Institutional Choice, Community, and Struggle: A Case Study of Forest Co-Management in Mexico

DANIEL KLOOSTER *
Princeton University, New Jersey, USA

Summary. — Change in the commons remains poorly understood. This essay analyzes a comparative case study of community forestry in Mexico. In a primary case study, corruption in a community-owned logging business legitimates timber smuggling, and this situation contrasts with several forestry communities having internally-legitimate social institutions able to control such problems. A discussion assesses the institutional choice model for understanding change in the commons and contrasts it with an approach that views individual choices and actions as embedded in communities and cultures. The commons exists in a value-laden social context, and this requires a theory “thicker” than current versions of institutional choice.

Key words — Latin America, Mexico, common property, institutional choice, co-management

1. INTRODUCTION

The commons is an arena for exploring several of the current themes and questions of development theory. These include the role of informal institutions in development; the issue of institutional creation and survival; the relationship between the state and civil society; and especially the urgent need for rural development strategies that enable environmental conservation (de Janvry, Sadoulet & Thorbecke, 1993; Peet & Watts, 1996; Uphoff, 1993).

Current debates in common property theory address three related questions: What makes some, but not all, social systems of common-pool resource management successful in sustaining the resource and distributing its products? How do these social systems come about? How do they change? The theory of institutional choice has come to be the most coherent and influential theory for explaining the evolution and survival of commons systems (Ostrom, 1990, 1992; McKean, 1992; Wade, 1988). It is in this vein that some researchers call for a focus on institutions-as-rules, rather than communities, in community-based conservation strategies (Agrawal & Gibson, 1998). On the other hand, a number of researchers continue to insist that “community” and thicker conceptions of institutions are necessary to understand commons dilemmas (McCay & Jentoft, 1998; Singleton & Taylor, 1992).

This study surveys the evolution of theory on change in commons management and briefly describes the institutional choice approach. It then assesses the utility of institutional choice in explaining observed processes of change in a comparative case study of success and failure among forest-owning communities in Mexico. A discussion points out several tensions inherent to interdisciplinary debates about change in the commons.

2. BEYOND THE TWO TRAGEDIES OF THE COMMONS: RATIONAL CHOICE AND ITS LIMITS

(a) The tragedy of the commons

Thirty years ago, Garett Hardin’s influential article (1968) used concepts of individual
rationality to associate firmly the “commons” with tragic natural resource degradation. Hardin argued that in a commons, individuals gain all the benefit from increasing their take, while the harm from increased use is divided between all users. Driven by a self-centered rationality and lacking external constraints, people degrade the resource. “Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons” (Hardin, 1968, p. 1244). Only privatization or state control could resolve this dilemma. Olson (1971) provided a broader framework for the idea of a basic contradiction between benefit-maximizing individual rationality and the group interest: “unless the number of individuals in a group is quite small, or unless there is coercion or some other special device to make individuals act in their common interest, rational, self-interested individuals will not act to achieve their common or group interests” ( Olson, 1971, p. 2, italics in original).

For many, this formulation remains the commons problem, in spite of a great deal of work debunking it (Taylor, 1992, pp. 633–634). Such ideas continue to have great cultural resonance in Western thinking. On the one hand, private property evokes the “invisible hand” of the market that guides individually selfish actions toward the greatest social good. On the other, lack of private property leads to brutish chaos and disorder (McCay, 1992, p. 194). In forests, an anti-commons attitude often results in privatization via concessions or nationalization. These policies sweep away established local systems of resource control, creating de facto open-access situations (Ascher, 1995, pp. 27–30; Azhar, 1993; Ostrom, 1990, pp. 23, 178).

(b) The real tragedy of the commons

Over the years, the tragedy of the commons perspective has spawned a heated counterresponse, especially from anthropologists, geographers, and other researchers familiar with the numerous small-scale non-Western societies that have successfully developed social practices to manage common pool resources. They observe that

a diversity of societies in the past and present have independently devised, maintained, or adapted communal arrangements to manage common-property resources. Their persistence is not an historical accident; these arrangements build on knowledge of the resource and cultural norms that have evolved and been tested over time (Feeny, Berkes, McCay & Acheson, 1990, p. 13; Berkes, Feeny, McCay, & Acheson, 1989; See also Blaikie & Brookfield, 1987; McCay & Acheson, 1987; Veblen, 1978).

Some observers counter Hardin’s pessimism with marked optimism. “Whenever a society has needed a natural resource—whether medieval common grazing lands in England or wild beaver in subarctic Canada—rules for its orderly use have been worked out” (Berkes & Farvar, 1998, p. 10).

The “rules for orderly use” that different societies work out are often stunningly complex, and intricately embedded in cultural systems. Researchers note, for example, that rural tenure systems in developing countries are typically quite different from the notion of exclusive private property in land which has evolved over several centuries in the West (Thompson, 1991). In contemporary rural societies, for example, there may be coincident rights to fruits from a tree, the firewood it produces, and the land it grows on. Rights holders are similarly complex. They include villages, kinship groups, households, men, women, government-sanctioned co-operatives, and national forest departments. Taboos, religion, and local views of morality often undergird tenure systems. Local structures of authority, such as chiefs, temples, and village councils play important roles in maintaining these rights and arbitrating disputes (Dorner & Thiesenhusen, 1992; Fortmann & Bruce, 1988; Fortmann & Riddell, 1985; Freudenberger, Carney & Lebbie, 1997; Messerschmidt, 1993).

Analysts acknowledge that these complex resource management systems are often susceptible to break down following intervention from the state, commercialization, land degradation, population pressures, encroachment, and the expropriation of disproportionate shares of common resources by a few members of the community (Carney, 1993; Blaikie & Brookfield, 1987). A common lament equates the development process with enclosure. The “real tragedy of the commons” is the destruction of common pool resource management systems and subsequent degradation following the intrusion of modernizing states and modern economic relationships (The Ecologist, 1993; Monbiot, 1993).

(c) Institutional choice, its critics, and some questions

Change is not always so grim. Current debates about common property now go
beyond the “tragedy of the commons” (Hardin, 1968) and the “real tragedy of the commons” (Monbiot, 1993). Analysts now develop theories of common pool resource management that attempt to explain whether, and under what circumstances, common pool resource users can avoid a tragedy of the commons.

For Hardin, the inexorable logic of individual rationality led to the tragedy of the commons. Models such as Hardin’s assume the ubiquity of “free-riders”—resource users who shirk the work and responsibilities of contributing to resource management but take the benefit of resource use. These models conclude that the free-riding problem makes voluntary contributions to a public good (such as common property maintenance) illogical; solutions require outside coercion.

One group of common property theorists do not challenge the basic notion of a dilemma between individual and collective rationality, but rather identify the difference between open access and a common property regime, where internally-enforced rules, or social institutions, harness individual rationality to the collective good (Ciriacy-Wantrup & Bishop, 1975; Bromley, 1992; Bromley & Cernea, 1989; Simmons & Schwartz-Shea, 1993).

This school argues that free-riding is not always the dominant rational strategy. When people have solved the “assurance problem,” they can also reasonably expect other individuals to cooperate. Institutions, understood as rules that coordinate social relationships, help balance behavior and solve the assurance problem. With adequate institutions, therefore cooperation becomes a rational strategy (Runge, 1984). So for contemporary commons researchers

the question is no longer whether decentralized collective action can be effective, but under what circumstances it is appropriate, and how positive synergy between the state, market and civil organizations can most efficiently and fairly supply public goods (Uphoff, 1993; White & Runge, 1995, p. 1683).

Institutional choice is one of the most influential and theoretically powerful attempts to address this question. The approach holds that people have the ability to craft the institutions (understood mainly as rules) that govern their use of a resource held in common. Institutional choice asks two basic questions. First, what kinds of rules are necessary? This is often expressed as the design principles of successful commons management systems. Second, under what conditions are groups of people likely to make these rules and follow them? In answering these questions, institutional choice rests on a notion of rational individuals making cost benefit analyses of whether to invest in processes of institutional change (Ostrom, 1990, 1992; Wade, 1988).

A more radical critique of the tragedy of the commons rejects the idea that rational choice can successfully explain the commons. These authors treat commons institutions, community, the individual person, and culture as inter-penetrated items composing a realm of meaning (Douglas, 1986; Peters, 1993). Commons users are not only embedded in specific historical sets of political and economic structures but also in cultural systems of meanings, symbols, and values. “It is an error to suppose that an individual calculus can explain a commons system—rather, one has to understand the socially and politically embedded commons to explain the individual calculus” (Peters, 1987, p. 178).

Institutional choice, however, remains the most influential approach to theory-building for the commons. Rational choice-based models, including institutional choice, necessarily require contextual simplification to set a framework for actors’ decisions, and this creates several limitations to understanding change in the commons. First, it is contextually thin. It minimizes or eliminates considerations of history and processes outside the community of resource users. Second, it stints on the complexity of tenure practices, and overlooks the issue of environmental perception, a social process in which people determine what their commons problems are, if any. Third, it obscures consideration of community as something that might have gestalt characteristics relevant for commons management. Fourth, it confronts problems concerning the relationship between individual incentives, the autonomy of individual motivations in the context of community, and the nature of institutions as something more than rules. Fifth, it faces problems relating individual choices to institutional change, which often require attention to factional struggles and issues of culture change. An analysis of forestry communities in Mexico suggests that these factors are crucial for explanation and provides a basis for further exploration of these tensions.
3. COMMON PROPERTY FORESTRY IN MEXICO: A COMPARATIVE CASE STUDY

In contrast with the general state of affairs in Latin America where some 80% of forests are national properties, in Mexico, thousands of village communities hold 80% of forests under de jure common property arrangements. Forest loss remains a pressing problem, however, with estimated deforestation rates near 2% per year, while forest fires, poorly implemented logging, and commercial woodcutting degrade an even larger area (Masera, 1996; World Bank. 1995).

One of these forest communities is San Martin Ocotlán, in the state of Oaxaca. Currently, San Martin is home to some 600 households and 3,300 inhabitants. One-fourth of community residents speak the Mixtec language in addition to Spanish, and there is an ethnic distinction between a relatively mixed-race (mestizo) capital village and five outlying hamlets (Figure 1, Table 1). Nearly all members of the community combine subsistence maize farming with remunerative activities, especially

![Map of San Martin Ocotlán, Oaxaca, Mexico.](image)

**Figure 1.** The six settlements comprising the communal territory of San Martin Ocotlán, Oaxaca, Mexico.

**Table 1.** Total population and number of Mixtec speakers in six settlements of the community of San Martin Ocotlán, Oaxaca

<table>
<thead>
<tr>
<th>Settlement</th>
<th>Population</th>
<th>Number of Mixtec speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Village of San Martin Ocotlán</td>
<td>1,512</td>
<td>27</td>
</tr>
<tr>
<td>La Soledad Ocotlán</td>
<td>511</td>
<td>417</td>
</tr>
<tr>
<td>Benito Juárez</td>
<td>510</td>
<td>52</td>
</tr>
<tr>
<td>El Temescal</td>
<td>301</td>
<td>196</td>
</tr>
<tr>
<td>La Brujería</td>
<td>251</td>
<td>36</td>
</tr>
<tr>
<td>El Manzanito</td>
<td>184</td>
<td>88</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,329</strong></td>
<td><strong>816</strong></td>
</tr>
</tbody>
</table>

*a Source: Official census data (INEGI, 1990). Location names are pseudonyms.
*b Includes less than 12 Zapotec speakers.
logging, woodcutting, and timber smuggling carried out in 13,000 ha of common property pine and oak forests.

Logging in San Martin began in 1958, under the control of a small private firm that overstayed its contract and generated little benefit for the community. Starting in 1964, a series of state-owned and parastatal concessionaire logging firms began to work San Martin's forests. Mexican concessions were monopsonies; peasant forest owners could only sell to the concessionaire, and only when the concessionaire wanted to buy. Stumpage fees and wages were low, and concessionaires often cheated on volume measurements (Gonzalez Pacheco, 1985; Halhead, 1984).

Despite substantial benefits under the concessionaires including employment, payment to communal authorities, and improvements to roads and collective buildings, the community was reduced to a subordinate role in forestry, dependent on the big firms for employment and other benefits from forestry, and alienated from real participation in forest management. The companies directed logging, road maintenance, commercialization, and accounting. The only power the community had was the ability to refuse to sign a contract and deny the company access to the forest. Paternalistically, the agrarian reform agency sometimes tempered the conditions of the monopsony, but even so, the unequal relationship between the community and the outside firms made it easy for companies to take advantage of the community (Chambille, 1983).

Logging plans, tree selection, and other technical aspects of management were left up to the government and the private sector, so the system separated forest owners from the means of forest management. In areas of rental and concession logging, lack of reforestation and high grading failed to create the ecological conditions necessary for regeneration (Chapela & Lara, 1995; Snook & Negreros, 1986). San Martin Ocotlán was no exception. Residents remember that outside logging companies cut selectively and slovenly, leaving good wood on the forest floor.

Some community members became dissatisfied with logging waste and suspicious that forestry benefits were substantially less than they should be. In 1980, a local leader enlisted support from the official peasant union and the Agrarian Reform agency, broke free from the concessionaire, and formed a community forestry enterprise, one of the first in Oaxaca.

In doing so, the community took advantage of a narrow policy opening created in the 1970s by reformers within the forestry and agrarian departments. In response to persistent problems of forest degradation and peasant unrest, this alternative allowed community forest owners to form and manage their own logging enterprises. The reformers expected the policy to provide forest-linked rural development benefits and, thus, incentives to maintain forest cover and quality. In the 1980s, the reformers began to empower communities and unions of communities to hire and oversee required professional forestry services, providing potential avenues for community influence over logging methods. A 1986 forestry law formalized this possibility and disallowed third-party logging permits (Bray & Wexler, 1996; Klooster, 1996; Wexler & Bray, 1996). This approach to natural forest management is a kind of co-management wherein forest ownership clearly resides with communities, communities influence and implement logging plans, but the government sets the management framework.

Independence from the concessionaires increased the community's profit by 600% compared to the year before. That increase came after more than doubling the wages to community-member loggers. The subsequent 16 years of community forestry generated substantial wealth in public works, capital equipment, and employment possibilities—especially with the purchase of a sawmill. Unfortunately, even after community independence, there have been chronic problems with corruption and the inequitable distribution of forestry revenues, a situation with repercussions in forest management.

(b) Corruption and the imbalance of power

Outside logging companies fostered fragmentation of an already-stratified community with a history of local bossism and family feuding. The concessionaires developed an internal constituency in the communities where they had contracts, channeling benefits such as the key jobs of winch operator and bulldozer driver to influential community members. They also fostered truck ownership and cultivated a class of truck owners dependent on forestry for work transporting logs and acquiring permits to legally commercialize truckloads of firewood. The concessionaires also provided salaries and expense accounts to members of communal government. In the short run, these
practices increased the chances of favorable outcomes in the yearly community assemblies where contracts were renewed, since this group was likely to support a status quo on which their livelihood depended. In the long run, such practices reinforced the development of a clique of men equipped with trucks and other capital, having knowledge of the forestry business, power in community assemblies, and accustomed to getting disproportionate benefits from forestry.

The establishment of community forestry in 1980 did not change the basic power imbalance between an elite from the central village and the predominantly Mixtec villagers from the outlying settlements, nor did it correct an inequitable distribution of forestry benefits. Social investments with forestry profits aggregate in the central village, including the Catholic temple, a cobblestone street, a health clinic, government buildings, and the community-owned sawmill. This contrasts with the outlying settlements, which consistently see their requests for funds for electrification, schools, roads, and communal pickup trucks rejected. Villagers from the outlying settlements also complain that the employment benefits from the logging and milling business go disproportionately to residents of the central village; data from the forestry business support their case.

According to the 1995 payroll, wages totaling 481,620 pesos reached 366 workers, 50% of the economically active population. Workers from San Martin Ocotlán Village got a disproportionate share of wage earnings, however. They made up only a third of all workers, but took in nearly half of all wages. This is because they got the best jobs and worked more often; a kind of forestry elite from San Martin Village comprised two-thirds of the small group of forestry workers who earned more than 5,000 pesos during the seven month logging season. Forestry generates sporadic earnings for a great number of people in the community, but substantial ones for only a select few, disproportionately from San Martin Ocotlán Village (Table 2).

In addition to employment, the forestry elite also finds more direct ways to divert forestry revenues toward their own pockets. In 1995, after six years without any profit distribution from the forestry business, community members demanded audits of past and current forestry administrations. These uncovered substantial loans of money and wood to a group of wealthy community members who owed the forestry coffers nearly 208,000 pesos, equivalent to 40% of payroll. Most refused to acknowledge their debts. The overwhelming majority of recent debtors were from the central village, and many owed sums in excess of 10,000 pesos. Much of the money helped finance personal truck purchases. A sawmill audit uncovered an additional problem with the misclassification of boards, which represented a bonanza for local truckers who could buy cheap and resell at a higher, more expensive, classification.

In San Martin Ocotlán, a forestry elite milks the logging business. The majority of the community’s members neither participate in the decisions regarding collective use of the forest nor do they share in the jobs and economic benefits which commercial forestry produces. In effect, the forestry elite usurps the forest commons.

The formal institutions of common property management ought to provide controls against mismanaging the communal forestry enterprise. The basis of local power is supposed to be the

<table>
<thead>
<tr>
<th>Wage category (pesos)</th>
<th>Earnings (pesos)</th>
<th>Share of total wages (%)</th>
<th>Number of workers</th>
<th>Share of all workers (%)</th>
<th>Number of workers from San Martin Village</th>
<th>Share of workers from San Martin village (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–250</td>
<td>14,822</td>
<td>3</td>
<td>103</td>
<td>28</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>250–1,000</td>
<td>71,995</td>
<td>15</td>
<td>126</td>
<td>34</td>
<td>41</td>
<td>33</td>
</tr>
<tr>
<td>1,000–3,000</td>
<td>168,835</td>
<td>35</td>
<td>96</td>
<td>26</td>
<td>41</td>
<td>43</td>
</tr>
<tr>
<td>3,000–5,000</td>
<td>65,741</td>
<td>14</td>
<td>17</td>
<td>5</td>
<td>6</td>
<td>35</td>
</tr>
<tr>
<td>5,000–7,000</td>
<td>98,975</td>
<td>21</td>
<td>17</td>
<td>5</td>
<td>10</td>
<td>59</td>
</tr>
<tr>
<td>7,000–10,600</td>
<td>61,252</td>
<td>13</td>
<td>7</td>
<td>2</td>
<td>6</td>
<td>86</td>
</tr>
<tr>
<td>Total</td>
<td>481,620</td>
<td>366</td>
<td>120</td>
<td>33</td>
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</tr>
</tbody>
</table>

community assembly. Comprised of mostly male heads of household, the community assembly elects community members to an executive committee representing the community to outside authorities, selects members to oversee the logging business, appoints an oversight committee to monitor the executive committee and the logging administrators, and appoints a committee charged with combating timber smuggling (Figure 2). These communal institutions ought to provide a system of checks and balances to maintain the accountability of communal authorities and forestry administrators, but the forestry elite finds ways to circumvent such checks on its power.

The forestry elite dominates communal institutions through intimidation, manipulating elections, dodging oversight, and discouraging participation in community assemblies. Threats, violence, bribes, and the manipulation of reciprocal obligations are common tools of internal politics. “Some threaten, others invite you to drink,” is the way one community member put it. Another vocal dissident of the forestry elite says he fears for his life, and one left town to avoid problems. Dissidents demanding audits of the forestry business complain that the authorities who administered past forestry businesses have taken them aside and told them to desist. A clique of feared leaders uses these pressures to extend their influence over elected community authorities who are not in their camp. The elite comprise the majority on the Council of Distinguished Men, a traditional body of authority parallel to the general assembly, and this traditional institution provides a convenient lever of power for the forestry elite, at times circumventing the community assembly in decision-making. These weapons of the not-so-weak reproduce the forestry elite’s power and privilege, while undermining the democratic potential of the formal institutions of common property management.

(c) Forest degradation

Forest degradation results. Communal authorities are associated with corruption in the logging and milling business, and this undermines the restrictions on timber smuggling that they enforce. Despite the conflicts, local authorities and the restrictions on forest use still have a certain degree of acceptance. Many members of the community recognize that the pressures to cut and clear could get out of hand and threaten the forest. They see timber smuggling as a form of theft against the community, because individuals cut community-owned trees, sell the lumber, but leave nothing of common benefit. There is still substantial support for restrictions on timber smuggling, especially when they are directed against the minority of full-time cutters and transporters,
who neighbors believe do it not for “need,” but for “avarice.”

Corruption in the community forestry business however provides timber smugglers with a mantle of legitimacy. Membership of the forest protection committee and the oversight committee overlaps, and the community president and his staff accompany them in sweeps, patrols, roadblocks, and confiscations of smuggled lumber. The village authorities controlling contraband, therefore, are the same ones thought to benefit from corruption in the forestry business, and so smugglers consider the punishments they mete out hypocritical and unjust. Consider the views of Pedro Diaz, an admitted timber smuggler and one of the loudest critics of village authorities:

When we are cutting one tree they want to throw us in jail, so how can they cut 50,000 trees and not produce anything? You can’t say “I’m going to cut 50,000 trees, and you, two gunny sacks of charcoal.” There are two kinds of timber smugglers. Some have licenses but still leave nothing for the community.

So timber smuggling also plagues the community. San Martin Ocotlán is situated close to established regional markets for building timbers and rough-hewn boards, a strong network of old logging roads makes the forest easily accessible, pickup trucks are numerous, chainsaws are ubiquitous, and the skills needed to cut and market boards and building timbers well-entrenched. Some Oaxaca lumber merchants blame cheap lumber from the community for driving several legal lumberyards out of business. 4

Timber poaching high-grades the forest, removing pines with straight, branchless boles, close to roads, leaving oaks and twisted, branchy, diseased, or bifurcated pines of little commercial value. It resembles forest mismanagement under the concessionaires: genetic selection for commercially-desirable attributes in pines, lack of pine regeneration, oak dominance, and long-term decreases in commercial volumes (Chapela & Lara, 1995; Snook & Negreros, 1986; Styles, 1993).

(d) A struggle for the forest

This situation does not go unchallenged. Some community members resist the dominating local elite. In 1995 they called for audits and then demanded accountability for unpaid personal loans among the relatively wealthy elite. In one of the high points of internal conflict over natural resource management, members of Benito Juárez, an outlying village, put up a chain to stop logging trucks from reaching the forest. When members of the forestry elite sent in a bulldozer to break it, the women of the village stood between the machine and the chain, babies in their arms, and faced them down. These events brought logging to a halt.

It is still too early to tell the results of San Martin’s struggle. In late 1997, dissident members of outlying settlements were elected to positions of communal authority. This is the first time in 20 years that those positions did not fall to members of the central village. Efforts to resolve conflicts, control timber smuggling, and return to logging under different institutional arrangements were still under way, however, and success was by no means assured.

4. THE COMPARISON WITH SUCCESSFUL COMMUNITIES

Can the community of San Martin create and maintain institutions that provide accountability in the logging business and encourage compliance with rules against timber smuggling? The possibility that it can gains credibility from comparison with seven communities elsewhere in Mexico which have been able to establish effective democratic community control over their forests. These are successful logging communities, in the sense that they have been able both to control corruption and mismanagement in the communal forestry business, and to establish effective controls over individual uses of the forest. They control timber smuggling, reverse deforestation, and invest in the future productivity of their forests. Resonant with Ostrom’s (1990) design principles for successful commons management, these communities have a number of common property management rules and institutional characteristics that San Martin might come to share.

Site visits, interviews, and literature reviews provide comparative information on the adjacent community of San Antonio, 5 several communities in the Union of Zapotec and Chinantec Communities in the Sierra Norte of Oaxaca (UZACHI), Ixtlán de Juárez, also in the Sierra Norte, and Nuevo San Juan Parangaricutiro, Mexico’s most famous forestry community, in the state of Michoacán.
(a) Community histories

The seven successful communities considered here had a variety of different histories leading up to the solidification of their communal enterprises. In San Antonio, forestry started in 1972 under the same concessionaires then logging San Martin Ocotlán’s forests. A small private rental firm took over in 1986 until the community formed its own logging business in 1988. Like in San Martin, community leaders played important roles in raising consciousness, planting doubts about the veracity of timber volumes taken, and questioning the concessionaires’ forestry practices. In 1987, San Antonio joined UCEFO, a union of communities that managed their own logging businesses and shared the costs of providing professional forestry services. UCEFO organizers, including some who had worked for the forestry department as community organizers, introduced San Antonio to an organizational framework modeled on the traditional legal structure of Mexican communities. The community assembly elects members to two-year positions as business manager, head of finances, head of logging operations, and volume recorder. Similar elected positions exist in San Martin, but the UCEFO model includes an additional oversight mechanism, an independent auditing committee composed of community members elected in community assembly (Castaneda, 1992; Lopez Arzola & Gerez Fernandez, 1993).

A concessionaire held a monopsony on the forests of Ixtlán and the UZACHI communities during 1956–82. Together with other communities of the Sierra Norte of Oaxaca, the communities formed a regional organization in order to protest the renewal of the concession. University-trained activists from outside the region assisted the communities in this effort, and some of them later formed Estudios Rurales y Asesoria A.C. (ERA), an NGO that continues to provide technical assistance to communities in UZACHI. Ixtlán is a district capital with a number of indigenous, university-trained professionals who returned to the community to work administering the community forestry enterprise, and relies little on outside promoters.

In Nuevo San Juan Parangaricutiro, a volcanic eruption in 1943 devastated large areas of community forest, destroyed the original village, and forced community members to relocate their village. In the 1950s and 1960s, the community saw its forests abused by small rental firms, and in the 1970s it participated in a government-imposed forestry union. Dissatisfied with limited economic benefits and forest mismanagement under the union, the community left in 1981 and formed an independent communal enterprise. University-trained members of the community and returning emigrant workers played key roles in establishing the community business. When community members lacked skills such as marketing and business administration, the community hired outsiders, but with the caveat that they take on community members as apprentices. The enterprise also benefits from official favor. It is affiliated with the Mexican government’s official peasant organization, and received support from the agriculture and forestry secretariat in 1986, as a showpiece for the forestry reforms of that period (Alvarez Icaza, 1993; Sanchez Pego, 1995).

(b) Communal institutions provide accountability

Vigorous, regular, and well-attended community assemblies are standard features of the successful communities. San Antonio’s community assembly meets monthly. The community’s 71 adult men share the obligation to participate and those who do not attend are fined with a day’s communal work obligation. Assemblies in Ixtlán vigorously debate decisions to invest in machinery, raise wages, or take other major actions that affect the forestry business. Those who shirk their responsibilities to participate in community assemblies receive fines deducted from their share in forestry profits. In Nuevo San Juan Parangaricutiro, a majority of the more than 1,000 registered community members have convened each month since the communal enterprise formed in 1981 (Alvarez Icaza, 1993).

The successful communities share accounting and reporting practices that provide community members with healthy flows of information. In San Antonio, UCEFO provided initial training to the villagers elected to run the logging business. Currently, ASETECO, a grassroots support NGO with historical links to UCEFO, trains community members elected each year to the auditing committee. San Antonio values these services and pays for them.
with proceeds from timber sales. Every six months the auditing committee reviews the forestry business's accounts and reports on them to the community assembly. Having served on auditing committees themselves, many members of San Antonio are familiar with the kinds of costs that exist in the forestry business and can understand and question the reports.

In the UZACHI communities, an NGO helps train community members in auditing and appropriate reporting procedures. These community members give reports on their community's forestry business every four months, with the written report available to all community members. In Ixtlán and Nuevo San Juan Parangaricutiro, the community's oversight committee (Consejo de Vigilancia) conducts yearly audits and reports them to the community assembly.

Oversight enables accountability. In UZACHI, for example, "A community president who ordered the felling of trees without the forester's mark was removed from office the same day the community assembly found out about it" (Ramírez & Chapela, 1995, p. 31). Ixtlán has also replaced an executive committee whose president misdirected funds. These authorities now suffer the social sanction of communal disdain.

(c) Fair distribution of forestry benefits and restrictions

The successful communities distribute the benefits from logging fairly. San Antonio invests forest proceeds in new public buildings, including a school, shrines, and communal office buildings. In 1994 each community member received 2,500 pesos (then about US$690) in profit distribution. Work is easily available to those who seek it, with rotation when necessary. There is a community perspective to running the forestry business, with clear attempts to increase local employment opportunities by paying for work in reforestation, road maintenance, and clearing the debris left by logging. The community constantly seeks ways to increase job opportunities for community members, and for this reason villagers are interested in acquiring a sawmill.

In UZACHI communities, community assemblies chose to invest profits back into the logging business or spend them on collective goods, such as road improvements, an auditorium for community assemblies, and the construction of churches, both Catholic and Protestant. Nuevo San Juan Parangaricutiro has a similar strategy, and constant reinvestment has allowed it to establish two sawmills, kilns for drying lumber, a furniture factory, a resin distillery, and to embark on a program of agricultural diversification and modernization (Lemus, 1995; Sanchez Pego, 1995). In Ixtlán, forestry proceeds have allowed diversification into transport, agricultural promotion, and ecotourism. These communities balance plans to modernize sawmills and displace workers with projects to re-hire them in downstream activities, such as pallet and furniture factories.

When the successful communities impose restrictions on forest tenure rights, they make clear attempts to minimize costs and seek ways to compensate those harmed. San Antonio imposes many restrictions on individual uses of the forest, but most restrictions redirect traditional rights and compensate for lost rights. Fuelwood gathering is coordinated with logging activities in order to decrease fire hazards and favor pine regeneration, for example. Community members also have an agreement to forgo cutting pine trees for the traditional roofing shingles, but as compensation for this restriction the forestry business supplies free tin roofing materials and lumber when needed. Similarly, community members maintain their rights to take trees from communal forests for house building, but must coordinate this traditional right with village authorities and the forestry business.

Several of the UZACHI communities maintain designated areas for cutting fuelwood for domestic purposes. In Ixtlán, most firewood comes from marked trees in logging areas. If the wood is for home use, the village authorities facilitates transport with communal trucks—the user just buys the gasoline for the truck. Community members cutting firewood for sale, however, pay the community a stumpage fee for the wood.

One of the clearest examples of the integration of individual tenure rights with communal interests comes from Nuevo San Juan, where all forest lands are parceled out to community members for resin tapping. Federal laws governing common properties provide no comfort for this practice, but leaders establishing the community logging business chose to respect individual usufruct rights to forest plots anyway. Resin collection continues in these plots in accord with individual interests, but when logging plans slate an area for cutting, communal
interests take precedence. Possessors of resin-tapping plots do get a stumpage payment as an incentive for protecting trees, however. Similarly, at one time the community had problems with contraband cutters supplying the community’s 23 packing crate workshops. In order to discourage this form of timber smuggling, the community hired some of the best cutters, implemented patrols to dissuade the rest, and started selling sawmill scrap at reduced prices to the family-owned workshops (Alvarez Icaza, 1993; Sanchez Pego, 1995).

(d) Forest management

The forest benefits from democratic community control found in these seven successful cases. As a result of forest restrictions and reforestation efforts, the communities’ forest areas have increased. San Antonio has an aggressive reforestation program. In the UZACHI communities, aerial photographs show the forest area increased by 500 ha in the last 18 years, due mainly to effective enforcement of collective decisions to recuperate agricultural lands and limit new clearing (Ramirez & Chapela, 1995). In Ixtlán, forest fires, timber smuggling, and clearing are also under control, and tree planting is routine. Nuevo San Juan Parangaricutiro has an aggressive reforestation effort, in some case digging down through several feet of volcanic ash to reach soils buried during the 1943 eruption of the Paricutín volcano.

The successful communities invest in future forest productivity, despite the increased costs and decreased timber production these efforts imply. In San Antonio, community forestry technicians understand the silvicultural techniques called for by the management plan and carefully implement them, including expensive thinning cuts and canopy-opening treatments to favor pine regeneration in areas of oak dominance. La Trinidad, an UZACHI community, could have continued with the highgrading forestry methods of the concessionaire and maintained high incomes with low cost until the year 2004. Instead, the community chose to invest in the restoration of forest areas degraded by those methods, reforest abandoned agricultural areas, and manage a remaining unlogged area in a low-impact manner (Chapela & Lara, 1995; Chapela, 1997). SmartWood®, an independent certifying agency accredited by the Forest Stewardship Council, has approved UZACHI and Nuevo San Juan’s forest management practices. Ixtlán also maintains a special forest reinvestment fund, capitalized from forestry proceeds. The fund defrays the costs of favoring pine regeneration in areas dominated by oak due to mismanagement under the concessionaire. As UZACHI’s president put it in an assembly of union delegates, “We are returning something to the forest. With (the concessionaire) it was take and take and leave only wreckage.”

5. DISCUSSION

(a) History and context

The comparative case study reaffirms the need to look at history and the way commons are situated in broader social processes. Unfortunately, much of the literature on common property focuses narrowly on property rights at the expense of contextual analysis of the situation within the commons and the relationship between commons management and other regional, national, and international structures. But common property management regimes evolve or erode among resource-use influences and power relations embedded in local, regional, national, and international scales (Chapman, 1989; McCay, 1992).

Common property theorists call for increased attention to the relationship between common property regimes and structures outside of it, such as markets and the multiple implications of commodification (McKean, 1997). For example, the power of rich merchants and forestry officials are sometimes of greater importance in determining the distribution of community benefits from forest production than tenure structures at the village level (Ribot, 1998).

This study bears this out. The evolution of community forestry in the eight communities took place amidst co-evolving government policies. The relative failure of San Martin, and the relative success of the other seven communities could only take place after they had won important battles against concessions, a struggle often waged at scales far above the
community level. Local leaders and outside supporters—who were themselves affected by broader social and economic processes of modernization, emigration, and education—played important roles in these struggles. Processes rooted outside of communities deepened divisions in already-stratified rural societies, with profound effects on the evolution of commons institutions.

(b) Institutional choice offers explanation

Ostrom’s (1990) institutional choice perspective provides an important theoretical lens on the process of institutional change in the commons. According to Ostrom (1990, 1992) rational actors choose to invest in rule changes based on an analysis of benefits and costs, the perceptions of which depend on situational variables. A framework for analyzing institutional change summarizes these variables in a number of factors favoring collective action. First, users of a commonly-held resource share the judgement that lack of change will harm them. Second, the resource users highly value the continuation of benefits from the common property resource and have a sense of a common, valued future. Third, they face relatively low information, transformation, and enforcement costs. Fourth, they share norms of reciprocity and trust. This “social capital” includes a capacity to communicate and make binding agreements, the ability to arrange for monitoring and enforcement provisions, and shared norms of guilt, concepts of self-worth, social censure, and patterns of reciprocity. Sixth, the group of resource users is well-defined (Ostrom, 1990, p. 211; Ostrom, 1992).

This framework indicates that San Martin Ocotlán is less likely to embark on a course of rule changing than the other six communities because it faces higher costs and lower benefits (Table 3). In this comparison, costs refer to amount of effort individuals must exert to successfully organize. Other things being equal, for example, it is more difficult to organize in a large, dispersed, and ethnically heterogeneous group of people than in a smaller, ethnically homogeneous group of people living in a single settlement. Benefits refer to the potential economic return from forestry, indicated by the amount legally available to cut, which provides a very rough measure of the potential economic benefits from collective action.

The ratio of forest resources to population is roughly the same for both San Martin and the majority of the UZACHI communities; their comparative potential benefits from logging are low. The UZACHI communities are much smaller, however, and, due to cultural homogeneity and settlement patterns, they share stronger initial “social capital” than San Martin Ocotlán; presumably, their comparative costs of collective action are also low. Simi-

<table>
<thead>
<tr>
<th>Community</th>
<th>Population</th>
<th>EAP</th>
<th>Settlements</th>
<th>Pine Permit m³</th>
<th>Pine m³/EAP</th>
<th>Costs</th>
<th>Benefits</th>
<th>Successful</th>
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</thead>
<tbody>
<tr>
<td>San Martin</td>
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<td>733</td>
<td>6</td>
<td>16,000</td>
<td>22</td>
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<td>Low</td>
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<tr>
<td>San Antonio</td>
<td>295</td>
<td>71</td>
<td>1</td>
<td>4,000</td>
<td>56</td>
<td>Low</td>
<td>Hi</td>
<td>Yes</td>
</tr>
<tr>
<td>Xiacuít</td>
<td>767</td>
<td>162</td>
<td>1</td>
<td>2,660</td>
<td>16</td>
<td>Low</td>
<td>Low</td>
<td>Yes</td>
</tr>
<tr>
<td>La Trinidad</td>
<td>800</td>
<td>156</td>
<td>1</td>
<td>3,299</td>
<td>21</td>
<td>Low</td>
<td>Low</td>
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</tr>
<tr>
<td>Comaltepecd</td>
<td>1,125</td>
<td>180</td>
<td>3</td>
<td>7,672</td>
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<tr>
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<td>1</td>
<td>8,000</td>
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<td>Low</td>
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<td>Med.</td>
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<tr>
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<td>1</td>
<td>100,000</td>
<td>81</td>
<td>Hi</td>
<td>Hi</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*Population figures are from the 1990 census (INEGI, 1990). EAP refers to the Economically Active Population and is a surrogate for the number of community members. Exceptions include San Antonio, where data from communal authorities is substituted, and Nuevo San Juan Parangaricutiro, where data comes from published reports (Sanchez Pego, 1995; Lemus, 1995).

*Costs refer to the difficulty in organization, which presumably increases with population and settlement dispersion. Benefits derive from the potential economic return from logging, which depends on the ratio of population to forest resources.

*Successful communities are able to enforce restrictions on individual uses of the forest, such as clearing and woodcutting, while running logging businesses that operate under effective community controls.

*A member of UZACHI (The Union of Zapotec and Chinantec Communities), which coordinates shared professional forestry services.
larly, Ixtlán and Nuevo San Juan Parangaricutiro are much larger than the other communities considered, but these higher costs of collective action are accompanied by higher potential benefits, indicated by more favorable ratios of forest resources to population. In addition, these large communities are also comparatively ethnically homogenous with populations concentrated in single villages, so costs of collective action are probably lower than for San Martin.

The institutional choice perspective does not explain why the situation in San Martin has reached the point of paralyzing conflict. It correctly indicates that community members in San Martin face significant hurdles in affecting institutional change, but why have so many members of the community engaged in collective action against the forestry elite when the costs are high and the benefits low?

(c) Environmental and social motivations

Income potential is one factor. There have been direct payments of profit shares in the past, and the desire for more certainly plays some role in conflicts over forestry. In the absence of proper accounting and reporting procedures, they might be overestimating their potential share in forest wealth. The actions of villagers from Benito Juárez could even be interpreted in terms of a group strategy to blackmail the forestry elite. But there is more at stake than potential income.

For the peasants of San Martin, the forest is a vital part of their livelihood, and they share in its fate. Wood for fuel and housing materials and the commercial opportunities of woodcutting and timber poaching are obviously important motivating factors, but non-consumptive environmental values also shape the way community members clash over forest use. Many farmers in San Martin depend on stream-diversion irrigation; the water-regulating capacity of the forest is of crucial importance for them. In Benito Juárez, the 1994 and 1995 rainy season saw flash flooding that killed some pigs and goats, but then in the dry season stream flows dropped well below normal levels. People blamed this change on agricultural clearings and on logging, which has been concentrated in the village's watershed for some time. When community members debate forestry issues in community assemblies, farmers demand that cutting avoid springs and stream sides, and protect watercourses. Dissidents refer to these issues in statements justifying their actions, but environmental concerns are only a part of their motivations for struggle.

Issues of livelihood rights and the environmental values of the forest meld with calls for justice. When irrigation and water management concerns enter into local debates about the organization of forestry, for example, they nearly always accompany the issue of legitimacy and the distribution of benefits. The minutes of a local meeting in Benito Juárez authorizing the chain read: “It is obvious that logging is not of general benefit. The forest is our only birthright and we are fed up with so much trickery. Logging is finishing off the flora and fauna and, most alarmingly, our rivers are now trickles.”

For the people in Benito Juárez, the chain keeping the communal forestry enterprise out was necessary to protect forest resources on which they depend for livelihood, which provide important environmental benefits, and to which they have legitimate, but violated, rights. While defending the chain against the communal authorities from San Martin Ocotlán, the elected leader of Benito Juárez argued as follows.

Just like all of you have an area where you don’t let just anybody cut firewood, so are we here in this community. Pretty soon our children could end up without water to drink. The people have come to think differently. Like you know, this year the river rose very fast during the rainy season, but now water is scarce already. Our rivers are trickles. And forestry funds haven’t been correctly managed.

The last part of the statement suggests that motivations for dissent surpass the practical issues of income, livelihood, and environmental benefits of the forest. They have a moral component as well.

(d) Legitimacy, outrage, and moral economy

In discussing the importance of adequate enforcement mechanisms for common property management rules, institutionalists argue that a crucial function of enforcement and sanctions is to ensure people that they are not being “suckered” by others who break rules. Getting caught breaking the rules is reassuring, they argue, because it indicates to the transgressor that others are not getting away with it either. “Enforcement increases the confidence of individuals that they are not suckers” (Ostrom,
Mechanisms for monitoring and graduated sanctions for enforcing compliance "reinforce contingent commitments and enhance the trust participants have that others are also keeping their commitments" (Runge, 1984, 1986; Ostrom, 1990, p. 8).

The institutions and distribution of power in the successful forestry communities achieves something more than this. Because community members participate in decisions about forestry, are able to monitor and hold their leaders accountable for the financial management of the forestry business, and enjoy substantial benefits from employment and investment in public works generated by their community-owned logging businesses, they perceive restrictions on cutting, burning, and grazing as fair, and comply with them. Together with good rules, the democratic distribution of power confers both accountability and legitimacy on common property forest management in the community. The successful communities have something more than a framework of rules in which it is rational to avoid free-riding. They have a social and cultural condition in which it is morally right to avoid free-riding, to participate in reforestation, and to forgo the short term benefits of high-grading.

Legitimacy indicates coherence with a moral economy. Although the term goes back to the late 18th century, when it apparently emerged in opposition to developing notions of political economy, E.P. Thompson introduced it into contemporary academic exchanges (Thompson, 1991). Researchers usually invoke the concept of moral economy to explain protest of various kinds, especially food riots and peasant rebellions. It explains certain poor people's collective social behaviors, clarifying their motivating sense of outrage, and spelling out why they believed their protestations to be just. "The problem of exploitation and rebellion is thus not just a problem of calories and income but is a question of peasant conceptions of social justice, of rights and obligations, of reciprocity" (Scott, 1976, p. viii).

(c) Institutions as rules, institutions as culture

This suggests a need to re-think the concept of institutions. Commons theory must confront institutions as more than rules setting out a framework for a game played by rational actors. Some institutions are adequately conceptualized as rules, but not all of them. Some must be understood more thickly, as simultaneously culturally-embedded and culture-embedding artifacts. One type might be susceptible to negotiation through a process of institutional choice or some other aggregation of individual rational action, while the other falls in the realm of cultural evolution.

In the forestry communities considered here, institutions not only define who can cut where, they also define what it means to be both an individual and a community member. For example, community members of Nuevo San Juan Parangaricutiro developed a rule-institution to distribute the benefits from logging on individually-held resin-tapping parcels, but this is coherent with the deeper, culture-institution which relates individual and communal rights to land. In San Martin, on the other hand, the rule-institutions prohibiting timber smuggling do not cohere with the culture-institutions of an embattled moral economy, where need creates rights to the fruits of the forest commons, and where expectations of equality in enforcement and benefit are unmet.

(f) Motivating power of institutions

Perceiving institutions as more than rules facilitates a more nuanced view of people's motivation in the commons. The moral, normative, code underlying an array of customary rights or tenure rules can generate powerful motivations for action. Misappropriating common property resources or restricting customary usages can generate complex behaviors and impart a moral character to dissent. In San Martin, community members share a very strong relationship to the home territory, and have a distinct sense of propriety in using the communal resources associated with it. Community membership implies participation in an intergenerational cultural project. Community members are keenly aware that the common properties of San Martin will someday belong to their children. "We are just here temporarily. We are not owners," they say. Common properties should provide benefits to all, especially the poorest. Fair access to the commons is near the foundation of an embattled moral economy (Klooster, 1998).

The sense of injustice and lack of legitimacy provide powerful motivations to community members excluded from the benefits of the forest. Alicia explained that the participation of women in stopping the bulldozer in Benito Juárez sprang from their exasperation with the
unfairness of controls on woodcutting and clearing, exercised by corrupt and illegitimate authorities. As she put it:

Here there are poor people who can’t plant their maize. The people from San Martin Ocotlán Village chase after little clearings while their logging wreaks havoc on the forest. That’s what those women are thinking. And they want to eat. The five trees they give a year (in legal logging) aren’t enough. How long is that going to last? If we have a little corn and beans, we’re happy. But there are people who don’t have them. That’s what the women are thinking. And they go to the struggle.

In this view of land and forest resources, theft and other forms of concentrating the benefit from communal resources in the hands of a few takes on meaning beyond its immediate material ramifications. Seeing a few enrich themselves with common properties while abrogating the livelihood rights of others violates a basic moral code. This is why the issue of loans—understood as blatant thievery from communal coffers—galvanized dissent. Members of outlying settlements called for better distribution of forestry jobs and forestry proceeds long before resorting to putting a chain across a logging road, but the realization that members of the forestry elite made personal loans to each other with community logging proceeds galvanized their actions.

Together with perceptions that enforcement against timber smuggling and agricultural clearings was unfair, the loan issue particularly grated against the normative foundations of commons management. The denunciation that “just a few are using our resources while the rest are in abject poverty!” becomes a call to action. More than a calculation of costs and benefits is at work here. A sense of outrage motivates calls for audits, blockades of logging roads, and other actions in a continuing struggle over forestry.

(g) Community, power, and the role of struggle in common property change

Community plays an important role in commons struggles, but the individualistic basis of institutional choice obfuscates this. Ostrom’s (1990) framework implicitly recognizes several of the factors relevant to a notion of community, such as group size, existence of shared norms constituting “social capital,” and so on, but it treats each one in isolation, thus removing consideration of gestalt characteristics of community and eliminating the question of how people create, maintain, change, and struggle over the communities in which, ultimately, institutions adhere and have meaning.

Singleton and Taylor (1992) clarify that community is not necessarily a group of people who are close to one another and have warm and amicable relations, but rather a set of people (i) with some shared beliefs, including normative beliefs, and preferences, beyond those constituting their collective action problem, (ii) with a more-or-less-stable set of members, (iii) who expect to continue interacting with one another for some time to come, and (iv) whose relations are direct (unmediated by third parties) and multiplex (Singleton & Taylor, 1992, p. 315).

In San Martin Ocotlán, economic differentiation and ethnic heterogeneity undermine the shared beliefs, stable membership, and expectations of interaction. But through claims for equity and appeals to a moral economy, dissenters struggle to re-establish a damaged sense of community. Struggle re-establishes a sense of mutual interdependence, a condition in which each actor in the group values something that can be offered or withheld by others in the group, creating the possibility of sanction (Singleton & Taylor, 1992). Through blockades and calls for audits, dissidents reaffirm the community’s social boundaries and remind the forestry elite of their vulnerability to community sanction.

Struggle also challenges the distribution of power in a community. The institutional choice framework acknowledges the importance of the distribution of power within a group of people making use of a commonly-held resource. Ostrom (1990) points out that collective action is more likely where resource users have similar interests. The framework recognizes that rules have strong distributional effects, and points out that strong leaders and subgroups can inhibit efforts to change the rules that benefit them. But the institutional choice model only confronts such issues indirectly. The framework lacks a notion that struggle might modify power relations, but, struggle over access to resources affects the outlook for change in common property forest management. Because of their struggle, Mixtec villagers, poor farmers, timber smugglers, and the forestry elite could come to “share a common judgment that they will be harmed if they do not adopt an alternative rule” (Ostrom, 1990, p. 211).
Struggle directly confronts the imbalance of power in the community.

(h) Struggle and the environmental question

Rational choice-based modeling necessarily simplifies the environmental question. The definition of a resource is quite restrictive; a renewable resource becomes a stock with a replenishment rate, and a harvest is a flow: “as long as the average rate of withdrawal does not exceed the average rate of replenishment, a renewable resource is sustained over time” (Ostrom, 1990, p. 30). Rules adjust resource users’ behavior to environmental constraints; resource users choose whether to invest in rule changes needed to bring their use of a common property resource within some environmentally-determined limits. This environmentally deterministic model pays little attention to the social construction of environmental problems, but environmental perception is an active social process.

When dissidents faced the forestry elite across the chain, they justified their actions not only in terms of income potential, livelihood rights, and environmental values, but also in terms of legitimacy, justice, and group identity. They were not merely adjusting their behavior to the limits of the environmental tableau. Community members in San Martin struggle to forge a consensus about what the forest is for and whose interests it will serve (Pinkerton, 1997; Romm, 1993).

(i) Bounded rationality: subsuming the cultural and the moral to the merely rational

Recent work in the institutional choice approach calls for a behavioral approach, maintaining individual choice as the focus of explanation, but introducing social boundaries on rationality, especially norms of reciprocity, levels of trust, and reputation. Social norms, learned through social interaction, have an internal valuation which influences the individual calculus (Ostrom, 1998).

Wade (1988), also points out that peasant behavior around water management institutions is motivated by “oughts.” These include a moral capacity to recognize the claims of others in a spirit of reciprocity, and an individuals’ identification with a collectivity that gives meaning to participation in contestations with other actors over water.

Incentives include material inducements, prestige, power, pride in workmanship, service for others, satisfaction in social relationships, conformity to habitual practices and attitudes, and a feeling of participation. They come from the internal values that individuals assign to different outcomes and the activities needed to achieve those outcomes (Ostrom, 1992).

Institutions shape human behavior through their impact on incentives. The concept of incentives involves more than just financial rewards and penalties. Incentives are the positive and negative changes in outcomes that individuals perceive as likely to result from particular actions taken within a set of working rules, combined with the relevant individual physical, and social variables that also impinge on outcomes (Ostrom, 1992, p. 24).

Incentives include material inducements, prestige, power, pride in workmanship, service for others, satisfaction in social relationships, conformity to habitual practices and attitudes, and a feeling of participation. They come from the internal values that individuals assign to different outcomes and the activities needed to achieve those outcomes (Ostrom, 1992).

This side-steps the problem of where these values and incentives, come from. What is the relationship between the community—for example—and an individual’s incentives? Institutional choice captures these issues imperfectly, and only by reducing the contextual factors and stripping them of meaning. The problem is the one Peters (1993) discusses regarding the rational choice approach of Robert Bates: issues of culture and morals are addressed, but they are subsumed to a rational choice approach which blasts them free of explanatory power. They are added on ad hoc, a delta parameter to individual calculus.

The bounded rationality approach offers the possibility of limited explanation and partial...
prediction within the parameters of culturally-given values. But the problem is that rationality is not bounded so much as embedded. The lens of bounded rationality is opaque to processes of cultural change that define the borders of individual rationality. It lacks power to discern the motivations fueling environmental struggle.

6. CONCLUSION

Collective action pessimists work from the theory of rational choice, in which autonomous individuals atomistically weigh costs and benefits to them, and it is relatively unproblematic where their values come from or how they are judged. For advocates of institutional choice, in contrast, rational actors have institutions, including norms and values. Thus the question becomes one of understanding how rational actors create durable institutions which allow them to avoid tragedies of the commons and engage in collective action. A more radical critique of the Tragedy of the Commons model does not rely on a rational choice outlook, but rather argues that individual motivations are not naively given, but exist—and can only be understood—in relation to the society in which the individual exists. It looks to processes of culture change to explain changes in the commons.

This comparative, contextualized, case study suggests the need for an intermediate, thick theory to explain change in common property management systems. It reaffirms the need and potential for theory-building to predict when groups of individuals are more likely to be able to craft new institutions governing their commons. Institutional choice proves to be a useful theory; it does capture some of the differences between San Martin and its more successful neighbors, both in terms of factors which favor collective action and in terms of characteristics of successful commons institutions.

On the other hand, if explanation is also a goal, commons management theory can not remain glued to thin conceptions of institutions and parsimonious models of rational choice. It must provide a richer approach to understanding the dynamic of natural resource struggles that affects rule formation, but also influences the creation and maintenance of community, norms, and values.

One area for better theory-building is that of institutions. Institutional choice currently treats institutions as little more than agreed-upon rules bounding behavior. But institutions are complex social constructions with cultural content and meaning. So people have more than incentives, but rather motivations arising from the interpenetration of the self with culturally-embedded, and culture-embedding institutions. This research reinforces calls for a thicker view of the institutions governing the commons.

Institutions are more than a set of ramifications, a framework within which actors pursue their self-interests in strategic, cost-benefit manners. Interests are socially constructed, not naturally derived, and institutions define what these interests are, how they are acquired, and how they are internalized by the individual (Jentoft, 1997, p. 8; McCoy & Jentoft, 1998).

Commons theory must confront the idea of struggle, often within community, and over norms. Community and norms do more than set boundaries on the cost-benefit rationality of individuals acting in a commons situations. They are simultaneously arenas of conflict and sources of motivation for action. Common property theory must address community as a site of contestation, creation, and maintenance—not only of rules—but also of the social norms that motivate an individual's action in the commons. Though hardly the perfect metaphor, struggle better captures the issue of environmental perception and goal setting than does institutional choice. Struggle also maintains the needed emphasis on the material basis and socially-differentiated welfare implications of change in the commons.

The general directions of refinements to rational choice theory in the commons have greatly expanded the theoretic possibility for successful commons management and collective action to achieve results better than the narrowly rational outcome (Ciriacy-Wantrup & Bishop, 1975; Ostrom, 1990, 1998; Runge, 1986; White & Runge, 1995). The experience of San Martín Ocotlán and the seven successful forestry communities suggest that "community" and social norms do more than provide cheap sanctions and discourage free-riding. They motivate group members to cooperate rather than free-ride, but they also motivate them to apply sanctions and to struggle over institutional change. Understanding that an individuals' motivations involve more than incentives from a cost-benefit calculus, that
institutions are thicker than rules, and that communities are greater than the sum of their aggregated individuals, suggests that we might see collective action under a wider range of situations than thin, and even bounded, rational choice-based approaches suggest.

NOTES

1. Data for this section come from 16 months of participant observation and interviews, enriched with archival research in the Oaxaca Agrarian Reform archives, financial audits, and the 1995 payroll for the forestry business (Klooster, 1997). San Martin Ocotlán is a pseudonym.

2. It contrasts with other definitions of co-management, where the state retains ownership of resources, but allows communities usufruct and management responsibilities, or where government, NGOs, neighbors, and other “stakeholders” somehow broker the management of forests or fisheries (Berkes, 1997; Pinkerton, 1989; McCay & Jentoft, 1996).

3. In 1995, the exchange rate averaged 6.4 new pesos to the US dollar, according to IMF statistics.


5. San Antonio is a pseudonym.

6. While heterogeneity was originally seen as inhibiting, subsequent refinements recognize the possibility that internal difference might foster cooperation because of the gains possible through trade (Keohane & Ostrom, 1994).

7. Other benefits of organization include the pleasure of working in an effective and legitimate group. Furthermore, the relatively successful groups built on their investments in the social organization of communal production to diversify economic activities include transportation, ecotourism, nontraditional agriculture production, and other forest-related industries. They are also more successful in obtaining funds from the Mexican government and from NGOs. This is an additional benefit of institutional investment that group members probably did not perceive at the outset, however.

REFERENCES


