. It outlined the possibilities of community,[9] and was part of a blossoming of locally oriented studies that took as their point of departure the assumption that small groups of users could craft viable forms of environmental government.

Work on the environment that uses a common property framework has burgeoned since the 1990s. Perhaps the two most important contributions of this scholarship are by now widely accepted. The first of these is the principle that variations in institutional arrangements to govern environmental goods can have a marked effect on their disposition, and that among successful forms are those under which users cooperate with each other to govern resources locally. Thus there is no teleological or even deterministic logic to instituting private property and privatizing nature. A second important contribution of this literature is the recognition that concepts such as private, public, or common are too gross to account adequately for the

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massive variation in institutional forms that environmental subjects deploy to govern their environmental resources (McKean 2000).

A number of scholars working on the commons have, in addition, pointed to the multiplicity of factors that affect the prospects of environmental government. It is fair to infer from the work of Wade (1989), Ostrom (1990), Baland and Platteau (1996) and many other commons researchers that institutional variation is importantly related to environmental actions and outcomes (Agrawal 2001b). The presence of different institutional forms can have a significant influence on how environmental processes unfold.

But even a cursory examination of the literature on common property is sufficient to reveal some of the continuities in focus, and perhaps as a result of these continuities, some persistent debilities. For one, scholars of common property have tended to take, institutions - qua property - as the focus of their analyses. Social practices, especially those in relation environmental regulation, are for them typically the consequence of institutional transformations; institutions are seldom the visible symptoms and markers of social practices.

The focus on institutional effects is in no small measure related to the origins of writings on common property. Scholars of the commons began by trying to demonstrate that common property can potentially be as efficient a solution to problems of public goods related externalities as private ownership or state control. Although successful in this objective both theoretically and in terms of policy shifts, they have tended either to assume that distribution under communal government is more equitable, or to place only a limited emphasis on questions of allocation and distributive politics. But neither strategy may be useful if the objective is to understand better the conditions under which environmental government works successfully. The preceding chapters have shown the pervasive role of political negotiations and social struggles in Kumaon in producing precisely the institutions that are the focus of study for most scholars of common property. The previous two chapters have further shown the unequal burden of seemingly equitable institutional arrangements under asymmetric social relations. Since all social relations are

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politically asymmetrical, it becomes crucial to understand how the effects of even seemingly equal and symmetric institutional rules fall unevenly on those subject to the rules (see also Gibson 1999).

In response to criticisms posed over the past few years, scholars of common property have begun to acknowledge the critical importance and impact of a larger political-economic and social context on institutional outcomes. Contextual variables, difficult as they are to define independently of the questions being researched, clearly affect the ability of specific groups to use and govern their resources. Studies of decentralized mechanisms of environmental politics (Agrawal and Ostrom 2001), attention to the origins of commons institutions (Ostrom 1999), and analyses of heterogeneities within groups (Varughese and Ostrom 1999) are witness to this trend. But it is worth noting that even in these changing substantive concerns, institutions retain their preeminent place as the objects of analysis and explanation. Thus, common property theorists may have begun to attend to questions of politics, but for them the effects of politics on resources are always tracked through institutions. How political relations or changes in the relative power of different actors affect the environment even without institutional changes is usually only inadequately considered by scholars of common property because of their primary focus on institutions.[10]

The Shifting Nature of Politics in Political Ecology

It is in the writings of political ecologists that one can find a more direct focus on questions of power and politics in relation to the environment.[11] The substantive connection and the thematic divergence between political ecology and studies of common property becomes visible in the assertion, "political ecology is essentially a politics of the commons..." (Wells and Lynch 2000: 93). Such a focus on the commons is more characteristic of political ecologists concerned with global environmental processes and the erosion of global commons. But even political ecologists who are interested in more regional or localized changes around environmental issues, view a legitimate concern of political ecology to be redefinitions of access to commons in response to changing relations between capital and state.

Scholars in both fields - common properly and political ecology — thus, are concerned about the commons. Many political ecologists, for example, have written about the disappearance of the global commons or the many threats to more local commons. But they differ in the nature of their concern: scholars of common properly seek to address the problem of disappearing commons by looking at rules and institutions whereas many political ecologists focus especially on the politics inherent in the erosion of the commons, and the changing forms of access to environmental resources. Especially lucid expositions of political ecological analyses grounded in a social-historical context can be found in the works of Bryant (1996), Bunker (1985), Leach (1994), Neumann (1998), and Peluso (1992).

For many, political ecology became a recognized field of environmental studies in the 1980s. In its emphasis on politics, it is the result of the intersection of political economy and several existing fields of environmental study,[12] especially cultural ecology, human ecology, and critical human geography (Bryant and Bailey 1997:1-10, Peet and Watts 1996a: 4). In contrast to the first wave of environmental writings that were dominated by Malthusian visions of exploding human populations and resource shortages (Ehrlich 1968, Meadows et al. 1972, Ophuls 1977),[13] early political ecologists focused on distributive aspects of resource consumption and access when examining global environmental problems. When examining small scale, more localized human-nature interactions, they often focused not only on distributive issues, but also on the cultural practices that could be explained in terms of environmental concerns about stability and long term sustainability. But from the very beginning, and in some significant contrast to writings on common property, it is possible to identify a wide variety of approaches among political ecologists.[14] Indeed, the diversity of approaches has led Peet and Watts to claim that "political ecology seems grounded less in a coherent theory than in similar areas of inquiry" (1996: 6). But their call for a coherent theory itself risks difficulties in their simultaneously expressed belief in the "natural construction of the social," and advocacy for a poststructuralist turn in political ecology.[15]

Criticisms on grounds of methods, coherence, and systematicity notwithstanding (see Peet and Watts 1996b, Moore *1996),* different approaches in political ecology shared at least three common commitments during the 1980s and the early 1990s (Bryant and Bailey 1997). The first might be seen as an insistence upon questions about social marginality and access to resources. The second was the desire to investigate political causes and effects of resource allocation. And finally, political ecologists argued in favor of close attention to the cultural, socio-economic, and political contexts that shape human use and control of resources.[16] These commitments are visible even in Blaikie and Brookfield who suggest that political ecology "combines the concerns of ecology and 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 (1987:17).

In the mid to late 1990s, it is possible to identify two closely related developments in political ecological analyses: a) a more intimate examination of politics, often through a continued use of historical and ethnographic approaches, and b) a turn toward poststructuralist theory (Peet and Watts 1996, Escobar 1998). Claims that early political ecologists paid insufficient attention to politics, or that they did not adequately theorize its role in ecological practices are less applicable to more recent work.

But my more purposive interest in political ecological writings leads toward two specific areas of concern rather than global charges of incoherence: the first concerns the political, and the second is related to the nature of the subject that animates politics. On the one hand, the primacy accorded the political often prevents political-ecological analyses from examining how the political itself is made. The use of politics and power to explain the nature, causes, and effects of resource management and allocation casts the political as the prime mover, the cause that exists *sui generis.* But some reflections makes it clear that power and political asymmetries - the focus of political ecological writings - themselves have a history, and emerged over time as a consequence of many different processes.

In a related veils, political-ecoiogical analyses require a more robust exploration of the politics of subject formation. It would be accurate to claim that political ecology approaches the environmental subject tangentially at best. Whether it is the land manager standing at the center of Blaikie and Brookfseld's political ecology (1987: 239-40), the critic of western reason and the harbinger of emancipation in Peet and Watts's poststructuralist advocacy (1996:3,37) or the absent agent at the heart of Escobar's anti-esserstialist message, the question of subject formation is seldom raised adequately, let alone addressed carefully. The subject is always-already present in political ecological writings.

Attempts to examine the idea of the agentive subject, and theorize the emergence of ecological/environmental subjects typically take the form present, for example, in the important review of political ecological writings in Bryant and Bailey (1997). Organizing their review through an actor-centered framework, Bryant and Bailey examine states, multilateral institutions, business interests, non-government organizations, and grassroots actors. But each of these actors and their interests are represented as existing fully formed. The relationships of subjects to the environment, however, need to be examined in their emergence, not simply to be taken as part of a larger politics by preexisting interests. How environments, and the history of practices in relation to the environment, transform actors is an enormously interesting and complex question as chapter six showed. Actors work on their own interests in environments as part of their constitution as environmental subjects. Bryant and Bailey, and other political ecologists would likely concede the possibility of changes in interests over time and variations in them across different spaces. But a meaningful concession would also imply a more careful investigation of the processes whereby interests change, and of the mechanisms that relate interests to social structural locations on the one hand and to practices on the other. Also important would be attention to the relationship between interests, imagination, and the production of subject positions. To pursue such a making of environmental subjects, it would be necessary to give up the concept of subjects and interests that are always, already given by their social-structural locations, and instead examine how they are made. Some recent writings that can broadly be

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included in the domain of political ecology have begun to pay significant attention to processes of subject formation (Li 2000, Moore 1998, Sivaramakrishnan 1999, Worby 2000).

The Gendered Subject of Feminist Environmentalism[17]

The work of feminist environmentalists, like that of most ecofeminists,[18] is founded upon assumptions that connect environmentalism and feminism, often by advancing the thesis that politics and injustices around gender are closely related to and parallel those around the environment (Gaard 1993:1, Sturgeon 1997:23). But in contrast to some ecofeminists who have argued in favor of a spiritual (Starhawk 1982) or biological (Mies and Shiva 1993, Salleh 1984, Shiva 1988, 1994) foundation for the relationship between women and nature, feminist environmentalists are committed to investigating how economic processes, social practices, and political relations are instrumental in producing gender-related inequalities. Serious disagreements about what accounts for gendered inequalities and injustices in environmental practices and outcomes are perhaps matched only by disagreements about how to study them. Rather than accept a universal or essentialized relationship[19] between women and environment as early ecofeminists often asserted, feminist environmentalists are committed to examining gender-environment connections in a more materialist and contingent fashion (Agarwal 1994, Jackson 1993a, 1993b, Leach 1994). It is not surprising that they have generated some of the more exciting and fruitful scholarship in relation to the environment.

Feminist environmentalism comprises a range of approaches, some of them claiming specific names for themselves,[20] as is evident from a recent blossoming (Agarwal 1992, Alaimo 1994, Mellor 1992, 1997, Rocheleau 1995, Salleh 1997, Seager 1993, Sturgeon 1997, Warren 1997). Apart from sharing what Warren calls the minimal conditions of an ecological feminism,[21] there are additional common grounds among these approaches. Feminist environmentalists agree that gendered relationships in households, within communities, and around the environment are historically and contextually variable, and socially and politically complex. In many cases, they closely examine how the burden of political economic injustices

often falls on the bodies and labor of women, and the mechanisms through which such unequal burden sharing is translated into environmental degradation. Critical of the romanticized and reductive views of women in the developing world that lead to a failure to attend to political economy, feminist environmentalists seek to insert material, political economic, and cultural processes into their analyses of gender and environment (Jackson 1993c, Jewett 2000,). As Agarwal puts it, the inattention to political economy is precisely what turns ecofeminist analyses into a "critique without threat to the established order" (1992:153). It is further obvious that the attempt to defend the role of excluded groups and identities on naturalized grounds consolidates a very peculiar conception of the environment (Agrawal and Sivaramakrishnan 2001). It treats the relationship between human nature and the environment as a primordial fact, uninfluenced by experiences and changing social relations that may be changing precisely because of environment-related conflicts and negotiations. It reifies contingent relationships between social identities and environmental processes. It is inattentive to how social identities are shaped by social practices and how individual subjects reshape themselves in response to their changing experiences of the environmental government.

The necessary outcome of the recognition that there is no deterministic relationship between the interests of women and the conservation of the environment are two possibilities. One, that under some conditions efforts to regulate and protect the environment can work against women and two, that there may be other conditions where women act in ways that do not further environmental conservation. Such recognition also shows that environmental projects cannot count on women for environmental protection as a matter of course - instead, the extent to which women will act to conserve depends crucially on how conservation is related to their historically constituted material interests, and the practices of which they are a part. Similarly, the assumption that women are somehow closer to nature and act as its custodians and trustees can lead to policy designs that reserve for them additional tasks to protect trees and vegetation, without commensurate attempts to change political relations that marginalize them. This is exactly what

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Jackson (1993c) shows when she suggests that attempts at conservation often relegate women to marginal positions of power and simultaneously increase their labor requirements. The absence of women from decision-making positions in most forest councils in Kumaon is a fact that supports the argument advanced by Jackson. Recall similarly the unequal burden of environmental regulation and enforcement on women and lower caste members in the case of the Bhagartola forest council discussed in chapter five.

Although feminist environmentalists have successfully contested the easy conflation of the category of woman with environment and forcefully pointed *to* the regressive potential inherent in such naturalized relationships.[22] they have been less successful in examining the role of power in producing women as environmental subjects. Rather, the exercise of power is what excludes already constituted women from possibilities of participation, access to environmental resources, or positions of decision making (Agarwal 1994). Feminist environmentalist analyses can be greatly strengthened by a closer treatment of how differentiated environmental experiences creates gendered subjects or how they affect environmental outcomes. This would also, however, require giving greater primacy to practice rather than to the social identity category of gender. Indeed, the privileging of gender as the primary basis to investigate environment related injustices or inequalities has another important consequence. It means that although strategies for understanding gender can be extended to other social identities, the work of feminist environmentalists focuses on subject positions other than those related to gender only inadequately.

Elements for an Environmental Politics

It is evident that the three sets of writings sketched above have contributed importantly toward better analyses of environmental actions and outcomes. They have helped frame the terms of environmental discourses, and at the same time guided the thinking and training of a generation of young environmentalists. They have been especially effective because they each have clearly articulated foci of analytical interest - institutions for scholars of common property, politics for political ecologists, and the gendered subject for feminist environmentalists.

The specific focus of each of these cross-disciplinary interventions in environmental politics can also, however, be enriched. Attention by scholars of common property to institutions often means that they underplay variations in subjectivities, or consider politics and knowledges only in their relationship to institutions. But surely, there is an entire domain of political practices and changes in subjectivities that affects resource use and government, and cannot be approached by a primary focus on institutions. Indeed, the emergence of new knowledges, often in intimate relationships with institutions, has the potential to affect the bounds of what can be imagined as the environment and actions in relation to the environment.

Political geologists consider politics far more carefully than do scholars of common property. Yet their work, as indeed that of feminist environmentalists, often consolidates a particularly narrow conception of the environment. They view the environment as an arena in which conflicts such as those between elite and poor, state and community, or outsider and local unfold (Bryant 1996:221-25, Hughes 2001). Indeed, these oppositional terms for portraying politics and conflicts are often structurally interchangeable. Elite are part of the state, or at least have intimate connections with state actors. Communities, and the poor who are their members, are locally situated (Colchester 1994, Klooster 2000, Lynch and Talbott 1995). In consequence, even acute analyses of political conflicts and environmental histories often become constrained to particular conclusions. Such constraints on the analytical imagination are especially evident in assessments of recent shifts in environmental politics in which communities and decentralization have emerged as important watchwords (Klooster 2002). Thus some scholars valorize communities and decentralization (Ghai 1993, Gurung 1992). Others see government/local partnerships as Trojan horses that facilitate the maintenance of status quo (Gauld 2000, Hill 1998, MUNRO 1998). In both cases, the argument often turns into the assignment of credit and blame. Depending on the initial assumptions, communities, states, or markets can conveniently be picked. Of course, some acute work has recently begun to question the easy conflation of communities with resistance or states with power (Castree and Braun 1998, 2001, Darier 1999, Li 2001, Moore 1996a, Peluso and Vandergeest 2001, Sivaramakrishnan 2000).

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Although political ecological writings attend insistently to politics and in some cases to institutions, they have only recently begun to explore questions of subjectivity and knowledge carefully. How people understand the environment and relate to it, how new knowledges about the environment shape such understandings, and how changing institutions, politics, and subjectivities play a role in ecological practice need greater elaboration and analysis. Especially important for further investigation is a better sense of how understandings about the environment change over time producing new environmental subjects.

It is certainly true that in contrast to political-ecological research and common property theory, a range of scholars writing about indigenous peoples and gender pay greater attention to questions of identity (Diamond and Orenstein 1990, Merchant 1980,1990, Shiva 1988). They have focused especially on the argument that "women" and "indigenous" agents should be viewed as guardians rather than as ignorant bystanders in relation to the environment. This focus on the subject contrasts interestingly with the almost-missing subject in political ecology, and its near complete absence in writings on common property,, However, feminist environmentalists focus on the making of subjects mainly in relation to gender. Certainly, feminist philosophers have generated some of the most general perceptive accounts of subjectivity and agency (Butler 1989; 1993, Haraway 1989,1991). But these accounts have not adequately been integrated into analyses by feminist environmentalists. As a result, much of the work on gendered subjectivities remains concerned with the kinds of discriminations for which gender turns into a proxy.

Foucault and Environmental Politics

An approach to environmental politics that builds on the contributions of common property theorists, political ecologists, and feminist environmentalists needs to be especially attentive to the production of new power/knowledges, institutions, and subjectivities, and not just to their role in affecting environmental outcomes. In developing such an approach, I draw selectively upon Foucault's later work, especially where he introduces and discusses the idea of governmentality. But the application of Foucauldian insights

requires not just selectivity. It also necessitates supplementing and reconfiguration. My purpose in such reconsideration is less to locate precisely what Foucault did or failed to do, even less what he could or should have done. Such exegesis is unnecessary for my purposes and has been pursued ably elsewhere (Stoler 1995). Instead, my objective is to use Foucaulfs work as a source of possible provocations toward a framework for environmental political analyses. Foucault perhaps would be the last to protest against such stretching and reformulation.

Foucaults initial use of governmentality, or governmental rationality,[23] was aimed partly to address those critics of his work who saw it as focused too directly on the micro-practices of power - as for example in *Discipline and Punish,* and attending too little to rnacropolitical relations. By now the term has been adopted by a large number of scholars who have developed and applied it primarily to problems of government,[24] especially in liberal democracies. This new scholarship has striven especially to outline, following Foucaults (1978,1991) suggestive remarks, how politics in advanced industrial countries has changed in the past two centuries. It has tried to focus on a new dimension of historical existence across a range of modern manifestations of power in arenas such as education, social economy, insurance, risk management, welfare, criminality and police, space and architecture, and security among others.[25] The goal of this scholarship has been to understand and describe how modern forms of power and regulation achieve their full effects not by forcing people towards some state-mandated goals, but by turning them into accomplices. Undertaken in part to contest the repressive hypothesis of power, it tries to shows how the very individuality that is supposed to be constrained by the exercise of power may actually be an effect of power. In this sense, these analyses of modern government trace the profound transformation in mechanisms of power over the last two centuries (Foucault, 1978). The power of death over subjects that is always implicit in sovereignty, now exists together with its counterpart: power that can exert "a positive influence over life, that endeavors to administer, optimize, and multiply it, subjecting it to precise controls and comprehensive regulations (1978:137).

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Governmentality Outside Western Modernity

The explosion of the problem of government, according to Foucault ([1978] 1991), occurs when one of the functions of state powers becomes the administration of life.[26] The regulation of life as a goal of government raises with particular intensity the problems of "how to govern oneself, how to be governed, how to govern others, by whom the people will accept being governed, how to become the best possible governor..." (Ibid: 87). However, these questions can not be answered fully without the invention of specific techniques that allow the treatment of both the individual and the social body as complete, self-contained entities. In one case, the science of the individual can be applied to shape his or her actions; in the other case, the science of statistics can be applied to the life of the population.[27]

Although Foucault notes that the emergence of population shifts the emphasis of statecraft from sovereignty and discipline to effective government, issues related to sovereignty and discipline do not disappear ([1978] 1991:102): "Sovereignty is far from being eliminated by the emergence of a new art of government" ([1978] 1991:93): Rather, a new set of problems comes to be a part of the legitimate domain for the exercise of state power. In this manner, the need to govern effectively complicates the exercise of sovereignty (Kuehls 1993:141): It is also important to note with Hacking's important historical study that statistics is not just about discovering the rhythms of populations and demography. "Statistics has helped determine the form of laws about society and the character of social facts. It has engendered concepts and classifications within the human sciences... It may think of itself as providing only information, but it is itself part of the technology of power in a modern state" (1991:181).

The two forms of power in social relations, that simultaneously govern and take care of the entire social body as they also try to reach out and care for each individual, are precisely what Foucault has in mind when he calls the characteristic property of modern government as a government of "all and each."[28] The government of all and each necessitates a meticulous attention for economy in political practice:[29] In Kumaon, when such economy could not be effected by centralized government, state officials and local elite

together devised new strategies of decentralized government that helped achieve economies in both political and social regulation. The real strength of the state lies in population - in the strength and productivity of all those who are a part of the state. "Police is a science of endless lists and classifications; there is a police of religion, of customs, of health, of foods, of highways, of public order, of sciences, commerce, manufactures, servants, poverty... (it) seems to aspire to constitute the sensorium of a Leviathan... Police government works by the means of specific, detailed regulation and decree."[30] Certainly this view holds for the government of the environment. From the detailed classifications of Indian landscapes into different types of forests that we encountered at the beginning of British rule to the tabulation of different forms of criminality that necessitated regulatory innovations in Kumaon, the production of lists, tables, numbers, and rules is a critical part of modern government.

The increasingly detailed elaboration of the means by which governance takes place is accompanied by an expansion and increase in the number of social arenas that potentially require government. It is interesting to note that every new form of governmental action in relation to the social simultaneously underlines the distinction between state and society, and also binds together more closely the working of the state and the social. Acts of government are only possible because the state and the society can be conceptualized as separate entities. At the same time, regulatory actions covering ever broader aspects of life demonstrate the difficulties of an autonomous existence of the social and reemphasize the social as the raison d'etre of government. Strategies of government, depending on how they are practiced produce the effect both of community and the state. The point is not to dispense with the use of terms such as state and community altogether, but to recognize and emphasize the politics that goes into their contingent production.

These dual, mutually-in-tension aspects of governmental actions become possible because of the way they target the individual. It is changes in the practices of individual persons, each a member of society and all collectively constituting the social, that are the object of regulation. Solutions to problems

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associated with some aspect of the social - high birth rates, low, low levels of industrialization, high

criminal activity, deforestation, underdevelopment - require changes in individual behavior. Governmental

strategies achieve their effect, to the extent they do so, by becoming anchors to processes that reshape the

individuals who are a part and the object of governmental regulation.[31] By attending to practices, it

becomes possible to see the unity in institutions, politics, and subjectivities that together comprise different

technologies of government.

The need for modern government arises out of several processes that highlight population as an

entity with its own regularities, cycles, and effects.[32] "The welfare of the population, the improvement of its

condition, the increase of its wealth, longevity, health, etc." become the object of government (Foucault

*1991:*100). The knowledge of population becomes available through the field of political economy, and its

regulation takes place through different apparatuses and institutions of security in such a fashion as to lead

to a thorough governmentalization of both what we see as society and what we call the state. Refinements

in the sciences of demography and statistics reveal those macro-level features of a population that one must

know in order to govern in a rational and conscious manner.[33] As Gordon (1991: 35) points out, "Twentieth

century government postulates... an intimate symbiosis between the care of government and the travails of a

society exposed to the conflicts and crises of the liberal economy." The construction of steadily more

elaborate lists and tables about the qualities of the population, the effort to know the rhythms and

regularities of the social, the launching of the processes that "make up people" (Hacking 1993), and the

governance of these people are thus all part of governmentality.[34]

It can be argued that the remarkable body of work that has used governmentality to trace the

history of changing forms of governmental authority and practice in the West[35] has helped a focus on

governmentality as a primarily liberal phenomenon. However, it is governmentality as an analytical optic

that is obviously relevant to other places and historical periods. Treating governmentality as an analytical

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construct exposes its potential usefulness in investigating the nature of institutionalized power outside western modernity.

In general, technologies of government may be characterized as being founded upon some combination of knowledges, regulations based upon these knowledges, and practices that regulations seek to govern. But institutionalization of new strategies of power and regulation is also accompanied with changes in conceptions of the self, a point that often misses scholars of institutions and regulations alike. Not only is such an interpretation of governmentality useful to investigate those forms of power that seek to shape conduct, it also bears the promise of connecting together disparate domains of analyses: those concerned with political-economic aspects of institutional and organizational shifts, and those focusing upon transformations in subjectivities.

Even in Foucault, there are suggestive indications for an analytical rather than only a historically specific treatment of govermnentality (Dean 1999). The most important lead into such an argument stems from Foncault's views on power and its relationship to the subject.[36] His apparently neutral accounts of technologies of power have led many to complain that he is normatively confused and has no basis for a critique of the social phenomena he describes (Fraser 1981, Philp 1983, Rorty 1984, and Taylor 1984: 152-3).[37] But such complaints, as Patton (1989) shows, miss the force of Foucault's arguments. They misinterpret how he uses the concepts of power and freedom. Foucault's views on power constitute many innovations, but what is critical to a discussion of subject formation is his thesis that power is not just something that operates negatively on preconstituted subjects. Rather, one of the prime effects of power is how "certain bodies, certain gestures, certain discourses, certain desires come to be identified and constituted as individuals" (Foucault 1980: 98).[38]

The relationship between subject formation and power rests for Foucault then on an utter refusal to view power simply as the ability of a person to make another do something[39] and is predicated upon a positive conceptualization of both freedom[40] and power. Power is not just about the ability to constrain

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certain kinds of actions, peoples, or outcomes; it is as much about the possibility of producing them. The distinction between positive and negative freedom is widely accepted (Taylor 1979, Rose 1999), even if the bearer of positive freedom is conceptualized differently by people like Taylor and Berlin in comparison to Foucault. *But* it can be seen that positive freedom and the power to accomplish something - positive power - are closely related. Positive freedom is the capacity to act in certain ways. The creation of subjects depends upon their exercise of power in the service of a goal. But subjects do not form themselves by exercising power abstractly; as if in a vacuum outside of history. It is in adopting certain actions, gestures, and desires over time that their practices produce the effect of their subjecthood. It is not surprising then that in talking about the constitution of subjectivity, Foucault talks about practices and knowledges that have a historical dimension. "New techniques for examining, training, or controlling individuals, along with the new forms of knowledge to which they give rise, bring into existence new kinds of people" (Patton 1989:264).

It is possible to distinguish three modes of subject formation in each of which power in a positive sense plays a critical role. Subject creation can take place through scientific inquiries. Such inquiries focus on and help identify particular types of subjects as their target - for example, the productive and the laboring subject of economics, the speaking subject of philology and linguistics, or the subject/citizen dichotomy of normative political theory. Subject formation also takes place through disciplinary practices that instantiate distinctions such as those between the sane and the insane, the sick and the healthy, or the author and the reader. Finally, the ways a human being turns himself or herself into a subject, by following certain practices and modes of thought constitutes a third, practical mode of making subjects.

These three modes of subject formation are interdependent. The first two, examples of what Hacking calls nominalism (1986), intersect with the third, potentially in mutually reinforcing ways. For Foucault, the realm comprising different practices of sexuality is a prime example of the third mode of subject formation (Foucault 1982:208). The imagining by some peoples that they are members of a given

national community (and the refusal by others to imagine the same sense of belonging), or the self-fashioning of some as environmental subjects (and the continuing lack of concern about the environment by others), exemplify other possibilities. In the argument 1 have advanced, practices of specific subjects are the location where relationships between institutions and power/knowledge, and imagination and subjectivity come together. They are a basic mechanism upon which subject formation rests. The adoption of particular practices at any point in time is itself a prior result of variable combinations of politics, institutions, and existing subject locations, of technologies of government.

It should be obvious that in my argument, different modes of subjectification are not necessarily specific to a particular place or historical period.[41] A similar argument about other elements comprising governmentality can also be advanced: knowledges aimed at regulation, and the targeting of social practices through regulations, emerge as part of an analytical framework to understand the conduct of conduct in the domain of environment. If goveramentality is not only the name of a modern form of political regulation, but is rather a critical lens through which to examine political regulation and programs of governance, then different forms of goveramentality can be viewed as a consequence of transformations in two arenas. On the one hand, there might be variations in the nature of the elements that comprise governmentality - power/knowledge, institutions, and subjectivities. But variations might also result because of the kind of activities and contexts that are the focus of attention: development, welfare, education, economy, and health; or advanced liberal democracies vs. colonial rule. This book has focused only on a particular domain of political regulation - the environment in colonial and postcolonial periods.

The analytical conceptualization of governmentality can be further underlined by taking a closer look at one of its other distinctive aspects. The exercise of power under liberal governmentality is distinguished in Foucault by the importance accorded to knowledge. Government is the right disposition of things, so as to produce a convenient effect. The right disposition of things can be known only through careful investigations and the deployment of certain kinds of techniques and procedures that yield

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knowledge about the needs and desires of a population. Chief among these techniques and procedures are those guided by reason.

But it is surely unnecessary to visit the epistemological and ontological problems raised *by* a view in which different forms of regulation and knowledge production are divisible into those guided *by* modern reason and those characterized by irrationality. It is equally difficult to cleave to a view that forms of knowledge and regulation based upon reason came to flower only under liberal government, displacing earlier knowledges that were dependent upon unreason. It is more defensible to suggest that regulations are always dependent upon some forms of knowledge rather than mere caprice. It is the nature of various forms of knowledge that is always potentially under dispute.[42]

Nor are regulations claiming to serve the interests of those being regulated particular to modernity. Plato's Laws argue that a legislator or lawgiver should know the nature of bis people and the conditions under which they live before he makes laws for them. "The art of governing people is rational on the condition that it observes the nature of what is governed" (Foucault [1981] 1988:149). In the third century B.C., Kautilya instructed Chandragupta Maurya in India, "In the happiness of his subjects lies the king's happiness, in their welfare his welfare. He shall not consider as good only that which pleases him but treat as beneficial to him whatever pleases his subjects" (Rangarajan 1987: x)." And Foucault cites Saint Thomas as explaining that "the king's government must imitate God's government of nature." ([1981] 1988:149).

The Government of Environment

A raft of new work that uses some derivation of governmentality to analyze political and policy-related innovations, especially in non-western locations, has begun to sail into view (Mitchell 2000, Ong 1987, Prakash 1999, Scott 1995,1999, Stoler 1995, Urla 1993). This scholarship on governmentality is testament to the fecundity of an approach that interrogates some of the most cherished positions in the heated (and dated) debates on the relationship between state and society.[43] A careful consideration of the

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concept of governmentality provides useful tools to sidestep the state-society distinction and the debates swirling around this distinction. Indeed, a recourse to governmentality has the potential to demonstrate how even those works that question the idea of the state by talking about state formation still remain wedded to a common conceptual architecture that takes states and societies as its basic building blocks. Instead of examining the boundaries and definitions of the state and society, an analysis of govemmentality orients attention toward the concrete strategies to shape conduct that are adopted by a wide range of social actors, and how these different actors collaborate or are in conflict in the pursuit of particular goals. As a result, it becomes possible to move around familiar questions about the nature of the state and about the extent to which states shape social processes. On the other hand, even the most well developed analyses of state formation and state-society relations, because they take the distinction between states and societies as self-evident rather than historically and politically produced, remain subject to this limitation.

Writings on governmentality can illuminate and track the uncertainties and unexpectedness of new forms of government in at least four ways. They prompt analyses of how problems that require government (the conduct of conduct) come into being rather than accepting imquestioningly the existence of problems. For example, analyses of development and environmental conservation that use the optic of governmentality do not just identify causes of underdevelopment and environmental degradation; nor do they just propose solutions. They also ask when and for what reasons these processes came to be identified as problems that merit a particular style of analysis and resolution, In late nineteenth century Kumaon, the problem of environmental degradation was identical for forest officials with the problem of indiscriminate logging by private contractors, uncontrolled use of timber and vegetation by shifting cultivators, and extraction of fodder and grazing by village residents. The solution required the exclusion of most human influences except logging as long as logging occurred under the auspices of the forest department.

Two, instead of taking power as the fixed property of some agent(s), it becomes possible to examine concretely how power is generated by and located in different strategies of government. No

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particular agent or person can then be seen as being located in a permanently more powerful political position vis a vis another. Instead, one can begin to ask why some strategies of government work in certain ways and with what effects. In Kumaon, for example, the revenue department was able to prevail against the forest department by finding an unexpected aide in the protest strategies chosen by local residents. The power of specific practices of involvement in regulation and enforcement is the basis for the emergence of new subject positions. The power of statistics made possible the adoption of similar governmental solutions to the problem of significant biophysical diversity in the landscapes that the forest department sought to domesticate.

Three, the recourse to governmentality as an optic also orients attention toward the careful study of the techniques, forms, and representations of knowledge that are related to new means of governance. Statistics, maps, numerical tables, and their collation in specific formats can become the basis for producing new forms of knowledge that make some actions seem naturally more appropriate in comparison to others as an invaluable aid to the process of government. Similarly, the monitoring of council-managed forests produces specific and intimate knowledge about village residents that then allows the forest council to select those forms of threats and sanctions that are likely to prove effective.

Finally, studies of governmentality bring to the forefront questions about the relationship between government and self construction. If the literatures on institutional analyses, public policy, and the state treat the process of subject formation and identity change as lying outside their legitimate domain, an examination of governmentalization is about integrating institutional and other social changes with changes in subjectivities. The foregrounding of questions about these relationships forces analysis to search for resources that would allow at least the beginnings of answers.

Contrast the possibilities of an approach that takes governmentality seriously with the position Ferguson ([1990] 1994) adopts in using Foucault to deconstruct development processes in Lesotho. Although he explicitly deploys the term governmentality, he uses it to signify what he sees as the

proliferation of oppressive state power and institutions.[44] Early in his analysis, he describes

governmentality as the principle according to which "the main features of economy and society must be

within the control of a neutral, unitary, and effective national government, and thus responsive to planners'

blueprints" ([1990] 1994:72).[45] In this version of governmentality, isolated and identified as bureaucratic

proliferation, the dichotomous classification state/society continues to form the analytical foundation. The

term becomes identical with expansion of state control over social processes. Ferguson's valuable point

about how arguments portraying the objective need for state expansion transform development into an

apolitical, technicist endeavor is bought at the cost of a Weberian gloss that invokes centralization as the

phantom haunting state-led development efforts. Ferguson's reading of governmentality through the lens of

bureaucratization foregoes the opportunity to explore the multiple forms of conduct of conduct in a polity

and leaves alone questions about how subjects of development come into existence and with what

consequences. It is important to explore the different technologies of government that states pursue and

their relative prospects of success. And although it is fair to suggest that development discourses colonize

subjects, surely they do not colonize all subjects. But the portrayal of the developmental state as an

expanding bureaucratic entity that comes to control its population misses the chance to examine when,

through what means, and with what chances of success do those subject to policies use them as part of their

straggles to improve their life chances (cf Pigg. 1992), Equally lost to view are the changes in subject

positions that take place together with changes in policy.[46]

Environment-related changes in Kumaon, and a closer reading of Foucault, suggest a somewhat

different interpretation of govemmentality in relation to environment. Environmentality, the term I find

useful in this context, refers to the knowledges, politics, institutions, and subjectivities that come to be

linked together with the emergence of the environment as a domain that requires regulation and protection.

Regulation always demands new knowledge. But the production of new knowledges is intimately connected

to the shaping of practices and human subjectivities in relation to the environment. Since politics always

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implies interactions and negotiations, it also always signifies the mutual constitution of fields of action related to regulation and practice. These considerations suggest that although it may be linguistically and analytically convenient to parse environmentality as a combination of four different elements, the working out of environmental politics implies concurrent changes in them. It is difficult to imagine the emergence of new forms of knowledge without changes in political relations, institutional arrangements, and new ways of thinking about the object of knowledge - the human subject.

Environmentality refers then to a specific optic for analyzing environmental politics instead of denoting a particular form of environmental politics. Specific forms of environmentality depend upon characteristics of the elements constituting it. Shifts in the nature of knowledge, politics, institutions, and identities lead to new forms of environmentality by definition.

The substantive chapters in this book have examined how each of the elements comprising environmentality changed over the last century and a half in Kumaon. Take for example the two chapters in part one of the book. They explored at some length the use of numbers and statistics to organize the vast amount of new information that was becoming available about India's vegetation and landscapes since the end of the eighteenth century. In the first instance, it were the strategic and commercial needs of the East India Company that formed the impetus for the production of this new information. Surgeon-civil servants of the Company were important fulcra for the initial taxonomic advances in botany. But from the mid-nineteenth century, the increasing importance of timber revenues, the sheer quantity of new information, and the belief that a more systematic exploitation of the subcontinent's vegetation wealth was in order led to institutional innovations in the form of new departments of forestry in all the major provinces. These institutional changes went hand in hand with the training of a new cadre of forestry officials who saw themselves as the guardians of India's vegetation and timber. In a sleight of mind that challenges the imagination, they portrayed themselves as guardians of forests at the same time as levels of timber exploitation reached unprecedented heights. Part and parcel of this mental legerdemain was the portrayal of

other actors who might be interested in forests - timber contractors and merchants, shifting cultivators, peasants, revenue department officials - as ill Mentioned or ill informed (or both) about the preservation of the environment.

Even this brief recapitulation of the discussion related to the production of forests in India (and Kumaon) should be sufficient to illustrate that the generation of specific kinds of knowledges is contingent upon and goes together with important political, institutional, and subjectivity related shifts. An understanding of how one of the elements comprising environmentality changes requires a consideration of its relationships with other elements. The chapters in the second part of the book illustrate this point equally well. Each chapter examined the triad of politics, institutions, and subjectivities in the context of altered knowledges about forests. But to facilitate exposition, within each chapter the focus remained on changes in a specific element and on the role other facets of environmentality played in relation to the changes under consideration. Thus, the chapter on "dispersal of regulation" provided an in-depth investigation of how intra-community institutions changed in Kumaon between the 1920s and the 1990s. But the making of new Institutions at the level of the village cannot be understood without attending to the ecological practices that underwrote them, negotiations over their character and precise makeup, and the distributive conflicts they generated.

Institutional regulation, ecological practices, and subject formation are related to and depend upon various forms of knowledge. But a central and particular feature of the knowledges that became a part of environmental regulation from the 1860s onward has been their genesis in and invocation of expert authority. Even more crucially, new ways to produce knowledge, through statistics and numbers, combined with claims to expert authority upon which regulations depend (and which shaped practices). Problems of the social body, as perceived by state officials were instruments in the production of knowledges which then became the basis for new policies to address deficiencies in existing strategies of regulation. The yoking together of multiple forms of regulation to expertise and truth claims was equally crucial to technologies of

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government that sought to create and rationalize regulations around forests in Kmnaon from the 1860s onward. Indeed, it is possible to suggest that joining them together has been critically important for Environmental regulation elsewhere as well, and continues to perform a significant normalizing task in programs of environmental government. The combination of knowledge and regulation is critical, finally, in the processes of self formation that can be viewed as the consequence of the interactions between regulation and situated practice. The implementation of new regulations in Kumaon, and the creation of new practices went hand in hand with changes in the human subjects who were the target of new regulations even if the changes that transpired were not always what government had explicitly attempted.

Although this discussion of environmentally follows closely the historical/political discussion around forests in Kumaon, it should be obvious that the concept can as easily be deployed in relation to the politics around other environmental concerns. Specific governmental strategies are often a result of attempts to regulate, and can have as their inspiration a whole range of phenomena, from observations of existing practices to assessments of inherent dynamics of natural resource "systems." Consider as an example the phenomenon of global climate change. Increasing fears about the likely upward shift in average global temperatures have prompted widespread discussions about creation and allocation of carbon quotas as a form of regulation to limit the production of carbon dioxide. The reduction of emissions and different strategies of carbon sequestration, many hope, will positively influence outcomes related to global climate change.

In discussions over the allocation of carbon quotas, the differences among the positions taken by various states are reflected in how they cluster around various proposals to limit the production of greenhouse gases. But each proposal is an attempt at regulation of existing practices (even if there is no international actor who has the ultimate power to enforce international agreements). The practices that regulations seek to transform are themselves a result of multiple causes, and their alteration depends on the abilities of humans to transform nature in accordance with their desires. In the regulation of carbon

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emissions, some countries see themselves as the guardians of the global environment especially those in northern Europe and other parts of the developed world. Others portray themselves as needing to pursue higher levels of development and demand compensation in the form of transfers of funds and new technology. They argue that such transfers of wealth and technology are necessary in part because they have been the victims of centuries of high levels of production of greenhouse gases in the North. It is in such tensions between regulations and practices that the ground of politics and political knowledge is generated.

Conclusion

Environmentality, in the way it has been used in this book, constitutes a way to think about environmental politics. It attends carefully to a) the formation of new expert knowledges, b) the nature of power that is at the root of efforts to regulate social practice, c) the type of institutions and regulatory practices that exist in a mutually productive relationship with social and ecological practices, and which can be seen as the historical expressions of contingent political relationships, and d) the conducts that regulations seek to change, and which go hand in hand with the processes of self formation and struggles between expert-authority based regulation and situated practices.

In opting for environmentality as the optic to examine the long process of changes in environmental politics, institutions, and subjectivities in Kumaon, this book has insisted on the importance of considering these concepts and their referents jointly. It is through the attempt to examine them together that it becomes possible to see how new technologies of environmental government emerge, the problems that they are devised to address, and the degree of success they enjoy. Technologies of government, as Zygmunt Bauman might say, "cast human reality as a perpetually unfinished project, in need of critical scrutiny, constant revision and improvement" (2000:229). They are about the effort to change existing "modalities of being"

- for nature as well as humans. As applied in Kumaon in the twentieth century, they have been reflected in governmentalized localities, regulatory communities, and environmental subjects.

A focus on technologies of government and their application helps undermine the tendency to view institutions, power, or subject locations as the unquestionable starting point to understand environmental change and politics. Instead it encourages attention toward the processes through which these concepts are consolidated and naturalized. It directs analysis to the interdependent constitution of these three seemingly foundational concepts in environmental studies, and thereby makes the familiar contingent.

Nature's government today may have come a long way from what Saint Thomas had in mind. But for all that it is equally closely tied to the government of humans - visible in the changing forms of regulation and subject formation in Kumaon and equally identifiable in global discussions about changing climate and declining biodiversity. We gain a richer awareness of environmental politics by beginning to trace the connections between power/knowledges, institutions and subjectivities. It is toward such an end that this book has worked.

1. As Al Gore states it, "We must make the rescue of the environment the central organizing principle for civilization" (1992:269). Buell's (1995:2) reflection on the accuracy of this statement closely matches the perceptions of many environmentalists - "no informed person would contest that it expresses an anxiety much stronger today than ever before in recorded history, and likely to grow stronger."

2, See Ribot 1995.

3. see White (1995: x).

4. For a comprehensive review of empirical studies of local management of commons see Baland and Platteau (1996). Region- and country-specific discussions and case studies of local management are numerous and widely available. For some exemplary studies, see Berkes (1989), Berkes and Folke (1998), Fernandes, Menon, and Viegas (1988), Gibson, McKean, and Ostrom (2000), McCarthy, Swallow, Kirk, and Hazell (1999), McCay and Acheson (1987), McKean (1992), NRC (1986), Ostrom (1990), Peters (1994), Pinkerton and Weinstein (1995), Poffenberger (1990), Redford and Padoch (1992), Wade (1994).

5. Agrawal (2001a) examines 55 cases of environmental policy changes in Africa and Latin America in which communities and local populations have come to play some decision making or implementation related role.

6. The failure has occurred along a number of dimensions: highly unequal distributive effects, resistance from those considered marginal and powerless, and steady erosion of land under vegetation (Agarwal, 1997, CSE 1982). Agarwal (1998: 59) argues that even the early efforts of state agencies to address some of the deficiencies of centralized control faced "widespread local resistance, including people uprooting saplings" that forest department officials had planted.

7. Several other distinct streams of environmental writings have identifiable disciplinary origins: environmental anthropology, historical ecology, human geography, environmental history, and environmental sociology. For accessible and comprehensive introductions to these writings see xxxxx.

Insights from disciplinary environmentalist scholarship have significantly influenced the more cross-disciplinary literatures on common property, political ecology, and ecofeminism that are the direct focus on this chapter. I have chosen to focus on more cross-disciplinary studies in part because of their relatively explicit attention to policy and politics. In addition, I am concerned in this chapter mainly to flesh out a robust understanding of environmental politics by tracing the historical articulation of power with nature. Given the orientation of this chapter, disciplinary crossfire is clearly less interesting.

8. Although I choose the work on common property as the entry point for my discussion of these three interdisciplinary streams of literatures, I do *not* mean to privilege any ontological or chronological priority by my choice. The roots of political ecology can be traced back to discussions in political economy and cultural ecology, and the ancestry of ecofeminism can be handily discerned in phenomenology and early feminist and environmentalist writings. For example, Sturgeon sees in ecofeminism a name that "usefully if partially describe[s] the work of Donna Haraway and Mary Daly, Alice Walker and Rachel Carson, Starhawk and Vandana Shiva" (1997:24).

9. A number of scholars associated with Ostrom have helped extend the research program on the effectiveness of the community-level institutions in the management of renewable resources (Blomquist and Ostrom 1985, Lam 1998, Ostrom, Gardner, and Walker 1994, Schlager and Ostrom 1992, Tang 1992).

10. If common property theorists have begun to pay attention to politics, albeit through the mechanism of institutional reconfiguration, they have yet to initiate any serious examination of the relationship between institutions and the production of environmental identities, or the connections between changes in institutional arrangements and transformations in the character of environmental subjects. I examine this gap below in summing up the contributions of these three different sets of interdisciplinary writings on environmental politics.

11. Although Peet and Watts (1996:2) place the emergence of political ecology as one factor worth citing (together with the collapse of socialism and the resurgence of global environmental concerns), to explain a

greater emphasis on nature-society relations, it may be appropriate to claim a somewhat more modest role for interdisciplinary analyses of the environment, including those by political ecologists.

12.Initial works in political ecology can be dated perhaps to the 1970s, to papers presented in a symposium on nature and environment that were published in *Anthropological Quarterly,* and especially to a short paper by Eric Wolf (1972) with the title "Ownership and Political Ecology." Some of the points in Wolfs paper were developed at greater length in Cole and Wolf ([1974] 1999). But the substance of the arguments advanced in the 1970s in Wolfs paper, despite the title of his paper, in at variance with later theoretical innovations in this field in several respects. For example, despite his emphasis on processes and politics behind rales, Wolf also retains a belief in "self-regulating communities" in parts of the Alps as contrasted to another ideal-typical formation - politically federated groups in the valleys. Nor does he say much about what political ecology might be. A clearer ancestry to political ecology might be traced to the late 1970s and the early 1980s (Blaikie 1985, Blaikie and Brookfield 1987, Bunker 1985, Cockburn and Ridgeway 1979, Redclift 1984, Watts 1983).

13.The notable exception to the Malthusian focus of early environmentalist writings is Carson (1962) who was far more concerned with the effects of artificially produced chemical compounds and the role of corporate actors in ignoring the effects of the chemicals they sold as an unmixed good.

14.For concise reviews of the multiplicity in political ecological approaches, see Peet and Watts (1996:6-13) and Bryant and Bailey (1997: 20-26). After pointing to the limited and under-theorized role of politics *in* Blaikie and Brookfield's work, Peet and Watts list several new directions in political ecology: to theorize the specific dynamics of environmental change and socialism; to attend to resistance, social movements, and organized politics as examples of politics related to the environment; to relate civil society to environmental associations and organizations; to analyze environmental discourses and narratives; to deepen the historical aspects of environmental change; and to shift the analysis of ecological processes from idioms of harmony and stability toward those of complexity, chaos, and disequilibrium. The grab bag of

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approaches that they list does not improve when compared to that listed by Bryant and Bailey. Among the

approaches Bryant and Bailey identify are those oriented to addressing specific problems (soil erosion,

deforestation, overfishing), concepts (social construction of the environment, scientific forestry,

sustainability), regions, social categories (such as class, gender, or ethnicity), or actors (peasants,

corporations, nongovernment organizations). As a way to bring greater unity to this wide diversity, Peet

and Watts look to and advocate for poststructuralism for theoretical inspiration and social movements for

inspiration in social organization. Bryant and Bailey, focusing on the existing gaps in political theorizing in

political ecology, advocate for an actor-oriented approach.

15.Peet and Watts (1996:263) attempt to exercise a significant amount of care in how they see the social

as being naturally constructed and in their advocacy of specific elements of poststructuralist thought. But

no matter how they wish it, a natural construction of the social would require some presocial, predisciirsive

entity that can be called "natural."

16.See Neumann (1992), and the special issue of the *journal Antipode* edited by Neumann and Schroeder

(1995).

17. I would like to acknowledge Bina Agarwal's influence on several of the subsequent arguments about

gender-environment relationships, and Donald Moore's helpful suggestions for my choice of the title for

this section.

18.A range or writings that can be identified as ecofeminist began to flower in the late 1970s, and

blossomed from the 1980s onward (Diamond and Orenstein 1988, Merchant 1980, Warren 1987, 1997).

19.Kathy Ferguson's analysis of three kinds of essentialisms in relation to feminism, and the tendency

among different theorists to conflate them, is worth examining (1993: 81-90). According to Ferguson, the

first - essentialism per se - refers to arguments that attribute women's experiences to some unchanging

traits in physiology or some larger order of things. The second, universalism, takes the patterns visible in a

particular time and place as being accurate generally; and the third, constitution of unified categories,

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entails the creation of any unified set of categories around the terms "woman" and "man". Ferguson suggests that the third kind – constitution of unified categories - is fundamental to language and all analysis requires such naming practices. Although it is possible to be mindful of the contingent and specific nature of the creation of such categories, it Is impossible to operate without them. Often, charges of essentialism confuse these three forms of essentialism. Such confusion is especially problematic when instances of the third kind are criticized as being of the universalist or the biological kind.

20. Some of the differences prompting scholars to claim different names or typologies for their approaches are a function of the emphasis they place on the difference between anthropccentrism/androcentrism vs ecocentrism, and environment vs nature/ecology. See Eckersley (1992) for a discussion of these differences and Grendstad and Wollebaek (1998) for an empirical study. For an examination of the typologizing processes that produce feminisms with different names and characteristics, see King (1994). Her argument applies equally to feminist environmentalisms. The typologizing impulse and charges of essentialism often have the unfortunate consequence of eliding the political contexts within which particular forms of feminist environmentalists might have come into being (Sturgeon 1999).

21. Among the most important of the conditions noted by Warren are, a) oppression of women and nature shares important connections; b) the nature of these connections is key to understanding the oppression of women and nature; c) feminist theory must include an ecological perspective and solutions to environmental problems must include a feminist perspective (1987:4-6).

22. In this regard, see also McMahon (1997) who launches a critique of neoclassical economics from an ecofeminist stance.

23. Foucault's lecture on governmentality at the College de France was first published in the journal I *& C* in 1979, and has come to be more widely known in Its revised form in Burchell, Gordon, and Miller 1991.

24. Foucault's definition of government as the "conduct of conduct," or the effort to shape, guide, or affect the conduct of some agent(s), is one that has underpinned the principal sense in which the term has found

use throughout the following discusssion.

25.See Burchell, Gordon, and Miller, 1991: ix. In his lectures, Foucault himself had applied this perspective to a number of different historical domains: the idea of government as a form of "pastoral power" in Greek antiquity, doctrines of government associated with the idea of reason of state and police in early modern Europe, eighteenth century beginning of liberalism, and post-war forms of neo-liberal thought in Germany, USA, and France (Gordon 1991: 3). Dean (1999: 3-4) lists some of the specific works that describe and examine how modern forms of power relate to politics in these different domains.

26.Foucault speaks explicitly of the emergence of biopower as taking place in the 17th century, and treats it as a new form of power over life. His discussion of governmentality (Foucault 1991) can be seen as an effort to track changes in forms of political control as they relate to the triangle of sovereignty, discipline, and government. Two developments underpinned the appropriation by states of power over life: the shattering of feudal structures and the establishment of large territorial, administrative, and colonial states, and Reformation and Counter-Reformation that raised the question of how one must be ruled spiritually.

27.Power over life can be seen to operate through two basic forms. Disciplinary power centered on the body, optimizing its capacities, increasing its usefulness and docility, and integrating it into systems of efficient and economic controls. The other centered on the entire species, and aimed at the regulation of the biological processes that affect a whole population: birth, mortality, health, and life expectancy. Institutions such as the army, schools, barracks, and workshops came to embody the mechanisms to discipline the body, whereas the regulation of population was achieved by techniques in emerging fields such as those of demography, economics, statistics, and resource management. In these fields, we witness the methods and techniques that can optimize life and its forces without at the same time making it more difficult to govern. The careful shepherding of economic processes and the forces that sustained them became a rationale for governance (Foucault 1978:139-41).

28."Omnes et Singulatim" is the title of Foucault's Tanner Lecture delivered at Berkeley (Foucault [1979]

2000).

29.This style of political governance was fully articulated for the first time, according to Foucault, under the rubric of *polizeiwissenschaft,* the science of police. The idea of policing, with the appropriate translation of *polizei* being closer to policy than to police, developed in German territories after the Thirty Years War.

30.Gordon 1991:10-11, draws upon Foucault's lectures at College de France in 1978 to make these comments. See also Pasquino 1991 for a further discussion of this particular relationship between the idea of police and policy.

31. Indeed, the implicit assumption that the individual is the link between states and societies is precisely the reason why those who try to undermine the state-society separation attempt to show the simultaneous location of state officials in society and the links of individual members of society with the state (Gupta 1995, Migdal, Kohli, and Shue 1994, Nugent 1994).

32.

33. As Hacking says in his important historical study, "statistics has helped determine the form of laws about society and the character of social facts. It has engendered concepts and classifications within the human sciences... It may think of itself as providing only information, but it is itself part of the technology of power in a modern state" (1991:181).

34.The virtue of liberalism, according to Foucault, is that it grants due credit to those regular and natural processes that characterize aggregates such as the population or the economy. Liberal government does not try to impose on them the will of a sovereign. Internal regularities of aggregate phenomena become evident because of the application of specific procedures of knowledge generation and expert authority creation. The importance of new knowledges lies in that they show how *to* govern, how to regulate, and how to achieve desired ends. The difference between the state that tries to realize the full import of sovereignty and that which attempts to govern is precisely that the one imposes a sovereign will, whereas the other seeks to

deploy the correct forms of surveillance, control, and management in order to achieve optimal outcomes. It

is precisely to highlight this difference of liberal goveramentality from earlier forms of state power that

Foucault pays so much attention to the ideas of pastoral power and likens government to the art of ensuring

the "correct disposition to things, arranged so as to lead to a convenient end" ([1978] 1991:93).

35.1ndeed, *the* influential collection of essays on governmentaly edited by Burchell, Gordon, and Miller

represents itself as a "genealogy of the welfare state- and of neo-liberalism" (1991: 37). Another recent

volume on govermuentality also focused on its liberal forms (Barry, Osborne, and Rose 1996). Similarly,

the larger proportion of essays related to Foucault's work in the journal *Economy and Society* takes

govemmentality as a feature of power in modernity. See also Grant's (1997) interesting essay on discipline

and its relationship to the formation of subjectivities in the context of schooling.

36,As Foucault was to remark in the later period of his life, "the goal of my work during the last twenty

years... has not been to analyze the phenomena of power... My objective, instead, has been to create a

history of the different modes by which, in our culture, human beings are made subjects" (1982: 208).

37.See Connolly 1985 and Patton 1989 for a defense of Foucault's views on power, and for the explication

of how these views remain consistent across Ms early and later writings.

38. In its primary sense, power for Foucault is "power to," the ability of a subject to accomplish something,

and it is exercised whenever there is action upon the actions of others. Relations of power can exist only

when they involve forms of actions upon the actions of others, and leave open a range of possible responses

(Patton 1989:271). For Foucault, thus, freedom and power do not exist in an oppositional relationship.

There is less a face to face confrontation between power and freedom and more a permanent provocation.

39.Remarking on this view of power, Taylor says, "the utter sterility of the view popular a while ago in

American political science, that one could analyze power in terms of A's ability to make B do something he

otherwise would not illustrates this [Foucault's invaluable contribution].., [A]cts of power are so

heterogeneous; they absolutely do not admit of being described in such a homogeneous medium of

culturally neutral makings and doings." (1984:171). One can add to Taylor's scathing criticism. Views of power in which A makes B do something without B realizing it continue to adhere to a negative, sterile view of power.

40. Positive freedom, in Isaiah Berlin's discussion, refers to desires for self government and autonomy (1969). But for Foucault, the existence of any individual capacities underlies the idea of positive (and negative) freedom (Patton 1989: 262). Internal constraints, dependent on the intellectual and moral constitution of a person, can limit the class of actions that person is able to perform as much as external constraints. Positive freedom then refers to the degree to which internal constraints limit a person's ability to undertake some action.

41. See, for example, Foucault's own investigations of subject formation in periods outside of modernity and through techniques that broadly fall under what one might call "cultivation of the self (1988, 1990).

42. Recall in this context the strongly resonant beginning of Foucault's *The Order of Things* where he cites Borges on a "certain Chinese encyclopedia" that presents an "unthinkable" classification of animals (1973: xv-xvii). The taxonomy from a given system of thought demonstrates for Foucault the stark impossibility of being imagined if one inhabits a different system of thought. Under modernity, perhaps a particular variant of reason - narrow rationality - has come to constitute the entirety of what could count as reason.

43. Foucault's title for his lectures on the subject was "The government of one's self and of others" (Gordon 1991:2).

44. Ferguson's, and as I discuss later, Gupta's use of Foucault can be seen to conform to what Hannah calls the evocative rather than the exegetical (2000:4)

45. Later in the book, Ferguson defines governmentality as "the idea that societies, economies, and government bureaucracies respond in a more or less reflexive, straightforward way to policies and plans. In this conception, the state apparatus is seen as a neutral instrument for implementing plans, while the government itself tends to appear as a machine for providing social services and engineering economic

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growth" ([1990] 1994:194). Nothing that Foucault says about governmeniality, however, signals that it refers to the neutrality of the state, or that it simply denotes the expansion of modern states. A reading of Foucault through an organizational theoretic optic is likely to pick only on the increasing efforts by states to produce regulation. But such a reading misses the some of the most provocative and interesting elements in the concept of govemmentality, reducing Foucault at best to a version of Weber.

46.Two other important recent efforts to analyze development processes (and to some extent issues related to environmental conservation as well) from a Foucauldian stance are Escobar (1995) and Gupta (1998). Escobar's critique of strategies of development since the 1950s dwells more on the concept of biopower and biopolitics than on governmentality and does not examine questions of changes in subjectivities or identities. Escobar's work attends more to the manner in which discourses structure a certain view of development: both among practitioners, and those who according to Escobar, have been its victims. Gupta suggests the possibility of a "new regime of discipline in which governmentality is unhitched from the nation state to be instituted anew on a global scale" (1998: 321). For Gupta, governmentality is about the "global regulation of populations, bodies, and things" (ibid: 34) as a result of new global treaties and accords. Global institutions construct a particularly constrained field of beliefs and actions; for third world peasants, and thereby inaugurate a different form of domination from that of the nation state. In both these accounts the use of Foucault is aimed at a particularly dichotomized conceptualization of power and its effects.

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Woolsey, Theodore, S. Jr. 1920. *Studies in French Forestry.* New York: John Wiley & Sons.

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Zolberg, Aristide. 1972. Moments of madness. *Politics and Society* 2(2): 183-207.

C.V. for ARUNAGRAWAL

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Education

PhD: Political Science, Duke University, 1986-1992, First to complete and defend dissertation in my cohort.
MA: Political Science, Duke University, 1986-88.
MBA: Indian Institute of Management, Ahmedabad, India, 1983-85. Specialization in Development Administration and Public Policy.
BA: History, Delhi University, India, 1980-83,

Publications

Book

— 1999. *Greener Pastures: Politics, Markets, and Community among a Migrant Pastoral People.* Durham NC: Duke University Press. (Also jointly published by Oxford University Press, New Delhi).

Monograph

— 1999. *Decentralization in Nepal: A Comparative Perspective.* San Francisco: ICS Press.

Edited Volumes

— Forthcoming. *Indigenous Knowledge.* Invited editor of a Special Issue *of International Social Science Journal.* October 2002.

— Forthcoming, The State of Pastoralists in South Asia. Invited editor of a special issue of *Nomadic Peoples.* June 2002. (With Vasant Saberwal).

— (Forthcoming) *Regional Modernities.* Stanford University Press. (With K. Sivaramakrishnan). (Also to be published jointly by Oxford University Press, New Delhi). Fall 2002.

— 2001. *Communities and the Environment: Ethnicity, Gender, and the State in Community-Based Conservation.* Rutgers University Press (With Clark Gibson).

— 2000. *Agrarian Environments: Resources, Representations and Ride in India.* Duke University Press (With K. Sivaramakrishnan). (Also published by Oxford University Press, New Delhi as *Social Nature: Resources, Representations, and Rule in India)*

Refereed Articles

— Forthcoming. The Government of Common Property Institutions. *Annual Review of Anthropology.* (2003).

— Forthcoming. Indigenous Knowledges and the Politics of Classification. *International Social Science Journal.* October 2002.

— Forthcoming. Whither South Asian Pastoralism? *Nomadic Peoples.* (With Vasant Saberwal) May 2002.

— 2001. Common Property Institutions and Sustainable Governance of Resources. *World Development* 29(10): 1649-72.

— 2001. Collective Action, Property Rights and Decentralization in Resource Use in India and Nepal. *Politics and Society* 29(4): 485-514 (With Elinor Ostrom).

— 2001. The Regulatory Community: Decentralization and the Environment in the Van Panchayats (Forest Councils) of Kumaon. *Mountain Research and Development.* 21(3): 208-11.

—-2001. State Formation in Community Spaces?: The Forest Councils of Kumaon. *Journal of Asian Studies.* 60(1): 1-32.

— 2001. Group Size and Collective Action: Third Party Monitoring in Common Pool Resources. *Comparative Political Studies* 34(1): 63-93. (With Sanjeev Goyal).

— 2001. Common Property Theories and Forest Management in the Indian Himalaya. *Contributions to Indian Sociology (n. s.).* 35(2): 181 -212.

— 2000. Environmental Orientalisms. *Cultural Critique.* #45: 71-108. (With S. Sawyer).

— 2000. Transboundary Resources and Adaptive Management. *Environmental Conservation.* 27(4): 326-33.

— 1999. Accountability in Decentralization: A Framework with South Asian and West African cases. *Journal of Developing Areas* 33(Summer): 473-502. (with Jesse Ribot).

— 1999. Enchantment and Disenchantment: The Role of Community in Natural Resource Conservation. *World Development.* 27(4): 629-49. (With Clark Gibson). (Reprinted in *Conflict Prevention and Resolution in Water Systems,* edited by Aaron Wolf. Cheltenham, UK: Edward Elgar).

— 1998. Profits on the Move: The Raika Shepherds of Western India. *Human Organization* 57(4): 469-79.

— 1997. The Politics of Development and Conservation: The Legacy of Colonialism. *Peace and Change* 22(4): 463-82.

— 1997. How do Local Institutions Mediate the Impact of Market and Population Pressures on Resource Use? *Development and Change* 28(3): 435-65 (With Gautam Yadama),

— 1997. Followers and Leaders among Raika Shepherds in Western India: A Principal-Agent Perspective. *Journal of Theoretical Politics* 9(2): 235-63 (Reprinted in *Polycentric Games and Institutions,* edited by Michael D McGinnis. Ann Arbor: University of Michigan Press).

— 1996. Poststructuralist Approaches to Development: Some Reflections. *Peace and Change* 21(4): 464-77.

— 1996. The Community *versus* the Market and the State. *Journal of Agricultural and Environmental Ethics* 9(1): 1-15.

— 1995. Dismantling the Divide between Indigenous and Western Knowledge. *Development and Change.* 26(3): 413-39.

— 1994. Mobility and Control among Nomadic Shepherds: The Case of the *Raikas,* II. *Human Ecology* 22(2): 131-44.

— 1993. Mobility and Cooperation among Nomadic Shepherds: The Case of the *Raikas." Human Ecology,* 21(3): 261-79.

Book Chapters:

— Forthcoming. Regional Modernities. In *Regional Modernities in Stories and Practices of Development.* Eds. K. Sivaramakrishnan and Arun Agrawal. Stanford University Press. Fall. 2002. (With K. Sivaramakrishnan).

— Forthcoming (2002) Environmental Capacity Building: India's Democratic Politics and Environmental Management (with Noriko Yokozuka).

— 2002. Common Resources and Sustainable Governance. In *Institutions for Managing the Commons,* (eds) Thomas Dietz, Nives Dolsak, Elinor Ostrom, Paul Stern, Susan Stonich, and Elke Weber. Washington DC: NAS Press.

— 2001. Agrarian Environments. In Agrarian Environments: Risks, Representations, and Rule in India. Eds. Arun Agrawal and K. Sivaramakrishnan. Pp. 1-22. Durham, NC: Duke University Press, (With K. Sivaramakrishnan.

— 2000. Community and Natural Resource Conservation. In *Nature, Production, Power: Towards an Ecological Political Economy.* Pp. 35-55. Eds. Fred Gale and R. Michael M'Gonigle. London, UK: Edward Elgar.

— 2000. Small is Beautiful but is Larger Better: Forest Management Institutions in the Kumaon Himalaya, India. In Clark Gibson, Margaret A. McKean, and Elinor Ostrom (eds) *People and Forests: Communities, Institutions, and Governance,* pp. 57-85. Cambridge: MIT Press.

— 1999. Community: Tracing the Outlines of an Enchanting Concept. In Roger Jeffrey and Nandini Sundar (eds) A New Moral Economy for India's forests? Discourses of Community and Participation. pp. 92-108. New Delhi: Sage Publications.

— 1998. Not Having One's Cake, Nor Eating It: Intellectual Property and "Indigenous" Knowledges. (In German). In Michael Flitner / Christoph Görg / Volker Heins (eds) Die politische Entwicklung der Natur: Neue Konflikte um Biologische Ressourcen. Opladen: Leske & Budrich.

— 1994. Rules, Rule-making and Rule-breaking. In *Rules and Games,* E. Ostrom, R. Gardner and J. Walker, pp. 267-82. East Lansing: Michigan University Press.

Other Publications

— Forthcoming (2002). Resource Institutions. Entry in the International Encyclopedia of the Social and Behavioral Sciences. Eds. Neil Smelser and Paul Baltes.

— 2000. The Ethnographer's Kaliyugaya: A comment. *Current Anthropology.*
— 1995. Indigenous and Scientific Knowledge: Some Critical Comments. Article and exchange in *Indigenous Knowledge and Development Monitor* 3(3-4), 4(1-2).
— 1995. Overpopulation=Resource Degradation: An Oversimplistic equation? *Unasylva.* 46(2): 50-58.
— 1994.1 Don't Need it But You Can't Have it: Analyzing Institutional Conflicts Between Farmers and Pastoralists. *Pastoral Development Network 36a,* London: ODI, pp. 36-55.
— 1993. Patenting Gene Fragments. *Economic and Political Weekly* 28(22): 1089-93.
— 1992. The Grass is Greener on the Other Side," IIED Issues Paper, London: Overseas Development Institute.
<u>Under Review</u>
— Book manuscript entitled: *Environmentally: Technologies of Government and the Making of Subjects.* Draft complete and under review (March 2002). Available upon request.
— Making up Forests: Statistics and Colonial Environmental Knowledge. Paper submitted to *Progress in Human Geography* (March 2002).
— The Decentralizing State: Politics, Institutional Choice, and Environmental Policy in Africa and Latin America. *Comparative Politics* (March 2002).

Work in Progress

— Book manuscript entitled: Decentralization of Environmental Policy: Politics and Institutional Choice. Three chapters complete. (A study of environmental policy decentralization in 55 countries in Africa, Asia, and Latin America).

Selected Awards, Grants, and Honors

2001-2004: Globalization and Self Determination. Carnegie Foundation (With Geoffrey Garrett and Gustav Ranis) **(450K)**
2002: Visiting Fellow, Center for International Affair, Harvard University.
2000-2001: Senior Faculty Fellowship, Yale University.
2000-03: Grant from the MacArthur Foundation to investigate decentralization and community based resource management (with Elinor Ostrom) (455K)
1999: Arthur Greer Memorial Research Prize in social and natural sciences for junior faculty at Yale University.
1999-2002: Rethinking Area Studies. Ford Foundation (with Gustav Ranis, Patricia Pessar, and Eric Worby)(155K).
1999-2001: NGO Research Training Consortium grant, DfID, England. (With David Mosse), in collaboration with Center for Development Studies, Swansea. (220K)
1999-2001: National Science Foundation grant to study forest use and institutional arrangements in Kumaon, India. (85K)
1997-2000: Grants from MacArthur Foundation (33OK), UNDP (75K), and FAO (48K) to study Forest Management in Arunachal Pradesh, India and Nepal, and Decentralization of Development Administration in Nepal (With Elinor Ostrom).
1996-97: Post-doctoral Fellow, Workshop in Political Theory and Policy Analysis, Indiana University, Bloomington.
1995-96: Senior Scholars fellowship from the American Institute for Indian Studies (AIIS) to carry out fieldwork in India on indigenous knowledge of nomadic pastoralists.
1995-96: Postdoctoral fellowship, Program in Agrarian Studies, Yale University.
1995-98: Research grant from the Aspen Institute, to support ongoing research on democratic consolidation and voluntarism in India (38K).
1994-95: "Advanced Research Grant" from the Social Science Research Council, USA, to support research on community-based forest management in the Indian Himalayas (15K).
1993: "Best Dissertation in Political Economy" Award from the American Political Science Association in a joint competition for the years 1990-92.

1993-94: Research development award, University of Florida to conduct research on local organizations and natural resource use in villages in the Indian Himalayas.

1991-93: Ciriacy Wantrup post doctoral fellowship from the University of California at Berkeley.

1991-95: Research Grant from the World Wildlife Fund, USA to study local institutions and resource use in Indian and Bhutanese Himalayas. (Report submitted).

1990: Research Grant from International Institute for Environment and Development (IIED), London to study the migration patterns of Raikas, shepherds in India. (Report Submitted)

1989-90: Population Council Fellowship for dissertation field research.

1989-90: Dissertation research grant from Forest History Society. (Postponed until 1990-91).

1989: Dissertation Research Grant from Institute for the Study of World Politics (Not availed).

1986-89: James B. Duke Fellowship for incoming students from Duke University.

Field Experience

1985-86: 13 months in India among NGOs in seven states.

1987: Two months in India on role of grassroots development organizations in social forestry programs.

1989-90: 12 months in the Thar Desert and the Western Himalayas in India on role of community institutions in the use of commonly owned fodder and fuel resources.

1990: 4 months in the Thar Desert in India on the *Raika* migrant shepherd community.

1990: 3 weeks in Bhutan on indigenous institutions of forest resource use.

1992: 2 months in India among *Raika* shepherds.

1993: 2 months in Western Himalayas in India on village Forest Councils.

1997: 2 months in India and the "Nepal Middle Himalaya.

1998: 3 weeks in Nepal,

Selected Invited Presentations in the Previous Five Years:

October 2001: Reconfiguring the Politics of Nature" Columbia University.

March 2001: "Environmentality: An Introduction" South Asian Studies and SNRE, University of Michigan.

February 2001: "The Indian Parliament," Political Institutions in India conference, CFIA, Harvard University.

December 2000: "Relevance of Common Property to Public Policy," LEAD-Mexico seminar, El Colegio de Mexico.

November, 2000: State formation and Resource Management. Institute for Globalization Studies, University of Minnesota.

September 2000: The Visible Hand: Markets and Exchange among Raika Migrant Shepherds in India. History Department Workshop, Princeton University.

September 2000: Sustainability on the Commons. National Academy of Sciences, Pocantico, New York.

March 2000: Group Size and Collective Action: Third Party Monitoring of Common Pool Resources. South Asian Studies Colloquius, Harvard University.

November **1999**: Environmentality: Forest politics in Kumaon, 1860-2000. Environmental Studies, Emory University.

June 1999: Transbouhdary Parks and Adaptive Management, IUCN, Montreal, Canada.

June, 1999: "Devolution, Collective Action, and Forest Management: India and Nepal" CGIAR, Philippines. (With Elinor Ostrom).

April 1999: State Formation in Community Spaces: The Forest Councils of Kumaon. Environmental Politics Seminar Series, University of California Berkeley.

October 1998: "The Production of Community-in-Conservation: The Forest Councils of Kumaon." Program in Agrarian Studies, Yale University, Institute of Development Studies, Sussex, UK; and ISEC, Bangalore, India.

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June 1998: "Science, Indigenous Knowledge, and Power." School of Oriental and African Studies, London.
April, 1997: "Community-in-Conservation: Beyond Enchantment and Disenchantment," Second Board Meeting of the Conservation and Development Forum, Georgia, USA.
February 1997: "Forests, Institutions and Resource Use: Elements of a Research Program," NERIST, Arunachal Pradesh, India.
September 1996: "Community: Tracing the Outlines of a Seductive Concept," Colloquium Series, Workshop in Political Theory and Policy Analysis, Indiana University, Bloomington.
June 1996: "Dismantling the Divide between Indigenous and Scientific Knowledge," New York Botanical Gardens, New York.
April 1996: Papers presented to the Political Economy Group at University of Texas at Austin on poststructuralism and development, and to the South Asian Studies Department on subaltern politics around grazing commons.
April, 1996: "Not having one's cake nor eating it: Intellectual property and indigenous knowledge." Program in Agrarian Studies, Yale University.
March 1996: "Common Property Discourse and Forest Management in the Indian Himalayas: A Critical Assessment" Conference on "Participation, People, and Sustainable Development," Rampur, Nepal.

Selected Paper Presentations in the Past Five Years
— "The Decentralizing State: Nature and Origins of Changing Environmental Policies in Africa and Latin America, 1980-2000" APSA 2001.
—"Decentralization, Collective Action, and Resource Management in South Asia." APSA, September 2000. (With Elinor Ostrom).
—"Conservation's visions: participatory resource management in Nepal's Terai," and "Sustainability on the commons," IASCP, Bloomington Indiana, May 2000 (in a double panel I organized, and in a panel organized by the National Academy of Sciences.
—"State Formation in Community Spaces: Forest Management in Kumaon Himalaya," APSA, September 1998 (in a double panel co-organized with C. Gibson).
— "Power, Institutions, and the Everyday: The Forest Councils of Kumaon." IASCP, June 1998 (In a double panel co-organized with Jesse Ribot).
—"There is no Global: NGOs, Development and Democracy in India," South Asian Studies Meetings, October 16-19, 1997 (in a double panel co-organized with Sangeeta Luthra)
—"Poststructuralist Approaches to Development: Some Critical Reflections," APSA, September 1996 (in a panel co-organized with C. Boone).
--"Subaltern Politics Around the Grazing Commons," Paper presented at the Asian Studies Meetings, April 11-14, 1996 (in a double panel co-organized with Akhil Gupta).

Conferences and Colloquia Series Organized
1997: Agrarian Environments (with K. Sivaramakrishnan, at Yale University). Papers presented at the workshop have been published as an edited volume, *Agrarian Environments* by Duke University Press.
1998: Regional Modernities in Stories and Practices of Development. (With K. Sivaramakrishnan, at Yale University). A selection of the papers presented at this workshop are being published in a collection of essays, *Regional Modernities.* Stanford University Press.
1999-2000: Decentralization and Development (With Jessica Stites and Maria Murillo at Yale University).
1999: Training program in Forest Management and Institutions, Kathmandu Nepal.
2000: The Nation-State, Development, and Decentralization (With Gautam Yadama at Washington University, St. Louis).
2000: Social Movements and Development (with Rachel Seher at Yale University).
2000: Environment and Development: Power and Place (With Eric Worby and Rebecca Hardin at Yale University).

2000: Agrarian Studies 2000 Conference (With James C. Scott).
2000-2001: South Asianist Speakers at Yale.

Reports Prepared

1999: Conservation with Communities: Parks and People Program in Nepal. Report submitted to the United Nations Development Program, Nepal.

1998: Decentralization in Comparative Perspective: The Participatory District Development Program in Nepal. Report submitted to the United National Development Program, Nepal.

1991: The Grass is Greener on the Other Side, Report submitted to the International Institute for Environment and Development, London.

1989: Voluntary Organizations and Afforestation Programs in India, Report submitted to the Center for Philanthropy and Voluntarism, Duke University.

1986: Effectiveness of Voluntary Organizations in India, report submitted to the Indo-German Social Service Society, India.

Service

— Member, Editorial Board, *Studies in Comparative International Development, Conservation and Society.*

— Member, Program Committee, Association for Asian Studies (2003-04).

— Member, Holdeen Board of Trustees, UUA (2001-07)

— Member, Franklin L. Burdette Pi Sigma Alpha Award Committee to select the best paper presented at APSA, 2001.

— Member, Executive Council, International Association for the Study of Common Property, 2000 onward. (Elected in 2000, for a term of 6 years).

— Member of the Scientific Planning Committee of the IDGC project (International Human Dimensions Program), 1997-98. While I was a member of this committee, the IDGC project issued two reports on questions of scale and social institutions in global environmental change.

— Member of the committee to judge "Best Article in Comparative Politics" for 1996-97 (American Political Science Association). During the time I was a member of this committee, James Fearon and David Laitin's article on "Explaining Ethnic Cooperation" was judged by the committee to be the best article in comparative politics published that year.

— Member of the executive committee of the Political Economy Section in 1994-95 (American Political Science Association).

— Member of the committee to judge the "Best Dissertation in Political Economy," 1994-95 (American Political Science Association).

— Panel organizer at meetings of the American Political Science Association, International Association for the Study of Common Property, Association for Asian Studies, and South Asian Studies Association.

— Book Reviewer for *Columbia University Press, Duke University Press, Princeton University Press,* and *Yale University Press.*

— Article reviewer for *Ambio, American Anthropologist, American Journal of Agricultural Economics, Bioscience, Capitalism, Nature, Socialism, Comparative Political* Studies, *Current Anthropology, Development and Change, Economic Geography, Economic Development and Cultural Change, Human Ecology, Human Organization, Journal of Asian Studies, Journal of Conflict Resolution, Peace and Change, Society and Natural Resources, Studies in Comparative International Development, Uhasylva, and World Development.*

— Grants and proposals reviewer for the *Conservation International, MacArthur Foundation, National Science Foundation* and *Social Science Research Council.*

— Short articles for *Human Dimensions Quarterly, Himalayan Research Bulletin,* and *CPR Digest.*

Teaching and Courses
Graduate

Politics of Natural Resources; Imperialism, Conservation and Development; Common Property Resources; Politics of Development; Politics of Agrarian Societies; Analytic Comparative Politics, Environment and Development, Qualitative Research Methods.

Undergraduate

Introduction to Comparative Politics; Politics of Development and Environment; Modernity and Ethnicity; Introduction to Asian Politics; Indian Politics, Environment and Development.

Graduate Supervision

PhD Students

1. Cassandra Moseley. Department of Political Science, Yale University (Dissertation title: New Ideas, Old Institutions: Environment, Community, and State in the Pacific Northwest).

2. Allen Carlson. Department of Political Science, Yale University (Dissertation title: Constructing a New Great Wall: Chinese Foreign Policy and the Norm of State Sovereignty).

3. Pamela McElwee. Department of Anthropology, Yale University. Currently conducting field research.

4. Steve Rhee. School of Forestry and Environmental Studies, Yale University, Yale University. Currently preparing for field research.

5. Curtis Lambrecht, Department of Political Science, Yale University. Currently conducting field research.

Work Experience

— July 2000 onward, Associate Professor, Yale University, Department of Political Science

— July 1997 onward: Assistant Professor, Yale University, Department of Political Science.

— 1992-1997: Assistant Professor, University of Florida, Gainesville (On leave between Sept. 1992 and Dec. 1992; and from Sept. 1995 to July 1997).

— 1988-89: Research Assistant at the Workshop in Political Theory and Policy Analysis, Indiana University, Bloomington, IN.

— 1985-86: Project Evaluation Researcher at Indo-German Social Service Society, New Delhi, India. Analyzed activities of 43 grassroots development initiatives in seven Indian states.

Referees:

1. Professor Margaret McKean/ P.O. Box 90204/ Duke University/ 214 Perkins/ Durham NC 27708-0204.
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