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Forest Co-management as Science and Democracy in West Bengal, India

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ABSTRACT

This essay argues that important development and natural resource management initiatives that seek to expand meaningful participation by rural communities directly affected by such ventures can be usefully examined as democratic technologies. Drawing upon nearly two decades of experience designing, implementing, and researching forest co-management programs in India, the essay examines the analogous practices through which democracy and forest management science become contested regulatory ideals while creating the deliberative spaces in which post-Habermasian public spheres can be constructed. The analysis of disciplinary tendencies, bureaucratic transition, and emerging solidarities among historically marginalised groups responding to the performance of democracy and scientific forest management is used to offer revisions to the more sweeping critiques of technology as fundamentally anti-democratic.

KEY WORDS

Forest management, science studies, cultural politics, democracy, critical theory, environment and development, India

INTRODUCTION

I will begin by briefly discussing co-management of natural resources and how many considerations of the topic lead us to questions of democracy. This happens because participation, which is at the heart of co-management, is at the heart of democracy as it is central to recent discussions of science and democracy or democratic technologies. Participation in forest co-management, for forest-

ers, villagers, social activists, rural development experts and other persons involved is simultaneously a political and scientific activity, which occurs in the overall context of democratic organisation. Democracy is a vast political field but for my purposes here one defining feature is of particular importance. In the words of Claude Lefort, 'the important point is that democracy is instituted and sustained by the *dissolution of the markers of certainty*' (italics in original), and in it 'people experience a fundamental indeterminacy as to the basis of power, law and knowledge, and as to the basis of relations between *self* and *other* at every level of social life'.¹

Indeterminacy, as Lefort goes on to argue, breeds incessant questioning, and both democratic and non-democratic responses to such questioning seek out a regulative ideal for this process. The quest is for a channelling mechanism for the energies of debate unleashed. It is to find a management technology for directing a polyphonic inquiry to common understandings and stable standards. In this context Amanda Anderson's reminder that 'a regulative ideal of mutual understanding does not render identity determinate, it merely renders politics possible' also becomes salient.² Forest co-management is fundamentally about the politics of creating such mutual understanding in a transformative moment when communities of discourse and debate, hitherto kept apart, are fused by the expansive energies of democratisation. That is why co-management is susceptible to analysis in terms of Habermasian ideas about communicative rationality. But an examination of the rational decision-making spaces opened by co-management also reveals their quick occupation by communities of discourse layered by asymmetrical power relations. Their uneven mutual access to each other, and the coercion often practised across and within them, is also ordered by sedimented practices of interaction and self-making within these communities. This point is differently true for villagers negotiating cultural and social forms of hierarchy, or foresters mindful of bureaucratic procedures governing professional conduct. But in all cases it reminds us that the spaces created by democratic technologies like forest co-management are filled by power-laden flows and ritualised patterns of engagement which ultimately give them shape and meaning.

Forest management, in short, is always a social as well as technical process, structured by a sequence of rites.³ Joint Forest Management (JFM) – which is the particular case of co-management that I have researched – illustrates a revision of rites, including ideas about who might be carriers and purveyors of ritual knowledge.⁴ A discussion in terms of rites and ritual is appropriate here to underline the performative aspects of political discourse in democratisation. Co-management is both about the construction of scientific practices deftly combining popular and technocratic conceptions of expert knowledge and about the political process of continuous consultation and incremental understanding among participants. It is, also, about the social construction of the deliberative citizen-subject, who in the guise of village elder, or *panchayat* (an elected local

government body at village, block and district levels) member, or forest officer, fashions the everyday institutions of forest co-management in a million acts of planning, discussion, collaboration, and disputation. This fact is being recognised in new research that acknowledges the spread of participatory approaches into a variety of natural resources sectors (starting from the pioneering efforts in forestry). In such work attention is paid to altering bureaucratic regimes,⁵ systematic exclusions engendered in participatory development,⁶ and consolidating political opportunities for the historically marginal people involved with participatory groups formed through natural resource management projects.⁷

This is where a refined Habermasian perspective becomes illuminative. Admittedly many post-structuralist approaches to subject-formation have provided non-mechanistic accounts of the process. A kind of participation does for example emerge in Foucault's accounts of constructed subjectivity, but he also subordinates intersubjective relations to the workings of systemic power.⁸ Judith Butler recognises this limitation and is right to insist, in her reformulations, that the dialogical process of democratisation will lead to divergence, splinter, breakage, and fragmentation. But she also casts a killing suspicion on any impulse to agreement or coalitions that leading to unity of purpose, impulses that are also part of the democratisation process. These positive moments are the focus of Habermas in his consideration of intersubjective communicative rationality.⁹ By presupposing relations of reciprocity and recognition in any action oriented toward reaching understanding, Habermas insists that the higher level of argumentation required in any self-reflexive democratic process is an extension of the more primary mode of action that is oriented towards reaching understanding. The status of subjects who are constituted through intersubjective relations is preserved yet placed in productive dialogue with an understanding of larger systems and histories. Hence the utility of revised notions of public spheres for our discussion, a point that will be taken up further towards the end of this essay.

In what follows I will examine, from this Habermasian perspective, the formation of social alliances and the patterns of antagonism among various participants in JFM to describe the world of democratic political institutions and scientific practice on which forest co-management is predicated. Plunging into the details of JFM I shall sketch out the case of micro-planning, which exemplifies some of the problems that come up in democratising scientific management of forests. By discussing the movement from technology – a realm of jealously guarded secrets – to management – the public sphere of scientific performance – I shall conclude with some remarks on how the JFM case helps us reflect on unrelenting critique of technology as inherently anti-democratic and invariably deleterious for community (a term often used to signal a pre-modern public social formation). I will have occasion to comment in particular on the work of Richard Sclove, but will also relate my arguments more generally to post-empiricist debates on technology, its ontology, construction, and so on.¹⁰

CO-MANAGEMENT: EXPERTISE AND DEMOCRACY ENTANGLED¹¹

Recent studies of democracy in India have commented upon the paradoxes of proliferating political institutions and widespread powerlessness among them; or the accentuation of urban-rural inequities in a framework of enhanced devolution.¹² Curiously enough, the increase in central environmental regulations and their implications for economic liberalisation and democratic devolution, proceeding apace in India since 1991, has not generated the same scholarly interest. Defining a sector of governmental practice that may be out of step with others, environmental management has also become a field of heated controversy, where nationalists, localists, and advocates of global free enterprise contest key issues of governance, environmental impacts and human rights. In India this debate is particularly rich and long-standing around the question of forest management and modern agricultural development, though it is beginning to encompass issues of pollution and public health.¹³ The debate is not only about natural resource management but extends to a redefinition of relations between state, civil society, and business and how all of these domains of democratic conduct impinge on the livelihoods of poor people.¹⁴

One outcome has been that nationalist ideas are being fuelled by the rapidly growing international governmental system for the environment.¹⁵ In some cases, like the opposition to Intellectual Property Rights clauses in GATT and the farmers' agitation generated in parts of India from that, such elite coalitions around nationalist anxieties promote a favourable climate for generating a grid of national environmental regulations. Periodic pressure from events like the Earth Summit of 1992 and its successor events, is a powerful impetus for a stringent national forestry code that would serve as an effective platform for staking out an 'Indian' position that diverges from the international dispensation. So the authors of this position are actively crafting and claiming a national consensus. In contrast, India also has a vigorous environmental movement, long divided over the complicated issue of where the locus of environmental management should be. Many influential environmentalists have recommended the empowerment of local communities for the effective conservation and sustainable development of scarce natural resources.¹⁶

Such contradictions reveal several fascinating aspects of the relationship of environmental management to democracy in India. At the ethical level, the debate is certainly about contested definitions of equity. Should inter-generational fairness be stressed over fairness across different segments of society? How do people living in different parts of the country share the costs of environmental management? Seeking answers to these questions threatens to institute fresh divisions, or accentuate existing ones, between town and country, locality and nation. Much of the tension arises from the definition of expertise, and identifying where it reposes in society. Debates on this issue, especially in fields like forestry and agriculture, have sparked reconsideration of what constitutes

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appropriate knowledge, spawning the field of indigenous technical knowledge, and its denial and appropriation by scientific development agencies and professional environmental managers.¹⁷

The case of forest management illuminates all these issues. The widespread introduction of JFM schemes, and similar co-management programs for watershed development and irrigation in certain parts of India, arguably signals an exception to the national trend towards more centralised and authoritarian government through environmental management. These wider paradoxes are not directly dealt with here, but this essay certainly confronts the question: how can management be devolved? How can something quintessentially scientific escape the tyranny of hierarchies and shrinking circles of expertise to become one with popular practice? What institutions, and what manner of fortification of such institutions, can create communities of resource managers whose members can naturally belong to the diverse worlds of interest and affect from which they view these resources, and yet also be of, and for, this eclectic community of managers? What patterns of inter-subjective communication emerge and how are they constrained by, while also reshaping, structures of inequality and secrecy?

Co-management is a useful window from which to view these issues, precisely because it envisages a management regime where interests beyond those of the most obvious community 'owning' the resource are recognised and actively dealt with in the management framework being devised. Co-management thus addresses global versus local kinds of issues, and the question of there being no single property regime that neatly encapsulates natural resource management. Such multiplicity of claims articulated by claimants through membership in several 'communities' that are not inherently compatible, has become a hallmark of natural resource management and is well illuminated by the case of forests. Co-management raises two other issues. These are the related questions of *jurisdiction* and *expertise*, of which the latter concerns us here, in its socially enacted form of management technology.¹⁸ Expertise, in this dynamic and socially contextualised form, inescapably becomes a 'situated knowledge', and through such forcible localisation, enters a dialogic relationship with decentralised democracy, which is a comparable localisation of governance.¹⁹ The notion of situated knowledge reminds us not only of the ontological pluralism of knowledge, but also refers us to processes constructing the universe of meaning in which specific technics and techniques become expert knowledge. The locus of such expert knowledge and its modes of transmission can become the focus of conflict, often violent, but always central to questions of management, especially when such management is framed in the discourse of participatory development.²⁰

Forest management is necessarily, though not exclusively, about the preservation, cultivation, propagation, multiplication and renewal of individual trees and forest landscapes. Knowledge of the autecology and synecology of principal

species of interest becomes salient, while competing corpuses of silvicultural techniques inform debates on the content and locus of expertise. Once again, the forest department, or foresters working for corporate interests, makes powerful claims to exclusive control over the pertinent expertise.²¹ These claims have little to do with property rights, though their admission does directly affect the nature of co-management that obtains thereafter. A good illustration of this point is provided by something like the Soil Conservation Act (as in the US), or laws for regulating privately owned forests (as in colonial eastern India). In these cases law reposes managerial powers, via a definition of expertise, in government technical bureaucracies that have no property rights in the resource being managed – land or forest. But the case at hand is joint forest management in Bengal, where environmental, commercial and community stabilising goals have to be simultaneously served under a management regime reliant on the democratic performance of science.

There are fascinating parallels between the performative rubric of validation for experimental science and democratic process. In both cases we have experts building their claims to the legitimacy of the practice – experimental or political – by depersonalisation and objectification of the practice. Transparency, visibility, and replicability are the touchstones on which successful experimental science and democratic politics are evaluated. Lay participants are incorporated into the performance as witnesses, whose legitimating gaze and engagement at critical moments renders the practice scientific or democratic. These moments of complicity also allow subsequent concentration of power in the hands of experts, representatives, and others empowered by specific performances. These are the issues I will return to in my concluding reflections on technology, scientific management, and democracy. Let me turn now to the story of JFM in West Bengal.

INTIMATIONS OF JFM IN SOUTHERN WEST BENGAL²²

In October 1987, two years before JFM received official sanction in West Bengal, the West Midnapore Forest Division reported that they had eighty-eight Forest Protection Committees (FPC), twenty of which were in Jhargram. These committees were already protecting over 8,000 hectares of forests and the divisional officials were working on a scheme for organising forest protection by the people.²³ 250,000 hectares of degraded sal (*Shorea robusta*) forests in southwest Bengal had been identified for natural regeneration through coppice felling on a ten-year rotation. Two-thirds of this area was already under such management. A scheme for forest protection and resuscitation through peoples' participation was, therefore, considered appropriate for these areas.²⁴

In conceiving this scheme certain Bengal foresters combined technical possibility with political exigency through an official narrative of mismanage-

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ment, increasing pressure on resources and conflicts that is nicely summarised in the above-named scheme and its justificatory eloquence:

after state take over in 1955 forests were brought under scientific management ... but these were short lasting ... as a big gap had already been created between demand and supply of forest produce. The situation was aggravated by a phenomenal rise in population ... growing unemployment led to complete disenchantment of people towards ... forest preservation ... the job of forest protection has become extremely hazardous leading to frequent clashes with people ... usual forest protection has failed to mitigate the situation, as a direct consequence felling as per working plan had to be brought down to 25 percent of the prescribed area²⁵

By 1989, the idea had entered official rhetoric with government support, when the Forest Minister, Ambarish Mukherjee made his budget speech and said, 'our policy is to create the forest with help of people, maintain them with their co-operation and multiply them with their active co-operation'.²⁶

The spread of FPCs in the next few years was rapid, and local reports on their working were very laudatory. In June 1989, the West Midnapore Divisional Forest Officer (DFO) described FPCs in the division as uniformly effective.²⁷ But soon the active promotion of this management initiative became a project of senior officials. With the passage of the July 1989 government resolution approving a scheme for the setting up of FPCs, panchayat oversight of the progress of the scheme was introduced. No longer considered the daring innovation of low level foresters, the FPC scheme became a test of their willingness to adopt new styles of functioning.²⁸

Not only were Non Governmental Organisations (NGO) being funded by the Ford Foundation to assist in smooth transitions from custodial to co-operative forest management, but the new World Bank Forestry Project made administrative restructuring and attitudinal reform among field staff a fundamental goal of the project.²⁹ The idea had been mooted from within the higher echelons of the Bengal Forest Service itself. Writing some time in 1990, Subimal Roy, the Conservator of Western Circle had observed:

long used to institutional rigidity, often assuming repressive dimensions, in chilling isolation from the people, it is a difficult task to bring about attitudinal change among Forest Department staff to freely interact with villagers taking them as equal partners in a mutually beneficial set up. However, unless this is achieved, FPCs will either not be formed or wither in neglect – even if grudgingly formed to obey superior directive.³⁰

While the formation of FPCs continued apace, the DFO and his officers were not pleased with the idea that they needed attitudinal change training, that too from NGOs. Instances of conflict arising from FPC formation had also begun to be reported. Mass looting of forests protected by one village by other villages, who

were challenging their claims, occurred in several forest ranges in the early 1990s. These incidents helped field foresters to argue that attitudinal change was more urgently needed among these competing villages, and the panchayat-based oversight committees, which in their view showed little interest in protecting plantations.³¹

By the early 1990s the stratification of the forest service and its diverse responses to the JFM program was evident in southern West Bengal. In the next sections of this paper the sociology of fractures within the Bengal foresters will be examined alongside the dynamics of FPC maintenance, to evaluate the friction caused by public understandings of expertise and democracy. We can, then, appraise the sweeping and effusive praise that has been showered on JFM in West Bengal, which even to seasoned scholars appears to have promoted 'genuine partnership' between foresters and villagers, with local communities 'confirmed as joint managers of the forest'.³²

JFM AS PERFORMANCE

Let us begin by asking: Who are the foresters involved in JFM? Predictably, there is no simple answer to this question. At the lowest level there are forest guards and the casually employed *van mazdoor* (forest labour). These are the foot soldiers of the department, drawn from the region, often themselves members of FPCs, if not in their own jurisdictions.³³ The hierarchy of Beat and Range Officers marks widening circles of territorial jurisdictions that culminates in the divisional head – the DFO. All except the DFO are members of the subordinate forest services. Typically the DFO is from the Indian Forest Service, a federally recruited, trained and appointed elite corps. These officers and their superiors at headquarters (mostly in Calcutta) lead what has recently been characterised as a paramilitary organisation.³⁴

While Beat Officers function as the member-conveners of anything from ten to twenty FPCs in their beat, Range Officers participate in block level JFM oversight committees through the panchayats for the five to seven beats they supervise. The DFO not only coordinates and directs the JFM program in the entire division, s/he is empowered under relevant government orders to register the FPCs that have been formed. Registration requires the prior completion of a series of inquiries by the Beat Officer, certification by panchayats and the demarcation of forest areas assigned to the concerned FPCs. These procedures take time to complete and are fraught with conflicts.³⁵ Upon their verification, the DFO recommends the registration of an FPC, and only from the date of such registration, does the FPC formally exist in the official record. This fact is important and emotive because, according to the West Bengal scheme, five years of registered existence alone will earn the FPC approved rights in the commercial produce of the forests they protect.

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The DFO, in consultation with the panchayats, retains the authority to dissolve FPCs that do not perform their forest protection tasks. The precise details of these tasks are supposed to be laid out in a micro-plan, prepared through detailed discussion in a series of FPCs meetings. These micro-plans are not only charters of the various restrictions placed upon and policed by villagers involved in FPCs, they are also development plans, designating the agreed infrastructural projects to be taken up, like wells, roads, and the occasional community facility. These micro-plans are also the forest working (silvicultural) prescriptions for the relevant forest areas. They are ostensibly to be prepared through FPC deliberations. All FPC meetings I attended, and others I was able to collect information on, revealed to the contrary that the meetings were used at best as sounding boards for schemes the department wished to take up in particular villages, and at worst as opportunities to announce the annual projects selected.

So the failure of FPCs to realise their full range of deliberative and managerial functions was rooted in a large part within the forest department's unwillingness to devolve both necessary information (budgetary) and power. DFOs were generally aware of this shortcoming and also sensitive to the political clout of panchayats that bore direct links to ruling party bosses in Calcutta. For all these reasons, their power of FPC dismissal was never exercised. By being removed from the hurly-burly of daily dealings with villagers in their FPCs, and having a technical (if largely symbolic) control over the fate of FPCs, DFOs could appear to be above the fray.³⁶ These officers interacted with the public face of JFM through large, range level assemblies of FPCs where they would share the platform with panchayat luminaries. On such occasions speeches praising the JFM scheme would be made and 'feedback' on the working of the scheme would be collected.

From my experience of several such gatherings it became clear that these assemblies were secular darbars. Representatives of FPCs presented a litany of grievances, and asked for development projects, funds and greater police support for forest protection. In one such meeting the *sabhapati* of the block panchayat made a particularly grand speech. In his exhortations to the gathering he not only underlined the moral obligation of villagers to protect the forests that so munificently yielded them usufructs, but deftly reminded them that the panchayats were available to provide development. They, the elected panchayat officials, and not the forest department should be approached for such demands.³⁷

At this rather high, divisional level in the governance of JFM we can see fairly clearly the issues of control and constituency. The forest department had built its FPC program through minor rural development projects, the most popular being simple dug wells which were always welcome in jungle villages due to water scarcities. It was also visibly loath to surrender control of the program, and sought to retain adjudicatory powers through functions like plot demarcation, FPC registration, conflict resolution and so on. Panchayats have begun to assert their own supervisory role following the noted success of forest department

developmentalism. Formally charged with land and rural development administration, block panchayats led by the CPI(M) are particularly sensitive to *gram* panchayats led by the JKP establishing direct links with government departments and thereby encroaching on their domain of governance.

At the level of beats, panchayats are less visible, but the foresters are more ambivalent and unsure about the JFM program. One beat officer who must be considered basically unsympathetic to JFM said to me

FPCs cannot be expected to work miracles. We have formed committees with thieves. CPI(M) and JKP politics aggravate the situation ... a couple of years ago my predecessor was assaulted with bows and arrows.³⁸

Another, who professed great commitment to JFM, suddenly removed my scepticism about him one day when he covertly provided the details of the annual working schemes and budgets to the Dhansol-Phulgerya (one of the study villages) FPC leaders. This daring move on his part, going against standing instructions in the department, sparked a prolonged agitation by the FPC about the scale of operations taken up and the potential employment opportunities generated in the 1994 lean season. While we could justifiably treat this as a case where the FPC had been pitch-forked into micro-plan negotiations of the sort that were normatively prescribed, the beat officer's superiors in the Range did not take such a view. He was transferred out of the region with indecent haste. The incident made the individual official a hero in the area for a while, but also reveals the general lack of forester support for the more radical aspects of JFM.

The Forestry Training Institute at Jhargram organises regular courses for the forest guards, beat and range officers, and much of the focus in this training is now on JFM. In several workshops for beat officers held there (I attended a few), these field officers were encouraged to, and did, speak freely about their reservations about JFM. One aspect of their critique was a scepticism of micro-planning. Another was their frustration with the increased amounts of time spent in formal consultation with villagers. If consultation was the new face of departmental culture in the field, villagers were quick to seize upon its possibilities and expand its scope. Panchayats, on the contrary wanted such consultation always to be through their channels and under their auspices. Beat officers were new to these pulls and pressures.³⁹ While some beat officers enjoyed exchanging the hostility of their earlier relations with villagers for the newer paternalist experiences of dispensing development, others were visibly upset by what they construed as a decline in their authority, social standing, and ability to extort prebends.

To understand the impact of JFM on the lowest rungs of forester bureaucracies we might fruitfully dwell a little more on the work of beats. Their responsibilities may be broadly classified as forest *protection* and forestry *operations*. In the former category again we have two types of work. The first was routine patrolling and the second consisted of special drives to deal with

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sporadic but major occurrences of wood theft. All aspects of protection work were now shared with FPCs and this had greatly minimised routine patrolling. Protection work that is done by guards cannot escape the scrutiny of FPCs. Operations, again, are of two kinds. First there are civil works, like soil conservation, water management; second there are a range of silvicultural works like thinning, multiple shoot cutting, plantations and nurseries.

While FPCs are readily admitted into the selection of civil works through micro-planning, foresters – irrespective of rank – are reluctant to treat silviculture as negotiable in village plans. This last bastion of technical control is being fiercely guarded. Effective FPCs, most often led by village elites, insist that all meetings be attended by Range officers, as they shrewdly recognise that the range of things on which summary decisions in the meetings can be solicited increases in direct relation to the rank of the forest officer present. Beat Officers are resentful of this turn, for it has worked to shrink their domain of autonomous action from both ends. As a result they have raised through their associations the demand for smaller beats with greater delegation of powers to ‘make them more effective implementers of the JFM program’.⁴⁰

The respective roles played by committees and foresters in program implementation has understandably become the point on which many crucial interpretations and disputes turn. As more villagers travel, not only on routes charted by their social obligations of marriage, kinship and agricultural marketing, but also in groups organised by the forest department to visit FPCs in neighbouring ranges, they have become secular pilgrims. Pilgrimage confers wisdom and stature on the returned pilgrim, especially if this be an already influential villager. Knowledge and standing garnered on such travels are being deployed by the committee leadership in southwest Bengal to demand transparency, visibility, and delegation of powers to determine the routine and its emendation. This brings them into direct opposition with most foresters.

As our short encounter with the politics of micro-planning reveals, silvicultural expertise remains the technological basis for any bureaucratic control of JFM. But the performative disciplines of JFM, the systems of practice that would rationalise it, require natural regeneration to be the centrepiece of the technical portfolio. In any discussion of natural regeneration villagers are quick to remind their official kinsmen in the community of managers that it is a technique long mastered by them, if not as ‘forestry’, then certainly as ‘farming’. The preference for native species regenerated from available root stock creates a very specific deliberative space in JFM’s communities of rational discourse. Here foresters in the field are most vulnerable to challenge from the local wisdom of the woodcutter and pioneer farmer, while foresters in the higher echelons are subjected to the disciplines of consultation and the unpredictable outcomes that they might bring. Equally, village hierarchies of authority and expert knowledge are threatened by the prominent role that ritually lower-ranked and often poor people assume in tree management in these situations. Democratic technologies

have this potential to be a de-centring force in the social organisation of politics and scientific authority. In what follows the lessons of the JFM case study presented here are applied to an examination of this radical potential, and its limitations, in the context of democratic theory and social studies of science.

THE ORDERING EFFECTS OF DEMOCRACY AND SCIENCE AS PRACTICE

At the most elementary level, democracy can be understood as the process of political participation whereby people choose and dismiss governments.⁴¹ Elaborated processually, democratisation has been described as the pluralisation of power within a civil society protected and encouraged by an accountable framework of institutions.⁴² But even this is clearly inadequate. Not only does such a view neglect the selective participation that is enforced by social inequalities in formal democracy, it actually suggests that democracy is exclusively a function of social capacities or the strength of civil society.⁴³ We need to distinguish, as some scholars have recently argued, between formal and substantive democracy and understand how the definition of the latter hinges on a clear concept of statemaking. As Ayesha Jalal puts it,

democratisation's normative or substantive appeal derives from the empowerment of the people, not as abstract legal citizens but as concrete and active agents capable of pursuing their interests with a measure of autonomy from entrenched structures of dominance and privilege. Insofar as dominance underpins any social formation, democratisation entails the capacity to resist and renegotiate relations of power and privilege.⁴⁴

Democratisation thus provides the medium for the dialectic between domination and resistance to express itself as a dialectic between state structures and political processes. Two other characteristics are important. First, we need to recognise that democracy institutionalises general rules that risk loss of power. Second, democracy has always been a matter of political crafting to accommodate a broad consensus. To that extent, as Edward Friedman reminds us, 'democracy is not the antithesis of a strong state. Democracy actually is enhanced by effective state institutions'.⁴⁵ The working out of this apparent contradiction can be elucidated by some discussions of the public sphere.

Habermas studied the formation of the public sphere and its transformation between the seventeenth and twentieth century in Europe largely to revive the progressive potential of formal democracy and counterbalance its neglect in Marxist theory.⁴⁶ For him the importance of the public sphere lies in its potential to serve as a medium of societal integration. So in his theory the private realm is understood as one of freedom, which has to be defended against the domination of the state. For Habermas, the rise of the public sphere is the rise of civil

society, which he defined as 'the genuine domain of private autonomy ... opposed to the state'.⁴⁷ At the same time the public sphere could only be conceptualised in the full sense, as was the case with civil society, when the state as the locus of impersonal authority emerged through permanent bureaucracies and everyday routines of government. The democratisation of the public sphere was an inevitable result of the tension between its original class limitations and its principled openness. Structural transformation occurred when private organisations assumed public power and the state penetrated the private realm. So for Habermas, the degenerative transformation of the public sphere is the blurring of the distinction between state and society.⁴⁸

As the public sphere was forced to take account of inequalities among members and classes, it became an arena for negotiations, mediated by state activities. This has led critics of Habermas to argue for multiple, overlapping and at times contending public spheres. In the same spirit, Calhoun suggests that we think of the public sphere as a field of discursive connections.⁴⁹ But all these refinements build on a basic innovation offered by Habermas in theorising the world of politics. He offers us a notion of public spaces which when viewed through the lens of democratisation are revealed as the political sites for creating and modifying procedures whereby those affected by general social norms and collective political decisions can have a say in their formulation, stipulation and adoption.⁵⁰

There is, however, a dark side to public spheres generated in unequal societies. This side conceals the existence of multiple unevenly endowed publics struggling to be seen in the democratic process, and systematic exclusions through which the public sphere (or dominant public spheres) are constituted. Geof Eley has argued that the bourgeois public sphere was not only constituted in opposition to state absolutism and traditionalism, but also in containment of the popular, in conflict with the competing public spheres of those excluded from the bourgeois one. In this situation the official public sphere becomes a vehicle of domination through co-option of elites.⁵¹ These revisions suggest several important conclusions: first that status differentials cannot be bracketed, so social equality is necessary for political democracy; second that recognising a multiplicity of competing publics is a step towards greater democracy; third that private issues can appear in the public sphere and that there is no easy distinction between issues of the public and private realm; and fourth that a functioning democratic public sphere does not need a sharp separation between civil society and state.⁵²

We then have to ask, what institutional arrangements in stratified societies will narrow the gap in participatory parity between dominant and subordinate groups? Institutions define individual, group, and societal identities. They shape what it means to belong to a specific collective. Political democracy, therefore, depends not only on economic and social conditions but also on the design of political institutions.⁵³ Bureaucratic agencies, panchayats, forest protection

committees are not only arenas for contending social forces. They are also the manifestations of distinct governmental disciplines, and can be observed as discrete collections of standard operating procedures and structures which define and defend values, norms, interests, identities, and beliefs. Democracy thus creates deliberative space for, and sustains plurality in, political processes. This in turn is expressed through multiple publics and institutional arrangements for their interaction in political society. But the history of institutional arrangements for government, generates a structuring influence on the creative possibilities of democracy. The practical effects and channels of such structuring can be understood through the study of routines and procedures of government, which here is forest management. The contending public spheres through which forest management is undertaken can then be analysed not only as a contest over rights, access and control over resources, but as a struggle to reorganise the routines and procedures of government.⁵⁴ Routines, systematised practise, or embodied rationalisations, are the very techniques of scientific management as well. Technological rituals are also sociogenic, in that they have the ability to bring forth, define, and empower social relationships in the context of productive processes. We then have to turn to the study of science and technology as practice.

Historians and sociologists of science have frequently explored the ideological and intellectual processes in which particular branches of science developed.⁵⁵ I would suggest that such an approach pays insufficient attention to sites of application. That is, to places where these sciences become technological practices. The terrain of implementation leaves a strong impression on the production and transformation of scientific knowledge.⁵⁶ When these sites enter the processes of knowledge production in any specific domain like forestry, they bring with them much else that is going on there. One of the important things that creeps into generating scientific knowledge is the issue of government.

This happens in at least two ways. First, forestry as land management gets entangled in wider issues of land administration – agriculture, revenue, stable local arrangements of production. Second, the pressure on forest departments to develop, standardise and disseminate universal and replicable scientific management models which mesh with larger bureaucratic forms of government influences their selection and codification of procedures. There is then a tension between fitting forestry into a wider universe of managed landscapes of production and identifying it as a distinct, separate, professionalised activity. The work done by this tension suggests a constant production and transformation of science in its applications, often the context being development. We need to track these changes.⁵⁷

In *Representing and Intervening*, Ian Hacking provided a landmark study that shifted the focus of science studies towards practice, by stressing the doing aspects of science as much as representing. He later emphasised the multiplicity, patchiness and heterogeneity of the spaces in which scientists work.⁵⁸ More research in the history of science has now moved in this direction of looking to

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the social to understand the way rules and practices shape each other.⁵⁹ The discussion of interests I have suggested allows us to understand how the stabilisation of science takes certain routes and not others as the open-ended processes of experimentation unfold. But when scientists continually explore their way out of a problem, with experience as their guide, their interests intersect with ecological processes. Bengal foresters were, and continue to be, interested in growing sal in large contiguous blocks along convenient conversion and transport networks for timber. Their silvicultural options were soon limited to natural regeneration. Ecology here is itself a product of human perception and intervention, not fully autonomous, but not entirely imagined either. So scientific forestry focused on devising silvicultural systems where concentrated natural regeneration of sal could easily be obtained. This condition of science as historical practice is what I explore and illustrate using the case of forestry in Bengal.⁶⁰ While the technologies of natural regeneration, as well as legal and administrative infrastructures, are all received in West Bengal today as historically transformed colonial legacy, JFM is a product of this legacy's union with democratisation. The dynamic that has been set in motion was illustrated by looking at a few instances of JFM as performance.⁶¹

CONCLUSION: SCIENCE AND DEMOCRACY

In the introduction I made a distinction between management and technology, to which we may usefully return at this point. The chief difference is that management is doubly technology. It occurs first in a technical aspect – the implementation of a set of scientific procedures, or the carrying out of a mechanical, biological, physical design. But it also occurs as a technology of power, the social routines that are necessary to shape society through the application of technical designs. The latter aspect becomes entangled in political processes, because it occurs in the public sphere, influencing and shaped by competing publics. When we recall the political parties, class and status based antagonisms, panchayats, FPCs and forestry field officers who are all involved in JFM, contending publics are identifiable as numerous and overlapping. Through this welter of institutions and affiliations forest management as technology shapes social structure. It is here that Richard Sclove's discussion of the focal function and poly-potency of technology becomes insightful.

Yet in saying that 'technology is implicated in perpetuating antidemocratic power relations and in eroding social contexts for developing and expressing citizenship', and later adding that 'technologies ... constitute a substantial portion of societies and states', Sclove is giving technology an autonomous power, and predictably strong influence of social outcomes that our JFM case does not substantiate.⁶² He is of course extending a tradition of technology scholarship exemplified by James Carroll and Langdon Winner among others.⁶³ The reason for Sclove's line of analysis becomes clear if we see how his book

begins with the story of Ibeican villagers in Spain (and keeps returning to it), disempowered and losing community because of piped water to their houses replacing trips to a communal well. But such an outcome can only be imagined through the prior imagination of a community that was benign and beneficial to all its members in its earlier pre-technological condition. We could also imagine a village – in most parts of India – where the only well was in the upper caste hamlet and lower caste women suffered daily humiliation on their trips to collect water. In this case piped water could have an empowering effect, it could create the technological basis for more effective democracy.⁶⁴ We also have to ask, returning to the Ibeican example, why one exogenous factor – water pipes – should so drastically alter the texture and possibility of community in the village? Is it something inherent in the technology or was individualised water supply incidental to a wider transformation of communal relations already underway?

The answer to these questions lies in the public spaces of technology's performance, in the spheres of management decisions and agendas. Clearly, if the most important technology decisions are made via a covert politics that occurs within corporate headquarters and government bureaucracies or via the tacit politics of the economic market place, technology may appear to have a greater transformative power, but usually in the context of formal democracy as we defined it earlier. On the contrary, when the specific procedures of JFM – coppicing, shoot cutting, inter-planting, seedling protection, timber harvesting and rotation – are determinable in the multiple cross-cutting management communities we have discussed, technology may be more shaped by socio-political forces.

By discounting these possibilities, Sclove is reiterating in a curious way the Frankfurt School pessimism that technology was a kind of materialised ideology.⁶⁵ In contrast, recent work by Andrew Feenberg and Robert Pippin emphasises the social embeddedness of technology. For Pippin the problems associated with technology arise in the normative confusion, acquisitiveness, instrumentalism and ceaseless self-expansion that characterise modernity. Feenberg goes on to argue that technology is neither a servant of capitalism of communism, nor is it determining.⁶⁶ In their account, technology becomes a 'scene of social struggle ... on which civilizational alternatives contend'. By examining how technological rationality is incorporated into the structure of technologies, be they machines or systematised expert practices, we are not simply dealing with a critique of property systems, and we can distinguish societies by the way power rests on the technical mediation of social activities and those that democratise technical control and correspondingly technical design. As Feenberg insists, 'social meaning and functional rationality are inextricably intertwined dimensions of technology'.⁶⁷

Once we put the performance of technology, through management, into actor-networks, we are returned to a consideration of the Habermasian public sphere, spaces for rational communication, and contending publics that are both the context and referent for such performance. A guiding principle of democratic

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process has been transparency of power in its exercise. Visibility, legibility and transparency were founding elements of democratic conceptions of politics. For instance, Thomas Paine described democracy as a kind of government which ‘presents itself in the open theatre of the world in fair and manly manner. Whatever are its excellences or defects, they are visible to all. It exists not by fraud or mystery.’⁶⁸ This notion is important for our discussions of JFM, especially where villagers are complaining about the lack of transparency in microplanning. So if technology is about mystification, then it works against the ideal of transparency.

Writing that focuses on whether the modern democratic state has succeeded in enlisting science and technology for the enhancement of the instrumental rationality of its actions tends to ignore the enormous symbolic functions of technology in the redefinition of liberal democratic conceptions of power and accountability. We must focus on how technology is adapted as a political resource for the construction of a particular system of accountability.⁶⁹ We are likely to find that modern democratic civil epistemology does not lead us to discover a given world of social or political facts but is rather itself a powerful device for enacting politics as a view, political actors as performers, journalists as observers, and citizens as witnesses. This parallels technology’s experimental modes of validation, and implies that technology performed – as management in our case – is essentially an anti-rhetorical, anti-theatrical, partly risky, mode of persuasion. By dealing with science and technology as performance, we can study the indeterminacies and social embeddedness of technology’s structuration of society: a project I have tried to illustrate through the shifting social meaning of expertise in forestry, particularly where forest management encounters democracy, as in JFM in West Bengal.

ABBREVIATIONS USED

AFO	Assistant Forest Officer
CF	Conservator of Forests
CPI(M)	Communist Party of India (Marxist)
DFO	Divisional Forest Officer
DFOWM	Divisional Forest Officer, West Midnapore
FPC	Forest Protection Committee
FTI	Forestry Training Institute
GATT	General Agreement on Tariffs and Trade
GEF	Global Environmental Fund
GOWB	Government of West Bengal
JFM	Joint Forest Management
JKP	Jharkhand Kranti Party
PCCF	Principal Chief Conservator of Forests
UNCED	United Nations Council on Environment and Development

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NOTES

¹ Lefort 1988, p. 19.

² Amanda Anderson 1992, p. 89.

³ I am drawing upon and revising the writing of Condominas on "ritual technologies". See Condominas 1986. For a study that adapts the notion of ritual technologies to the study of resource management, see Lansing 1991. My discussion is also benefited by the work of Sally Falk Moore and Barbara Myerhoff (1977). For another case where high science has been examined as ritual, see Gusterson 1996.

⁴ For a discussion of the emergence of JFM in West Bengal, and its social construction, see Sivaramakrishnan 1998a.

⁵ See Agrawal 2001; Kolavalli and Kerr 2002.

⁶ Sivaramakrishnan, 2000; Agarwal 2001.

⁷ Sivaramakrishnan 2000; Lund 2001; Sivaramakrishnan 2002.

⁸ See, for instance, Foucault 1978 and 1979.

⁹ Butler 1990; Habermas 1987, 1989–90.

¹⁰ Sclove 1995. The classic critical theory contributions here are Heidegger 1977; Ellul 1964.

¹¹ This section draws upon and expands arguments presented earlier in Sivaramakrishnan 2002 and 1998b.

¹² Jalal 1995; Varshney 1995; Kohli 1994.

¹³ Agarwal et al. 1982, 1985; Shiva 1989; Guha 1989; Gadgil and Guha 1992, 1995; Ahmed 1991; Arnold 1991; Harrison 1994.

¹⁴ A recent study of JFM in central India amply documents these points. See Sundar et al. 2001.

¹⁵ I am referring to laws, treaties, conventions and organisations like the Montreal Protocol, Biodiversity Convention, laws for ocean pollution, Antarctic exploration, deep

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sea fishing, and institutions like GEF, UNCED and GATT. Such resurgent parochialism at different levels of political affiliation, including the powerful formation of the nation-state, is well described by John Comaroff (1996), p. 174, when he says, the transnational flow of universalising signs demands their domestication. 'The very experience of globalism ... underscores an awareness of localism – and in the process, reinforces it.'

¹⁶ In a series of essays, Ramachandra Guha has explored the various intellectual provenances and political affiliations of Indian environmentalists. See Martinez-Alier and Guha 1997.

¹⁷ Richards 1985; Escobar 1994; Ferguson 1994; Agrawal 1995.

¹⁸ The relationship between, science, technology, expertise and management is not easily summarised. Heidegger points out that modern science and machine technology are mutually dependent on one another. Technology is more fundamental and precedes science. It is that phenomenon, ruled from out of Being itself, that is centrally determining of all western history. See Heidegger 1977, pp. 3–35. But this view of technology as transcendent essence is now rightly questioned. A concise critical commentary may be found in Rockmore 1995. I proceed with the definition provided by Wiebe Bijker (1995, p. 231), that technology means physical artefacts, human activities, and knowledge. This means it includes technics = hardware, techniques = methods, skills, routines, and science-based organisational systems of technics and techniques. Other studies exploring the relations between science, technology, expertise, and the policy process, that have been useful to me, include Fischer 1990; Hamlett 1992; Jasanoff 1990, 1992; Nader 1996; and Pfaffenburger 1992.

¹⁹ I use the term 'situated knowledge' as defined by Donna Haraway (1995).

²⁰ An apposite example of such conflict over expert knowledge and where it is believed to repose may be found in the case of tea bush pruning and the appropriate definition of different 'cuts' discussed by Daniel (1993).

²¹ The extent to which conflicts over expertise influence on the organisation of environmental management has not drawn the scholarly attention the topic deserves. This is specially surprising in the US, where bureaucratised land and resource management has a long and contentious history. An early lead provided by Donald Worster (1985) has only been occasionally followed up, as in Waller 1994.

²² This and the following section draw upon material earlier presented and discussed in Sivaramakrishnan 2000.

²³ DFOWM, File 14-4/1987, no. 4319/28-11 dated 25 Oct 1987, DFO to CF Western Circle; no. 5815-20/2M-10 dated 14 Oct 1987, CF Western Circle to DFO.

²⁴ DFOWM, File 14-4/1987, no. 5789-9S-3D-67 dated Alipore 23 Sep 1988 from CF Western Circle to all DFOs.

²⁵ Department of Forests 1988, p. 59.

²⁶ Quoted in Department of Forests 1988, p. 60.

²⁷ DFOWM, File 14-4/1987, no. 2463/14-4, dated Jhargram 17 June 1989, DFO to CF Western Circle, p. 81.

²⁸ DFOWM, File 14-4/1987, no. 4461For/D/15-16/88 dated Cal 12 July 1989, resolution of the Forest Department, GOWB, pp. 86–88; no. 3657–62/2M-41 dated Alipore 4 Aug 1990, CF Western Circle to DFO, p. 121; no. 2945/14-4 dated Jhargram 29 July 1992, DFO to PCCF, pp. 438–39.

²⁹ DFOWM, File 14-4/1987, no. 16203/TRC/2M-3A dated Cal 13 Nov 1992 from PCCF to all field officers, pp. 469–71.

³⁰ DFOWM, File 14-4/1987, Subimal Roy, 'Participatory Forest Management in West Bengal', undated note, p. 5.

³¹ DFOWM, File 14-4/1987, no. 4215/14-4 dated Jhargram 30 Nov 1992, DFO to PCCF, p. 476; no. 618/14-4 dated Jhargram 8 Feb 1993, DFO to CF Western Circle.

³² Gadgil and Guha 1995, pp. 172–3.

³³ Two Lodha men of Lodhapara (one of three western Midnapore villages in which I did intensive field research), in an exception to general practice, were working as forest guards in the Jhargram Range, where they also lived. When FPC meetings took place in the village of which Lodhapara was a part, they arrived with the beat officer on their bicycles, and then stood at the fringes in complete silence. They participated thus not only in Lodha marginality to FPCs, but their stance also evoked the liminality of guards to the forest department power structure. The concept of liminality (which always has destabilising possibilities in any hegemonic order) is taken from Turner 1974.

³⁴ Saxena, n.d., p.11.

³⁵ A common problem was that when lists of households in member villages were prepared, due to partisan politics, the names of some family heads would be excluded. Alternately, powerful villagers would have several names from their houses included, as this would potentially multiply their future share in profits from forest management.

³⁶ This goes also for the AFO and other staff officers working out of the DFO's office. As they had a range of duties and JFM was only one part of them, these officials retained a level of remove from the scheme that marked them off from the range and beat staff. The public involvement in forest protection that FPCs entailed did not impinge directly on their official lives and persona to the degree that such impact was felt at the beat level.

³⁷ DFOWM, Report of FPC Meeting, 7 Feb 1994, p. 3. For reasons of confidentiality, I cannot reveal more about the venue of the meeting or the author of the report.

³⁸ Interview 11 Oct 1993, with a beat officer in Jhargram Range. The name of the beat and the officer have to be concealed for confidentiality.

³⁹ This paragraph draws not only on my own field observations, but also on discussions with the Assistant Director of FTI, Jhargram and the CCF (Development) West Bengal, who was a regular speaker in the training programs for beat officers.

⁴⁰ We cannot afford to miss the irony of the situation. A scheme to transfer forest management responsibilities to civil society institutions has encouraged demands for expanding the numbers and structures of state apparatuses.

⁴¹ Dahrendorf 1996, p. 229.

⁴² Keane 1988, p. 61.

⁴³ For a fuller critique see Cohen and Arato (1992, pp. 12–15), who argue for a new theory of civil society that overcomes the difficulties of elite versus participatory democracy; rights oriented liberalism versus communitarianism; and welfare statism versus neo-conservative anti-statism.

⁴⁴ Jalal 1995, p. 3.

⁴⁵ Friedman 1994, p. 48. See also Perry Anderson 1992; Hirschman 1992; de Palma 1990.

⁴⁶ Calhoun 1993, pp. 5, 32.

⁴⁷ Habermas 1989[1962], p. 12.

⁴⁸ Calhoun 1993, p. 20.

⁴⁹ Ibid. See Eley 1994 and Fraser 1989.

⁵⁰ Benhabib 1993, p. 87. See also Keane 1988.

⁵¹ Eley 1994; Fraser 1993, p. 116. For the exclusion of women in Habermasian models, see Landes 1988 and Ryan 1990.

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⁵² Fraser 1993, pp. 118–19.

⁵³ March and Olsen 1989, p. 17.

⁵⁴ While some other studies of forest management in Asia have also emphasised that wider political-economic issues are pertinent, they rarely examine how local and wider factors connect through processes of state-making. See, for instance, Aiken and Leigh 1992; Broad and Cavanagh 1993; Lim and Valencia 1990; Hart et al. 1989.

⁵⁵ Scholarly discussions of science as representation have flowered into the sociology of scientific knowledge. Notable exemplars being Barnes 1977; Bloor 1976; Collins 1992; Gooding 1990. Comprehensive reviews of the state of the field broadly constituted as social studies of science may be found in Jasanoff et al. 1995; Franklin 1995; Hess and Layne 1992; Rouse 1992; Traweek 1993; and Yearley 1988.

⁵⁶ The relationship between science and practice, and the practitioner debates in which institutionalised 'basic science' is shaped, are well discussed in the context of late nineteenth-century American medicine by Warner 1991. I am grateful to Warwick Anderson for alerting me to this work and its endorsement of my approach. I should add that the recent surge of ethnographic research in scientific laboratories, high technology organisations, and so on, has depicted the practical modes and cultural worlds of scientific knowledge production. Excellent examples would include Traweek 1988; Latour 1987; Dubinskas 1988; and Gusterson 1996. But that still excludes the situations where science/technology encounter explicitly social contexts in which they have to be carried to fruition through the transformation of nature, social relations, and productive environments.

⁵⁷ For recent work that stresses that scientific ideas were not imported into colonies and were more often in a process of continuous construction, reconstruction and transformation there, see several essays in Reingold and Rothenberg 1987; especially Chambers 1987. In the case of forestry, the major contribution in this direction has been the work of Richard Grove, notably Grove 1995. The argument that 'colonising science' was transformed and hybridised in distinct ways by the places in which it was applied is made more generally, taking several Indian examples, by Prakash 1999.

⁵⁸ Hacking 1983 and 1992.

⁵⁹ See Pickering 1992.

⁶⁰ I am thus arguing that 'scientific knowledge has to be seen as intrinsically historical, in that its specific contents are a function of the temporally emergent contingencies of its production'. The phrase is from Pickering 1995, p. 209.

⁶¹ The material reported on relates to my fieldwork in southwest Bengal villages of the West Midnapore Forest Division, during 1993–94.

⁶² See Sclove 1995, pp. 7, 17.

⁶³ Carroll 1977; Winner 1986. Winner has explored how the entire ensemble of modern technological systems – including the background conditions needed to keep them operating – tends to promote centrally co-ordinated technocratic social administration.

⁶⁴ For such contested understanding of things like piped water its impact on the social-spatial routines that shape community relations in a village, see, for instance Gold and Gujar 2002, chapter 10.

⁶⁵ I refer here in particular to the classics like Heidegger 1977, Ellul 1964 and Marcuse 1968 (see also Marcuse 1964).

⁶⁶ Feenberg 1995; Pippin 1995.

⁶⁷ Feenberg 1995, pp. 8, 11–12.

⁶⁸ Paine 1819, p. 36.

⁶⁹ This point is well made by Ezrahi 1995, p. 160. See also Ezrahi 1990.

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