

Rearranging Social Space: Boundary-making and Boundary-work in a Joint Forest Management Project, Andhra Pradesh, India

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Abstract

Since the 1990s, there has been an increasing trend in developing countries to shift from state driven approaches to Community-based Natural Resource Management (CBNRM). In order to ensure sustainability of resources, the need for creating and maintaining clear resource use boundaries has been emphasised, both theoretically and in practice. However, there has been less attention to the varied social consequences for involved villages (whose inhabitants can access resources within the new boundaries) and for excluded villages (whose inhabitants are prevented from accessing resources due to these boundaries). Drawing on a case study of three villages affected by the Joint Forest Management project in Andhra Pradesh, India, this article shows how resource use boundaries interact with social categories such as caste, gender and livelihood occupation in ways that facilitate asymmetric distribution of costs and benefits among local people. The article calls for more consultative processes in constituting new resources use boundaries and for flexible interventions to reconcile conflicts arising from boundary-making.

Keywords: boundary-work, boundary-making, joint forest management, common pool resources, community based natural resource management

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INTRODUCTION

Boundaries abound. Between humanity and the gods. Between human and animal. Between culture and nature. Between life and death. Between genders, nations, peoples, times, races, classes and territories. But boundaries have also become problematic today, perhaps more so than before. In a world experienced by many to be without a natural design to which they might conform, the function of boundaries becomes highly ambiguous. Boundaries provide preconditions of identity, individual agency and collective action; but they also close off possibilities of being that might otherwise flourish. Boundaries both foster and inhibit freedom; they both protect and violate life.

— Connolly (1995: 163)

Joint Forest Management in India and Boundary-Making

Colonial and post-colonial states have long attempted to

extend and assert their control over forests (Guha 1989; Grove 1995; Drayton 2000). As part of their strategies, these states created specialised government institutions with policing authority over forests (Peluso & Vandergeest 2001). These efforts involved the construction of new geographical boundaries through categorising different types of forest and designating different kinds of legal use. The Indian Forest Act of 1878, for example, defined three kinds of forest: reserved forests, protected forests and village forests (Agrawal 2005). Such classificatory efforts largely disregarded the social and economic consequences of boundary-making processes for the inhabitants and users of the forests.

Since the 1990s, many developing countries have introduced alternative approaches that aim to involve local actors in forest management. The Joint Forest Management (JFM) approach in India is one such example. Since the inception of JFM in 1990, approximately 85,000 JFM forest protection committees have been put in operation, managing 27% of Indian forests (17.3 million ha of forestland) as of 2006 (World Bank 2006). Given the previous history of top-down forest management in India,

the dramatically increased interest of the Indian government in including local people in forest management is rather striking.

A variety of explanations have been offered for this new interest. Some have argued that the Indian JFM initiative illustrates the rising powers of civic society to shape equitable and democratic policies (Saxena 1997; Damodaran & Engel 2003). Others have suggested that states have had few alternatives but 'to turn from coercion to consent' given the 'constant conflict between recalcitrant villagers and beleaguered forest staff in which both sides had been known to lose lives and limbs' (Sundar 2001: 256). This argument aligns with the suggestion that the actual capacity of states to enforce regulations over forest resources dispersed over large territories may be quite limited, so that local involvement might in fact be the most effective way of achieving some measure of state control over such areas (Agrawal & Gibson 1999; Arnold 2001). Arun Agrawal (2005) has further argued that while JFM indeed functions as an extension of state power, this does not preclude the possibility that it might also create new opportunities for involved villages, and—at least potentially—facilitate the construction of new environmental subjectivities or social groups.

JFM shares some central assumptions with the influential framework of Common Pool Resource (CPR) theory (Ostrom 1990). Most importantly JFM and CPR theory both emphasise the importance of establishing formal resource boundaries in order to achieve sustainable resource management (Wade 1988; Ostrom 1990; McKean 1998). Of course boundaries create insides and outsides. Thus, new resource boundaries can have serious consequences for excluded villagers, if their livelihoods depend on resources available within these boundaries. However, this is not only a matter of which villages are included and excluded by JFM. Since villages are also internally heterogeneous in terms of gender, caste and livelihood activities (Agrawal & Gibson 1999), various social and economic consequences of JFM may arise even within villages located on the inside of resource use boundaries.

Drawing on a case study of three villages in Andhra Pradesh, two included and one excluded from JFM, this article considers the social implications of the natural resource use boundaries formalised as part of this policy initiative. The article shows how resource use boundaries interact with social categories such as caste, gender and livelihood occupation in ways that facilitate asymmetric distribution of costs and benefits among local people.

Making Forest Boundaries and Making Social Boundaries

As Scott (1999: 36) made clear in *Seeing like a state*, mapping is central to the modern, administrative endeavour. He referred to the cadastral map as the 'crowning artifact' of the state ambition to 'measure, codify and simplify'. Scott noted that the mapping of forests was crucial to the territorialising ambition of colonial and post-colonial states, as it made the land legible and thereby more easily controllable.

The endeavour to map is also supported by present-day CPR theorists who promote boundary-making as a means to facilitate sustainable resource management (Wade 1988; Ostrom 1990; McKean 1998). According to Agrawal (2003: 244), CPR theory can be characterised by its focus on the 'variations in the forms of property rights [that] make a difference in resource management outcomes'. With this focus, the CPR literature has analysed ways in which local collective action may hinder a 'tragedy of the commons' scenario in which nobody takes responsibility for shared common resources. Drawing on extensive empirical analyses, Ostrom (1990: 180) defines a series of design principles¹ aimed to improve the endurance and efficacy of CPR management. Central among these principles is the insistence on the need to create clear biophysical boundaries for each local level unit involved in resource management.

Clear boundaries have also appealed to policy sensibilities. Formal demarcation of natural resource use boundaries has been adopted as a policy principle for JFM (GoI 1990; Bhattacharya *et al.* 2009) and other CBNRM initiatives, including community forestry in Nepal (Acharya 2002) and Mexico (Klooster 2000), participatory forestry in Tanzania (Wily 2001), decentralised forest management in Bolivia (Pacheco 2004), community based catchment² management in northern Thailand (Wittayapak & Dearden 1999), the CAMPFIRE (Communal Areas Management Programme for Indigenous Resources) project in eastern Zimbabwe, and community based resource management in Mozambique (Hughes 2001). These approaches devolve managerial responsibilities to local level units (which may vary from user groups, villages, or traditional councils to democratic local governments), and formalise their resource territory and rights to various resources.

Although CBNRM has generally been received with enthusiasm, critics have noted that the establishment of boundaries and the assignment of exclusive collective property rights to certain groups may have unintended and often adverse consequences. The ethnographical and geographical literature on the 'power of maps' (Wood 1992; Peluso 1995) argues that biophysical and territorial boundary-making often has social, economic and political effects for those whose livelihoods depend on crossing such boundaries to obtain needed resources. Focusing on 'cadastral politics' involved in local mapping exercises in Zimbabwe and Mozambique, Hughes (2001) highlights the interrelations between geographical and social boundaries. He remarks that harmonious relations and mutual benefits among involved actors such as governments and villages, which the notion of CBNRM implies, rarely exist. He criticises proponents of CBNRM for failing to take into account that bringing a resource area within the jurisdiction of one village is also a way of excluding neighbouring villages from access to the resource. A case study of forest land allocation in Vietnam's Central Highlands offers another example (Sikor & Thanh 2007). Sikor and Thanh (2007) document that new forest management initiatives, even though they were considered beneficial and 'joint' from the point of

view of one village, brought along negative consequences for another. These critical analyses call for detailed empirical studies of boundary-making through CBNRM initiatives, in order to understand the mixed social consequences that arise as natural resource use boundaries give rise to new social practices.

To illustrate the social transformations as a result of the newly created boundaries, Yeh (2003: 514) introduces the phrase 'rearrangements of lived space'. Rearrangements of lived space are likely to occur both for those who are formally included as participants in CBNRM and their neighbours who are excluded. Rearrangements can be experienced as directly physical when villagers are prevented from accessing certain forest areas. But they can also be experienced through social and political effects when conflicts emerge as a consequence of the creation of new forest boundaries between villages that previously co-existed at relative ease.³ The processes set in motion by resource demarcations under CBNRM might therefore have ramifications aside from sustainable resource use at the level of the individual village.

Even though CPR theorists acknowledge the importance of conflict resolution mechanisms, the conflicted processes engendered by boundary-making have not been a focal point of analysis. In fact, CPR studies generally show little attentiveness to the social and political construction of natural resource use boundaries. This is likely because their focus is on defining principles required to achieve successful resource management rather than on tracing social implications in empirical detail. The consequence is that the boundaries of successful 'long-enduring CPR institutions' often come across as natural, rather than as having been made by specific people and institutions with particular agendas and interests. CPR analyses exhibit a certain analytical blindness to the consequences of *making* boundaries and especially to effects on those people falling *outside* boundaries. This is manifestly problematic when one is analysing *ongoing* processes such as JFM, where the new formalised boundaries are obviously neither natural nor neutral.

In an otherwise nuanced analysis of 'collective action, property rights, and decentralisation in resource use in India and Nepal', Agrawal and Ostrom (2001: 498) reach the conclusion that 'at least at the local level, rural poor have benefited from the relaxation of state control over forest resources'. Yet, this conclusion is much too general. As our case shows, when the state transfers resource control into the hands of certain local groups, the rural poor are likely to be *differentially affected*.

To analyse how new formalised natural resource use boundaries rearrange lived space in and among villages, we take the notion of 'boundary-work' from sociologist Thomas Gieryn (1999). Gieryn proposes the notion of boundary-work as a tool with which to analyse the activities different actors carry out to *establish and maintain*—or *dissolve and redefine*—differences between social groups. Following Gieryn, we show how boundary-work can function in diverse ways: 1) as a *means of social control*, 2) as an *effort to protect the autonomy of specific groups*, and 3) as a *tool of strategic, practical action to procure specific benefits*.

Below, we investigate the specific kinds of boundary-work through which villagers in the Medak district of Andhra Pradesh state engaged with, supported and resisted the JFM programme. Through this analysis, we aim to show how JFM engendered rearrangements of lived space in and between villages. The analysis aims to elucidate the intimate relations between the remaking of forest boundaries and the making and remaking of social boundaries in villages affected by JFM. By focusing on the boundary-work in relation to the creation of new resource boundaries, this study goes beyond others that concentrate on specifying success criteria for establishing resource boundaries while assuming that such boundaries, once well established, automatically have beneficial social or environmental effects. We argue that understanding boundary-work is significant in order to understand the success and challenges of the JFM policy, both in terms of ensuring sustainability of resources and in terms of promoting social equity and justice.

STUDY AREA AND METHODS

Study Area

The study area, which is the state of Andhra Pradesh, is the fifth largest state in India and has a population of 76.2 million (Census 2001). It has 6.4 million ha of forestland that constitutes 23% of the state's geographical area and 8.2% of the total Indian forest area (Forest Survey of India 2005). The Andhra Pradesh Forest Department initiated the JFM programme in 1992. The programme was financially supported by the World Bank between 1994 and 2000 (USD 77.4 million) and from 2002 onwards (USD 108 million). The number of forest protection committees in Andhra Pradesh amounted to 8,498 in total managing about 2.6 million ha of forests as of March, 2006 (Pai & Datta 2006).

All of the case study villages (Table 1) consist of one main village and several smaller surrounding hamlets. The main villages are inhabited by members of Other Caste, Backward Caste, and Scheduled Caste, and hamlets are inhabited by members of the Lambadi Scheduled Tribe. We refer to these castes, respectively, as the upper caste, the middle caste, the scheduled caste, and the tribes.

Caste status and economic status is highly correlated (e.g., Lama & Buchy 2003; Adhikari & Di Falco 2009). In general, the upper and middle castes have relatively high socio-economic status whereas the scheduled castes and tribes are

Table 1
Basic information about the three case study villages

Name of village	Mohammed Nagar	Kanchanpally	Antharam
Year of establishment	1997	1998	No allocation
Allotted forest lands (ha)	574	900	0
Number of households	325	382	197

Source: Andhra Pradesh Forest Department

socially disadvantaged. Most upper caste people are land owners and have a patron-client relationship with landless people from the middle caste and the scheduled caste. Most middle caste people own less than one ha of land. A high proportion of the scheduled caste is landless. Scheduled caste people have been subject to discrimination even after the category of ‘untouchable’ was officially abolished (Naruala 2008). Most tribal people own small patches of land (less than one ha) adjacent to forests. The segregated status of tribes is also seen in tribe people inhabiting surrounding hamlets separated from the main village.

Results from our questionnaire survey from Mohammed Nagar support this picture of the different socio-economic status of the castes. As Table 2 shows, a high proportion of the upper caste (71%) own more than one ha of land, whereas the proportion of landless and smallholders (zero to one ha) is high among the scheduled caste totalling up to 95%. The majority of middle caste and tribal people are smallholders with one ha or less.

In the study area, forest resources play an important role in meeting subsistence needs and supplementing income whereas agriculture is the most important source of income for a majority of villagers. Fuelwood is used for everyday cooking and sale. Women are the main collectors of fuelwood by head load while men generally collect with a cartload. Tree poles are collected by men and used to make implements to cultivate fields and to make buildings. Non Timber Forest Products (NTFPs) such as tobacco leaves and leaves for plate making are generally collected by women for household use and sale. Trees and fodder are also important dietary sources for small ruminants.

Data Collection Methods

The field research was conducted over four months between May 2005 and January 2008. Initially the first author selected Mohammed Nagar village for an in-depth case study and conducted semi-structured individual and group interviews with 54 informants with the help of a translator. These informants included representatives of all four caste groups, women and men, and people belonging to different positions in the forest protection committee (e.g., general members, the management committee members, and chairperson), and different livelihood occupations (e.g., agriculturalists, livestock herders, wage labours, and NTFPs collectors). The objective of the interviews was to understand 1) how forest protection

committees and new resource use boundaries were established, 2) what kind of forest management rules and restrictions were developed by forest protection committees, 3) how these rules were enforced by forest protection committees, and 4) how different segments of villagers perceived the initiative. During field research, we noted how emerging social practices relating to JFM (which we now designate as boundary-work) in Mohammed Nagar and other villages caused unintended effects not only for neighbouring villagers but also for certain groups *within* Mohammed Nagar. The neighbouring villagers included goat herders of a JFM village, Kanchanpally (which in Telugu means ‘goat village’) and a non-JFM village, Antharam. In order to analyse how the effects of JFM were perceived in these villages, the first author conducted interviews with 18 and nine informants from Kanchanpally and Antharam respectively. Additionally, the first author conducted semi-structured interviews with one Additional Principal Chief Conservator of Forests, one District Forest Officer, one Forest Range Officer, one Forest Section Officer, three Forest Beat Officers, and one local non-governmental organisation (NGO).

Based on the interview results, questionnaire surveys were developed and conducted with a total of 332 villagers from the three case study villages (Table 3). The survey for Mohammed Nagar was designed to understand how villagers with different socio-economic backgrounds participated in JFM activities, and how they perceived effects of JFM on their livelihoods and forest condition. The survey was conducted with a total of 226 villagers, both women and men, from 115 households. The households were randomly selected from stratified samples from the four caste groups. The number of sample households for each caste was approximated to their proportion of the village population. In Kanchanpally, a more simplified household survey was designed and conducted with 51 households (26 goat herders and 25 non-goat herders) to analyse how goat herders and non-goat herders perceive the effects of JFM on forest conditions and their livelihoods. The last smaller survey was conducted with 55 households in Antharam to gain information on whether they viewed JFM as improving or decreasing their ability to derive benefits from the forest.

We use the results from these interviews and surveys to analyse how different groups of villages have interpreted, reacted to and perceived the new boundaries that JFM has brought about. To supplement our results, we use village accounts and GIS maps of forest cover made based on remote sensing data provided by the Andhra Pradesh Forest Department.

Table 2
Land distribution by caste in Mohammed Nagar

Caste	Number of surveyed households	Landless	>0–1 ha	>1–2 ha	>2 ha
		Percentage of population			
Other caste (upper caste)	14	0	29	21	50
Backward caste (middle caste)	42	26	57	10	7
Scheduled Caste	21	57	38	5	0
Scheduled Tribe	38	11	66	13	10
Total	115	24	53	11	12

Table 3
Number of informants selected for questionnaire surveys

Number	Mohammed Nagar	Kanchanpally	Antharam
Total households	325	382	192
Households surveyed	115	51	55
Females surveyed	112	-	-
Males surveyed	114	-	-
Total number surveyed	226	51	55

RESULTS

In this section, we explain how JFM has created new relationships and engendered rearrangements of lived space. Before moving to the results, we introduce forest policies before and after JFM in India. We then examine the kinds of boundary-works that villagers and the Forest Department had been engaged in before JFM programmes were initiated.

Forest Policies Before and After JFM

Before JFM, the aim of forest governance was to maximise economic profits from the forests under the jurisdiction of the Forest Department/state government (Poffenberger & Singh 1996; Saxena 1997; Khare *et al.* 2000). The Forest Department had the primary task of protecting the forest against intruders (*ibid.*). Under this arrangement, villagers had no *de jure* rights to make use of forests and the Forest Department officers exercised a policing power over forest territory.

The introduction of the National Forest Policy in 1988 brought about significant changes in forest governance. The new policy shifted the primary objective of governing forests from maximisation of revenue towards forest conservation (GoI 1988). The policy also officially recognised the importance of incorporating the needs of local people in forest governance (*ibid.*). In 1990, the Ministry of the Environment and Forests issued a guideline for all states to adopt JFM (GoI 1990). JFM facilitates the establishment of partnerships between the Forest Department and the forest protection committees that consist of local villagers (Poffenberger & Singh 1996; Saxena 1997; Khare *et al.* 2000; Behera & Engel 2006). The committee is assigned with the task of managing and protecting the designated forest area against misuse (*ibid.*). In return, villagers who join the committee gain official rights to use some forest resources within the demarcated area for subsistence and income (*ibid.*).

Forest Boundaries Before and After JFM

Prior to JFM, forest boundaries were drawn between state-owned forests and villagers who were restricted from accessing forests. In spite of the restrictions over villagers' use of forests, village informants explained that they had *de facto* access to forest resources. They used to enter forests to collect various forest resources by avoiding the timing and locations of patrols of forest guards employed by the Forest Department.

This information corroborates arguments made by others, e.g., Agrawal (2005) and Sundar (2001), that Indian forest managers have been relatively unsuccessful in preventing villagers from accessing protected forests, although they could avail themselves of hard measures *when* they caught offenders. According to village informants, Forest Department field officers were well aware of villagers' *de facto* use of forest resources. The officers sent forest guards as 'spies' to the villages to assess locations of newly constructed houses, details of goat shepherds (e.g., number of herds, place of grazing, etc.), and details of collectors of tree poles and fuelwood. Based on such information, the officers demanded that each household pay bribes for their illegal activities and threatened villagers with fining offenders or taking them to court.

In these situations, both forest officers and villagers were involved in boundary-work. Thus, one central part of the job of forest officials was to maintain a strict boundary that kept villagers out of bounds of state-owned forests. This boundary-work took two of the forms identified by Gieryn (1999). First, it aimed to *protect the autonomy* of forests. Second, it functioned as a *source of social control* by restricting the movements and activities of villagers. Villagers, however, were able to circumvent the imposition of this boundary in diverse ways. Following Gieryn (1999) we see them as engaged in *strategic, practical action*, to procure various forest goods, breaching official boundaries and resisting both other villagers and villages in the process.

JFM led to a significant redefinition of these forest boundaries. As a part of JFM implementation, the Forest Department parcelled state-owned forests and assigned certain villages the task to co-manage forests⁴ (Figure 1 for the comparison of forest boundaries before and after JFM). According to the account of the Additional Principal Chief Conservator of Forests in the Andhra Pradesh Forest Department, the field officers parcelled out forests and then used these parcels as the basis for assigning forests to villages. The Forest Department viewed the villages lying closest to the demarcated forests as most suited for enrolment and they approached these villages to establish forest protection committees. However, the Forest Department did not involve all villages. The Medak District Forest Officer explained that the reason for this was that not enough forest was available to share it among all the villages. Paradoxically—despite the general aim of JFM to support livelihoods—they made these new boundaries without consultation with villagers. The Forest Department also did not take into account customary use patterns of the demarcated forest areas.

The following section explores in more detail how the re-making of forest boundaries and the consequent changes in forest management responsibilities brought about different kinds of 'rearrangements of lived space' for included and excluded villages. Specifically, we consider how villagers engaged in various kinds of boundary-work related to JFM and how this affected social relationships within and between villages. In this analysis, we draw on the cases from Mohammed Nagar and Kanchanpally villages, both of which

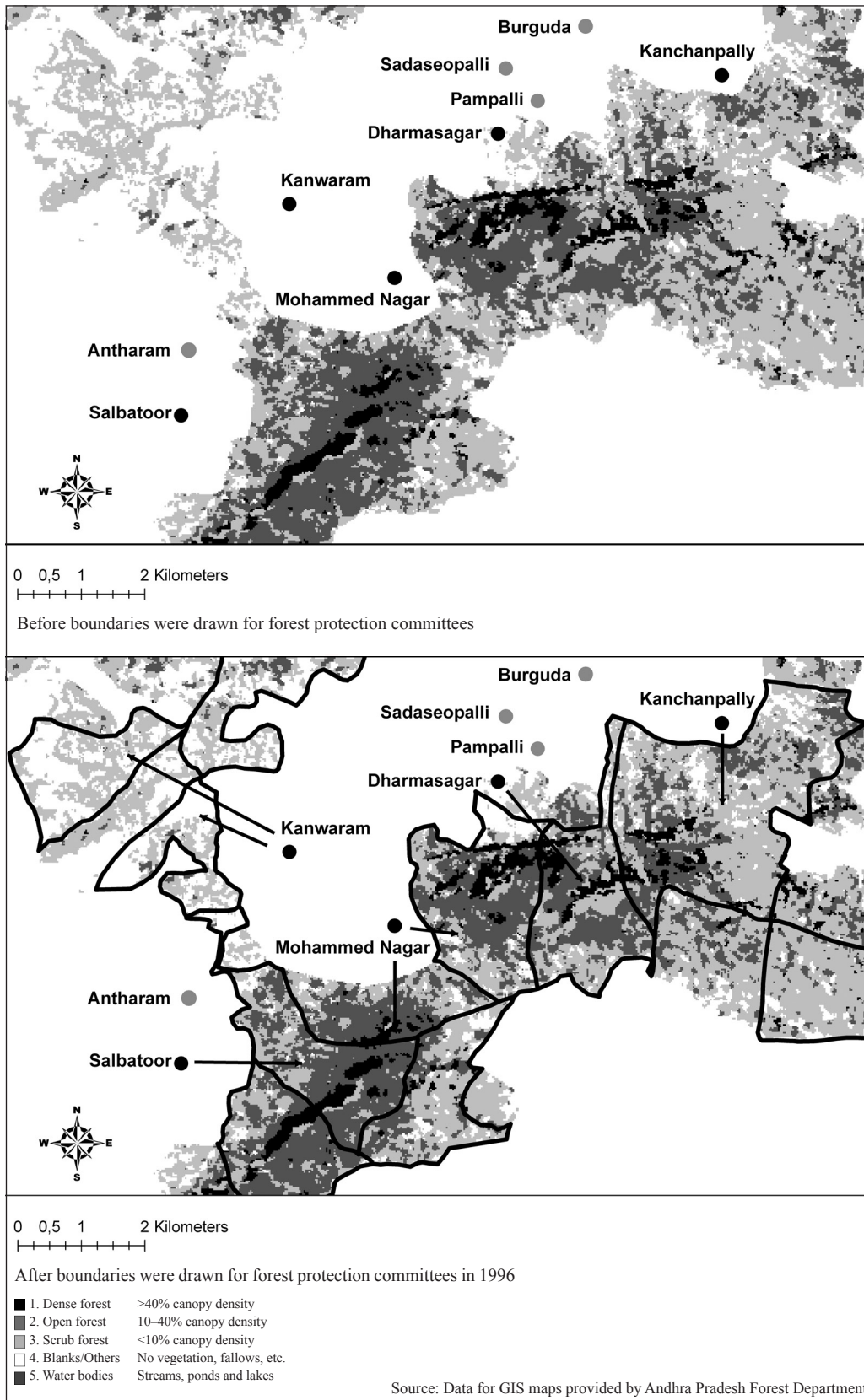


Figure 1
Before and after boundaries were drawn for forest protection committees JFM in 1996

became part of the JFM scheme and were assigned 574 ha and 900 ha of forests respectively, and from Antharam village which was not assigned any forest.

Supporting and Resisting the JFM Boundary

In 1997, the Mohammed Nagar village constituted a forest protection committee to govern the forest demarcated by the Forest Department. Two members (one male and one female) from each of the households belonging to the village constituted the general body. Those chosen selected 12 members⁵ representing each of the four castes to make up the management committee⁶ and management committee members nominated a chairperson from the upper caste. Under the leadership of the upper caste chairperson, Mohammed Nagar village held a general body meeting in the presence of all caste leaders to discuss how to protect their assigned forests while continuing to meet their own needs. First, they specified rules for kinds and quantities of forest resources that could be taken from the forests. It was decided that villagers were only allowed to collect dry fuelwood by head load and two tree poles per year free of charge. Beyond this, villagers were obliged to pay fees to the committee, e.g., INR 30 for a cartload of fuelwood, and INR 300 for a cartload of tree poles. They also prohibited encroachment and the cutting of tree branches for fuelwood collection, and feeding goats. Second, they decided to employ two forest watchers from their own village. These watchers would patrol daily in the mornings and evenings in order to survey the forest and catch offenders. Further, the village offered 25% of the fines that were collected to those who caught the encroachers. The remaining 75% was to be deposited in the forest protection committee account. The rates of fines varied depending on the significance of forest offence, ranging from INR 100–300 for inhabitants of Mohammed Nagar village, and starting from INR 1,000 and up for other villages (in comparison, the average daily wage for forest work is INR 60–90).

Some of the rules and restrictions imposed by the village forest protection committee did not follow the rules defined by the Forest Department. According to official rules, the forest protection committee is not allowed to collect fines above INR 100 and all fines are to be handed over to the Forest Department. It is only after deposition that committees are entitled to 50% of the fines collected by the Forest Department. Realising that the rules had been changed, a Forest Department officer criticised the committee and demanded that the fines be paid to the Forest Department. The first chairman of the committee explained how the villagers responded to this demand by saying that they were risking their lives to protect their forest and arguing that “if you oppose our practice, why don’t you patrol the forests and catch all the offenders yourself, then we will give you a fair share of fines”. According to villagers, the officer gave up pursuing his claim and he left the forest protection committee to its own devices from then on. Similar instances of enforcing rules that were much tougher than those mandated by JFM policy were observed in neighbouring villages. This suggests that boundary-

work relating to the protection of forest autonomy and enforcing social control was transferred from the Forest Department to the forest protection committee. Villagers prohibited from entering forest areas continued to engage in ‘strategic, practical action’ to access forest resources unnoticed by patrols on a daily basis. Yet, these ‘subversive’ activities were no longer directed against government officials but against their own and neighbouring villagers.

In spite of its commitment, the Mohammed Nagar forest protection committee faced numerous rule violations, both by people from the village and by outsiders. Forest offenders from the village were mostly from the tribes. They collected forest products without permission or illegally expanded their agricultural land to forest areas. Nevertheless, forest offences by outsiders constituted a far more serious problem. The forest protection committee aimed to strengthen the boundaries and caught many offenders from neighbouring villages. Gradually, several members of the middle caste became more active in forest protection activities, voluntarily taking jobs as forest guards. Their boundary-work consisted of patrolling forest boundaries and catching offenders. Although economically beneficial, this job was not without its hassles. As one middle caste informant explained “I have fought with so many violators from our own village as well as from neighbouring villages to stop the smuggling of fuelwood and tree poles from our forests, especially at the beginning.... It is a risky business since offenders often attempt to fight against us or even to murder us”.

Yet, after several years, the persistent efforts to enforce the boundaries had resulted in a reduced number of forest offences. As shown in Figure 2, the number of recorded offences in the Mohammed Nagar village dropped from 20 in 1998 to three in 2007. While this official record may show only a fraction of actual number of offences, it indicates a clear reduction of major offences in Mohammed Nagar. As a result of the reduced number of offences and restriction over forest use, Mohammed Nagar’s forest started to regenerate. Forest regeneration also meant that villagers started to benefit from their exclusive and increased access to forest resources. Their benefits from JFM included permission fees from its own villagers and fines from villagers inside and outside the village. During the period between 1997 and 2002, for instance, the forest protection committee collected a total of INR 1,64,861 (~ USD 4,000).

In Mohammed Nagar, the clear establishment of boundaries facilitated a significant regeneration of resources due to the effective exclusion of neighbouring village dwellers.⁷ Survey results from Mohammed Nagar show that 78% of the 217 respondents perceive forest conditions to have improved since the introduction of JFM in 1998. The GIS maps of forest cover based on remote sensing data in 1996 and 2005 shown in Figure 3 also indicate a significant increase in the areas of dense forest (more than 40% canopy density) under the management of forest protection committees, including Mohammed Nagar. According to the remote sensing data provided by the Andhra Pradesh Forest Department, the total ‘forest dense’ area of Mohammed Nagar, Salbatoor, Kanwaram, Dharmasagar and

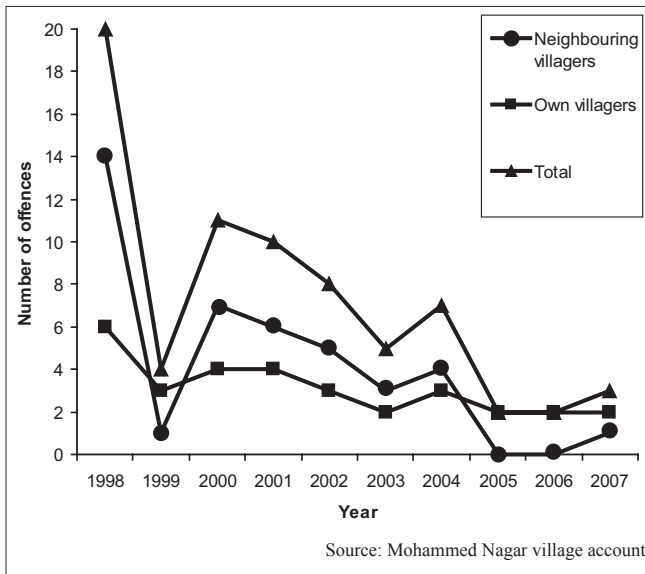


Figure 2
Number of recorded offences in Mohammed Nagar village

Kanchanpally has increased from 177 ha in 1996 to 1,048 ha in 2005.

Common Pool Resource (CPR) theory predicts that forests would regenerate as a consequence of formalising resource boundaries. However, boundary-making may also bring along other effects. In the present case, it transformed relationships between the Forest Department officers and the village, positioning the village more advantageously. Yet, it also led to literal boundary struggles between village forest guards and neighbouring villagers that resisted the rearrangement of lived space imposed by the JFM boundary.

The following sections illustrate how new conflictive situations arose *due to* the formalisation of natural resource use boundaries and the interaction between these boundaries and existing social categories. We show how new natural resource use boundaries unfavourably rearranged the lived space of those villages excluded from JFM. Additionally, we show that costs and benefits accrued from JFM were ‘asymmetrically distributed’ (Agrawal 2003: 254) even among included villagers.

Some Well-Entrenched Boundaries: Caste, Gender and Livelihood

The case of Mohammed Nagar village was a success story for JFM in that forest conditions improved and villagers gained almost exclusive access to their forests. In this section, we take a closer look at the asymmetric distribution of costs and benefits arising from JFM within Mohammed Nagar village. The asymmetries we identify are predominantly related to well-entrenched social categories defined by caste, gender, and livelihood (see Adhikari & Di Falco 2009). Whereas the previous sections highlighted how new forest boundaries may create new types of boundary-work among villages, this section documents the difficulties of changing inflexible social categories and boundaries relating to caste, gender and main

livelihood activities by means of new policies. This applies even to policies such as JFM that specifically aim to address questions such as gender inclusion and equality. How does boundary-work relating to JFM interact with established social categories, and with what consequences?

As discussed above, the forest protection committee devised a set of rules that would apply equally to all villagers. Yet, these rules had the largest impact on those whose livelihoods were highly dependent on forest products: the lower caste groups such as tribal people and the landless. According to Seva Sangam, a local NGO which conducted a survey of household collection and sale of fuelwood of six villages including Mohammed Nagar in 2007, one thirds of the upper and middle caste people and around 10% of the scheduled caste purchase fuelwood from tribal people rather than collecting it themselves. The rest of the castes collect fuelwood only for domestic use (about six to nine kg of fuelwood per day). In contrast, tribal groups collect more fuelwood than other castes for domestic use (about eight to fifteen kg of fuelwood per day). 10–15% of tribal groups collect additional fuelwood for sale to other castes. Some tribal people are in the wood cutting business which requires a large amount of tree poles. Since the new rules were introduced, they have had to pay additional fees to the committee to collect beyond the permitted amounts. In addition, tribal people who live adjacent to forests used to increase their livelihood opportunities by gradually cutting forest to expand their agricultural lands. Prior to JFM, this boundary-changing practice was prohibited by the Forest Department. After JFM was initiated, however, local villagers themselves enforced a ban on the practice.

For these reasons the JFM restrictions on permitted amounts of collection of fuelwood, tree poles and on encroachment created more pressure on tribes than on other castes. For many tribal people, the benefits of the new forest protection system were far from obvious. 21% of 74 tribal informants perceived JFM to negatively affect their ability to derive benefits from the forest (cf., two out of 29 scheduled caste informants and only one out of 105 informants from the upper and middle castes perceived negative effects). One tribal villager also explained that “fighting with the government is easy but fighting with our own villagers is very difficult”. According to him, the reason for this is that the villagers (represented by the committee) exercise greater authority in checking his activities than the Forest Department. His remark suggests that boundary-work relating to forest access and use may intensify with JFM, since in a Foucaultian optic [similar to the one adopted by Agrawal (2005)] monitoring and surveillance can be much more continuous and thorough when conducted by villagers than when carried out by Forest Department officers who employ only sporadic checks. Another consequence of the implementation of collective rules was the emergence of new social categories. Gradually villagers had begun to refer to their own villagers who broke rules and neighbouring villagers that took forest resources from their area as ‘forest offenders or intruders’. Likewise terms such as ‘rule-followers’, ‘enforcers’, and ‘violators of rules’ came into usage. In the case of their

co-villagers, these new categories largely corresponded with caste. During interviews, village informants from the upper, middle and scheduled castes often referred to themselves as the main followers and enforcers of the rules, and referred to tribal people as the main violators.

Just as punishments for rule violation were asymmetrically distributed, so were benefits from the common revenue generated by JFM. As mentioned, the forest protection committee generated significant common revenue from fines and permits. The committee decided to use the revenue for the construction of three Hindu temples in the main village. Even though the committee, in principle, represents all castes, these temples benefited higher caste people only (since the 'untouchable' scheduled caste people were not permitted to enter the temples and tribal people are not Hindu). This decision which clearly favoured the higher castes was passed presumably because the committee chairman was from the upper caste and a majority of management committee members belonged to higher castes (eight out of 12 management committee members).

Aside from caste differences, no social categorisation in the villages is as important as gender. Women are the main stakeholders in forest management as they are collectors of fuelwood and NTFPs. At the same time, women are socially disadvantaged as they have little opportunity or inclination to express their views in public. To ensure equal participation, the Andhra Pradesh government issued a government order that mandated more than half the general body and the management committee was to be constituted by women (Government of Andhra Pradesh 2002). Nevertheless, actual participation of women was nominal, as their husbands generally attended meetings on their behalf. 61% of 109 female respondents answered that they *never* attended general meetings (only 28% of 113 male respondents gave the same answer). The main reasons for non-attendance mentioned by women were that 'they are busy with household work', that 'they feel uncomfortable attending male-dominated meetings', and that 'it is not accepted by men that women attend meetings or speak up in a male-dominated crowd'. A scheduled caste widow from the second term management committee complained: "I was always the only female who attended management committee meetings. How can I make my opinions heard when all the other women are absent?" As a result, the women's point of view was not reflected in decisions and rules on forest related activities. Correlatively, there is a notable difference between male and female respondents' perceptions over effects of JFM on benefits from forests (cf. Agrawal 2001). Whereas 82% of 111 male informants perceived positive effects, only 38% of 107 female informants perceived such effects (cf. 7% and 10% of the 111 male informants and 54% and 8% of 107 female informants perceived 'no' and 'negative' effects respectively).

Finally, asymmetric distribution of costs and benefits within JFM villages also relate to main livelihoods. To exemplify this point, we draw on the case of Kanchanpally village where the new forest boundary adversely impacted many goat herders. Kanchanpally village joined JFM in 1998 and introduced

tough restrictions on forest use. In the village, around 50 out of 382 households depended on goat herding as their principal livelihood activity. Goat herders had followed the customary practice to move goats approximately 20–30 km on a daily basis to allow them to graze. For this reason the Forest Department considered goats harmful for the regeneration of forests and aimed to regulate the size of herds, and limit grazing by collecting fees per goat and fining herders. Since JFM, however, forest protection committees have overtaken this role.

The committees prohibited goat herders from their own villages from cutting tree branches and herders from outside the village from grazing their goats. Due to these restrictions, herders in Kanchanpally experienced increasing difficulties since the forests were insufficient to meet the dietary requirement of the animals. This meant that herders were forced to either ignore the restrictions on cutting branches or move to neighbouring forests governed by other forest protection committees. 12 of the 26 goat herders responded that they had been caught either by their own or by neighbouring forest protection committees. Altogether they had paid a sum of INR 80,550 in fines during the period 1998 to 2008. Due to strict regulations and fine charges, the Kanchanpally committee reported that the population of goats declined from around 2,500 to 1,000 between 1998 and 2008. Unsurprisingly a majority (81%) of these 26 respondents perceived negative effects of JFM on the benefits they derived from forests. Conversely, the forest protection committee viewed goat herders as both the main violators and the main source of revenue.

This section has introduced the cases of Mohammed Nagar and Kanchanpally to show how JFM has both benefited and harmed villagers who were inside the formalisation of natural resource use boundaries. Even as JFM formally includes lower caste people and women, social categorisations continue to impose social, economic and political boundaries that work against equality and inclusion. Thus, actual consequences of JFM result from *the interactions between natural resource use boundaries and social boundaries defined by caste, gender and livelihood*. These are social categories that show little propensity to change, except perhaps very gradually, and which, therefore, are *more likely to modify new policy initiatives than vice versa*.

Village Boundaries and the Rearrangements of Lived Space

We have indicated some of the varied ways in which JFM become enmeshed with social boundaries, that are difficult to change, but which impose an asymmetric distribution of costs and benefits, even *among* JFM villagers. However, the consequence of being left on the outside of new forest boundaries is far more damaging. As a result of JFM, villages that were not officially recognised as managers of forest lands quickly began to face difficulties. Their previous access to forests was blocked by village guards hired by neighbouring forest protection committees who demanded payment of large fines. Yet, the people of such villages had little choice than to

continue to transgress these boundaries, involuntarily adapting to the emerging social category of 'forest offender'.

Antharam village exemplifies this situation. As JFM commenced, a Forest Department officer tried to persuade the village to join JFM. The political head explained that the village decided to refrain from joining because villagers had no idea of the consequences. As a result the officer allocated all nearby forests to neighbouring villages including Mohammed Nagar, Salbatoor, and Kanwaram (see Figure 3 for the locations of villages and their forests). As forest protection activities began to be implemented by JFM villages, this caused difficulties for Antharam. In order to avoid being caught and fined by forest protection committees, they attempted to undermine the boundary, by sneaking into adjacent forests during the night in order to gather fuelwood. Antharam villagers perceived the JFM as unfairly restricting their ability to procure necessary forest products and view neighbouring village guards as purely economically motivated. One expression of a sentiment often encountered was that "our neighbours are not after protection of forests but after fines they collect from us". 22 out of 55 surveyed households reported that they had been caught by the forest protection committee of other villages between 1998 and 2008. Together they had paid fines of INR 48,600. All (100%) of the surveyed 55 households in this village viewed the impacts of JFM as 'negative' regardless of their caste and gender. Antharam is, of course, not the only village excluded from JFM (see Figure 3, for further examples in the local area).

Antharam village did not remain passive in the face of these problems. The village approached Forest Department officers numerous times to request allocation of a parcel of forest land for their management and use. Village representatives also contacted Salbatoor village about the possibility of becoming included in their forest protection committee. These proposals were rejected. In conversations with Forest Department officers about the difficulties of Antharam village, we were repeatedly told that nothing could be done since 'all forests had been allocated'.

This example indicates that newly made natural resource use boundaries may grow rigid very quickly. Although formalisation of boundaries may be a key success factor in sustainable resource management, the situation of Antharam village indicates that problematic socio-economic consequences may follow from the rapid naturalisation of such boundaries. At this point we can return to Agrawal and Ostrom's (2001) estimation that the rural poor have generally benefited from JFM. This may certainly be the case for (some) villagers *included* in the initiative. However, *de facto* not everyone is included or can be included in JFM. This raises important questions about the equity and distributive justice of JFM.⁸

CONCLUSION

This article has explored the social consequences of JFM by analysing how new forest boundaries interact with and transform social boundaries within and among villages. We have shown how JFM constructed new formalised resource use boundaries along with the establishment of new institutions

called 'forest protection committees' and analysed how included and excluded villages and villagers supported or resisted new boundaries. The article has also shown how new formalised resource use boundaries interact with entrenched social categories in ways that have rearranged the lived space of villagers and have distributed costs and benefits asymmetrically.

Researchers have noticed that a clear distinction must be made between the general and benevolent rhetoric of community involvement and the actual activities through which the 'joint' in JFM is substantiated (e.g., Agrawal 2001; Sundar 2001). In our case study, this discrepancy is particularly obvious in the early stage of the JFM implementation, in which new natural resource use boundaries were made and managerial responsibilities delegated to specific villages based on decisions made by the Forest Department. This boundary-making procedure had serious consequences as it divided local actors into legitimate and illegitimate forest users and rendered this division irreversible.

In order to understand the emergent social consequences of JFM, we adopted the notion of *boundary-work*. We used this concept to account for the activities that villagers engaged in to strengthen or weaken the formalised resource use boundaries, thereby supporting or resisting the JFM initiative. Boundary-work occurred not only at the level of formal policy but through villagers' everyday activities to secure livelihood needs. For members of forest protection committees, the most prevalent types of boundary-work were to physically guard the new forest boundaries and apprehend offenders. These activities exemplify boundary-work as a kind of social control with the aim of protecting and shoring up the autonomy and managerial responsibility granted to JFM villages. Meanwhile non-JFM villagers engaged themselves in boundary-work in the form of strategic, practical and sometimes devious action, in order to resist adverse consequences from the rearrangements of forest space brought about by JFM.

Our study has shown that boundary conflicts arose not only between those formally included in and those excluded from access to JFM resources. Exclusions were noted, remarked, and acted upon both inside and outside JFM villages. Boundary conflicts inside JFM villages arose due to interactions between new boundaries and well established social categories relating to caste, gender and livelihoods that may be challenged (and are, in some cases, meant to be challenged) by JFM. Entrenched social boundaries were often reaffirmed through JFM in a way that largely perpetuated an asymmetric distribution of costs and benefits within JFM villages.

Finally, we asked how new forest boundaries rearranged the lived space for JFM and non-JFM villages. At the most general level, JFM facilitated a shift whereby the most crucial distinction in forest management is no longer between Forest Department and villages in general, but between JFM and non-JFM villages. Perhaps to an extent, we are here dealing with the construction of new environmental subjects in certain social groups (Agrawal 2005). In the least, certain individuals began to define themselves as protectors of forests. These people

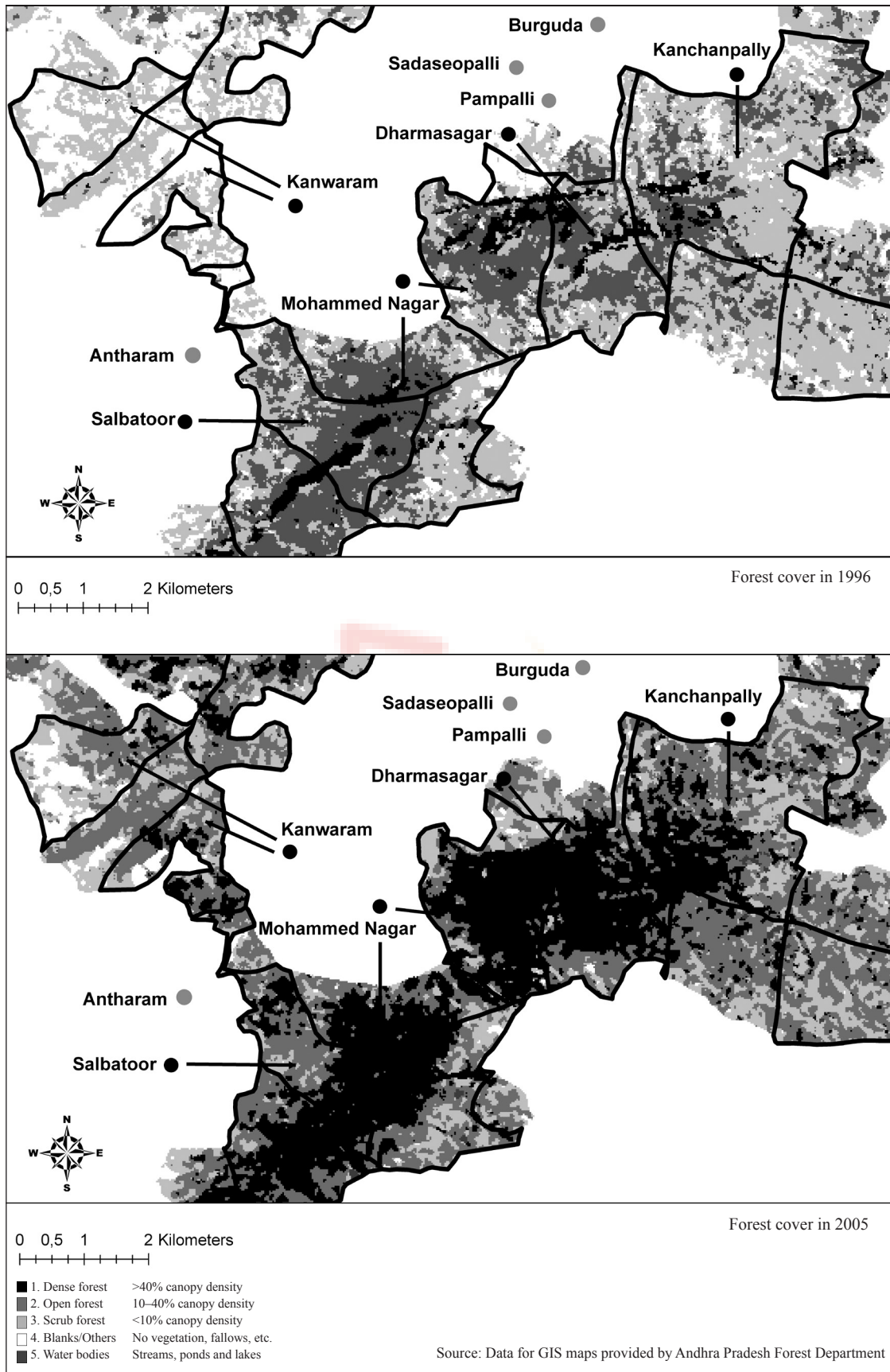


Figure 3
Forest cover change between 1996 and 2005

who gained income by patrolling the boundaries became *de facto* examples of Agrawal's 'environmental subjects', even if a deep environmental sensibility was not their reason for engaging in this work. Yet, simultaneously we have observed the construction of a kind of village-based state operation (as indicated by the emerging use of terms such 'forest offenders' for own and neighbouring villagers who violate rules). This is by far the most prevalent viewpoint amongst those excluded from access to previously accessible forest resources. By instituting local forest protection mechanisms in the name of sustainable resource management, JFM has thus also been instrumental in maintaining or reinforcing social distinctions between villages.

In summary, our case demonstrates a dynamic process in which formal policy principles give rise to concrete and practical boundary-work to resist new boundaries or enforce them. The making of new resource use boundaries results in adverse consequences not only for those excluded but also for some groups that are included by these boundaries.

It is particularly remarkable that the new formalised boundaries were 'naturalised' and came to be seen as irreversible very quickly, as exemplified by the failed attempts of Antharam village to become part of JFM. Such rapid reification of boundaries compromises the aspiration of JFM (and CBNRM more broadly) to ensure equity and social justice. It also engendered conflicts both within and among villages. These social consequences of JFM were unforeseen by policy makers and would have been difficult to predict from the CPR literature.

Our study points to the importance of questioning the naturalisation and reification of resource use boundaries both for analytical and pragmatic reasons. The boundary-making and the boundary-work that followed JFM initiation, makes clear that formalised resource use boundaries are social and political entities. Far from neutral, new boundaries rearrange the lived space of forest users through processes of inclusion and exclusion. The generic positive valuation on making boundaries, represented by much literature on collective action is insufficient to capture the dynamics involved in actual boundary-making processes. Unless the analysis of success criteria for establishing CPR institutions is combined with attention to the concrete boundary-work in which affected actors engage to support or undermine policies, it will remain unable to account for many concrete, yet unintended, outcomes of policy in practice, and will therefore also be unable to imagine creative ways of responding to such outcomes.

These conclusions are also relevant for other CBNRM projects that involve boundary-making. For example, they have implications for the currently high-profile global climate change mitigation initiative, Reducing Emissions from Deforestation and Forest Degradation (REDD-plus) which is likely to entail clarification or creation of resource management boundaries to improve carbon storage in forests (Cotula & Mayers 2009). Our analysis suggests the need for careful consideration of how to achieve more participatory, inclusive and flexible procedures of boundary-making and *adjustment* in CBNRM initiatives and REDD-plus. Only in this way can these initiatives have a chance to become what they aspire to

be: fair and equitable, broadly including rather than excluding.

In this regard policy makers and enforcers have central roles. They ought to negotiate, rather than impose, resource boundaries in the first place, and they ought to mediate, rather than ignore, subsequent conflict situations. Prior assessments of potential social and political consequences of new natural resource use boundaries should be conducted with attention to customary use patterns of resources and with consultation with locals.

If adverse effects arise due to the constitution of new resource use boundaries, policy makers should take an active role in 1) *ensuring a fair distribution of costs and benefits within included communities*, 2) *facilitating inclusion of excluded communities* in the use and management of resources, for example, by creating forums in which boundaries could be renegotiated and by making adjustments to boundaries, and finally, 3) exploring the possibility, analytically and in practice, that *keeping boundaries flexible* might in some situations lead to better (more equitable and environmentally friendly) outcomes than formalising them.

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Notes

1. These principles include 'congruent rules', 'monitoring', 'graduated sanctions', 'conflict-resolution mechanisms', 'clear boundaries and membership' 'recognised rights to organise', 'collective choice arenas' and 'nested enterprises' (1990: 180).
2. 'Catchment' is the terminology generally used in the UK and other places such as Australia and India where British term is used but the same concept is used as 'watershed' in the US.
3. As we discuss below, this does not imply that villages previously lived in a state of harmony.
4. Under JFM, forest ownership remains in the hands of the Indian government but forest protection committees gain management and use rights to the assigned forest (Behera & Engel 2006).
5. The number of management committee changed from 12 to 15 in 2002.
6. The allocated numbers for the upper caste, the middle caste, the scheduled caste and the tribal people were two, six, two, and two respectively in 1997 (the numbers have changed to two, seven, two and four respectively since 2002).
7. E.g., see Agrawal & Ostrom 2001; Behera & Engels 2009 and Bhattacharya *et al.* (2009), for related arguments that JFM may have (temporary) positive effects on forest conditions.
8. This relates to more general questions of forest policy, since one central reason why there is not enough forest to share is commercial logging. Although boundary-making practices relating to commercial logging are far outside the scope of this article, such practices have serious

implications for the boundary-making practices of community-based natural management initiatives. The boundary-conditions they put in place for CBNRM initiatives deserve analytical attention.

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