

Daniel Klooster  
Princeton Environmental Institute, Princeton University  
Woodrow Wilson School, 5 Ivy Lane, Princeton NJ 08544-1013 USA  
Fax: (609) 258-2394 Email: klooster@princeton.edu

## **Institutional Choice, or a Process of Struggle?**

A case study of forest co-management in Mexico

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Theory  
Geography

Change in the commons is poorly understood. After considering developments of theory on common pool resource management, this essay analyzes a comparative case study of community forestry in Mexico. It contrasts a community suffering from corruption in the logging business and timber smuggling with a set of forestry communities having institutions able to control these issues. A discussion assesses the utility of institutional choice models for change in the commons, and draws out implications for theory building and analysis.

### **Beyond the two tragedies of the commons, rational choice and its limits**

Thirty years ago, Garrett Hardin's influential article equated the commons with natural resource degradation. Hardin argued that in a commons, individuals gain all the benefit from increasing their take, while any harm from increased use is divided between all users. Driven by a self-centered rationality, 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):1244). Only privatization or state control could resolve this dilemma.<sup>1</sup>

Over the years, this has spawned a heated response, 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 et al. 1990:13; Berkes et al. 1989; McCay 1992; Acheson 1989; Blaikie and Brookfield 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 and Farvar 1989:10).

The "rules for orderly use" that different societies work out are often stunningly complex. Researchers note 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.<sup>2</sup> 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 cooperatives, and national forest departments. Taboos, religion, and local 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 and Thiesenhusen 1992; Fortmann and Bruce 1988; Fortmann and Riddell 1985; Messerschmidt 1993; Shepherd 1991; Carney 1993; Freudenberger, Carney, and Lebbie 1997)

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 (Blaikie and Brookfield 1987; Carney 1993). 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 (Ecologist 1993; Monbiot 1993).

### **Beyond the two tragedies: rational choice and its limits**

But change is not always so grim. Current debates about common property now go beyond Hardin’s (1968) tragedy of overuse and Monbiot’s (1993) tragedy of the destruction of common property systems following modernization. Analysts now develop theories of common pool resource management that 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. Theory builders point out Hardin’s fundamental confusion between a free-for-all open access situation and a common property regime, where internally-enforced rules can discourage over-use (Ciriacy-Wantrup and Bishop 1975; Bromley and Cernea 1989). This approach questions pessimistic expectations of free-riding as the dominant strategy of narrowly rational individuals. When people have solved the assurance problem, they can reasonably expect other individuals to cooperate as well. Institutions, understood as rules that coordinate social relationships, help balance behavior and solve the assurance problem. With adequate institutions, cooperation is a rational strategy (Runge 1984).

Ostrom (1990) argues that, in many circumstances, resource users will *create* needed institutions to solve the assurance problem and govern their use of common pool resources. At its core, Ostrom’s model for institutional change relies on the rational choices of individuals balancing their perceptions of the costs and benefits of proposed changes to institutional rules. These rational choices require information about costs and benefits, but the possibility of knowing them depends on situational variables, like the number of resource appropriators, skills of leaders, and so on. “This general conception of rational action places most of the explanatory weight on situational variables, rather than on assumptions made about the internal calculation process” (Ostrom 1990:193).

Rational choice approaches focuses on characteristics of the resource users and their property rights, but common property management systems are nested in historical contexts and embedded in broader societies (McCay 1992; Chapman 1989). Critics call for greater attention to history and resource-use influences from different scales of analysis, such as concentrations of power in market structures, and the multiple implications of commodification (McKean 1997; Ribot 1995). The internal

social stratification of rural societies poses additional questions for assessing the likelihood of cooperation in commons management (Cernea 1985a; Uphoff 1985; Andersen 1995; Ribot 1996).

Critics also argue that rational choice models overlook important sources of human motivation in commons situations. They call for renewed attention to the issue of community and the normative basis for people's actions in a commons situation. This critique points out that individual calculus doesn't explain a commons system. Instead, the socially and politically embedded commons explains individual calculus (McCay and Jentoft 1998; Jentoft 1997; Singleton and Taylor 1992).

Rational choice modeling also simplifies the environmental question. The definition of a resource is quite restrictive; a renewable resource is 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 1990:30). Rules adjust resource users' behavior to the environmental constraints. This deterministic model does not capture the process of people forging a consensus about what the environment is for and whose interests it will serve.

Rational choice-based models necessarily require contextual simplification to set a framework for actors' rational choice. They minimize or eliminate considerations of history, processes outside the community of resource users, the complexity of tenure practices, the environment, community, and normative aspects of institutions. An analysis of forestry communities in Mexico suggests that these factors are crucial for explanation.

## **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 (World Bank 1995; Masera 1996).

### **San Miguel Peras, from concessions to community forestry**

One of these forest communities is San Miguel Peras, in the state of Oaxaca.<sup>3</sup> Currently, San Miguel 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. (See Figure One, Table One, and Table Two) Nearly all members of the community combine subsistence maize farming with remunerative activities, especially logging, woodcutting, and timber smuggling. Despite forty years of commercial logging in the community's 13,000 ha of pine and oak forests, the community escaped the worst ravages of deforestation, but it does suffer from persistent forest degradation due to poorly-implemented logging methods, and timber smuggling carried on by a large number of community members.

Logging in San Miguel 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 Miguel's forests. Mexican concessions were monopsonies; peasant forest owners could only sell only 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).

In San Miguel, the first concessionaire actually offered the community a better deal than was normal in the 1960s. Aprovechamientos Forestales de Oaxaca (AFO) logged the community's forest for 10 years, starting in 1964. A firm owned by the state of Oaxaca, AFO split profits with the community, but only after shaving them as much as possible. The next company to log San Miguel's forests was the Tuxtepec paper company (FAPATUX), a parastatal firm with capital from the federal government. In contrast to AFO, under FAPATUX there was no profit sharing, only stumpage fees, set by the agrarian reform agency.

Despite substantial benefits under AFO and FAPATUX, 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. The paternalistic agrarian reform agency sometimes tempered the conditions of the monopsony, overseeing contracts, conducting audits, and setting some of the prices, 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, high grading and lack of reforestation eliminated much of the commercial volume from the forest without creating the ecological conditions necessary for regeneration (Chapela and Lara 1995; Snook and Negreros 1986). San Miguel Peras was no exception. Pereños remember that outside logging companies cut selectively and slovenly, leaving good wood on the forest floor. "They cut purely first-class wood. A lot was wasted. They left thousands of cubic meters of wood just lying there. They would leave the arroyos filled with logs that stained with age."

Some commoners became increasingly dissatisfied with logging waste and increasingly 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 FAPATUX, 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. In the 1980s, reformers began to empower communities and unions of communities to hire and oversee the 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 (Wexler and Bray 1996; Bray and Wexler 1996; Klooster 1996).

This approach to natural forest management allows communities to manage forests themselves, but lays out strict guidelines requiring them to implement forest management in accord with the tenets of sustainable-yield forestry, including management plans, forest zoning, rotating cutting areas, centralized (as opposed to household or individual) logging, and the frequent intervention of university-

trained forestry professionals. Thus it is a kind of co-management<sup>4</sup> wherein forest ownership clearly resides with communities, 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, financial mismanagement, and the inequitable distribution of forestry revenues, a situation with repercussions in forest management.

### **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. AFO and FAPATUX developed an internal constituency in the communities where they had contracts, channeling benefits such as the key jobs like 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 commoners 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. Commoners from the outlying settlements also complain that the employment benefits from the logging and milling business go disproportionately to residents of the central village, and data from the forestry business supports their case.

According to the 1995 payroll, wages totaling N\$481,620<sup>5</sup> reached 366 workers, 50% of the economically active population. Workers from San Miguel Peras Village got a disproportionate share of wage earnings, however. They comprise only 33% of all workers, but took in 48% of all wages. This is because they got the best jobs and worked more often; members of the forestry elite comprise 67% of the small group of forestry workers who earned more than N\$5000 during the 7 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 Miguel Peras Village. (See Table Three and Table Four)

In addition to employment, the forestry elite also finds more direct ways to divert forestry revenues towards their own pockets. In 1995, after 6 years without any profit distribution from the forestry business, commoners demanded audits of past and current forestry administrations. These

revealed substantial loans of money and wood to a group of wealthy commoners who owed the forestry coffers nearly N\$208,000 and refused to acknowledge their debts. The overwhelming majority of recent debtors were from the central village, and many owed sums in excess of N\$10,000. Much of the money helped finance personal truck purchases. A sawmill audit uncovered additional problems. It revealed a serious problem with the classification of boards. Misclassification represented lost revenues for the community forestry business, but a bonanza for local truckers who could buy cheap and resell at a higher, more expensive, classification.

In San Miguel Peras Village, 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 institutions of common property management ought to provide controls against mismanaging the communal forestry enterprise. The basis of local power in San Miguel Peras Community is supposed to be the community assembly. 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. (See Figure Two) 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. As one community member put it: "Some threaten, others invite you to drink." One vocal dissident of the forestry elite says he fears for his life, and another 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 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 institutions of common property management.

### **Forest degradation**

Forest degradation results. The association of communal authorities with corruption in the logging and milling business undermines restrictions on timber smuggling. Despite the conflicts, local authorities and the restrictions on forest use still have a certain degree of acceptance. Many commoners 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 do it not for "need," but for "avarice." Professional smugglers offend the commoners' moral economy.

But corruption in community forestry provides timber smugglers with a mantle of legitimacy. The village authorities who are charged with controlling contraband are also the ones thought to benefit from corruption in the forestry business, 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 Miguel Peras is situated close to regional markets, a strong network of old logging roads makes the forest 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.<sup>6</sup>

Timber smugglers focus their work on the very best trees in the forest – mature trees with straight, branchless boles, close to roads, leaving oaks and twisted, branchy, diseased, or bifurcated pines of little commercial value. The effects of such high grading in Mexican pine forests are well known. “The superior provenances (trees best adapted to a particular site and set of environmental conditions) are frequently the first to be removed. The trees left to regenerate are often of poor form, stagheaded (or rogue), and as seed trees produce genetically inferior progeny” (Styles 1993:415). The end effect resembles that of forest mismanagement under the concessionaires: genetic selection for commercially-undesirable attributes in pines, lack of pine regeneration, oak dominance, and long-term, decreases in commercial volumes (Chapela and Lara 1995; Snook and Negreros 1986).

### **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 Pensamiento Liberal Mexicano, 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 this struggle in the case study community. 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.

### **The Comparison with successful communities**

Can the community create institutions that provide accountability in the logging business and encourage compliance with rules against timber smuggling? This possibility 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. These communities have a number of common property management rules and institutional characteristics that San Miguel Peras might come to share.

Site visits, interviews, and literature reviews provide comparative information on the adjacent community of San Andres el Alto, 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 Michoacan. (See Table Five) These are successful forestry communities in the sense that they control timber smuggling and invest in forest productivity while running forestry businesses free from significant corruption.

### *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 Andres, forestry started in 1972 under AFO, and then FAPATUX, the same firms then logging San Miguel Peras' forests. A small private rental firm took over from FAPATUX in 1986 until the community formed its own logging business in 1988. Like in San Miguel Peras, community leaders played important roles in raising consciousness, planting doubts about the veracity of timber volumes taken, and questioning silvicultural practices. In 1987, San Andres joined UCEFO, a union of communities that managed their own logging businesses and shared the costs of providing professional forestry services. UCEFO organizers introduced San Andrés commoners to an organizational framework modeled on the traditional legal structure of Mexican communities. The community assembly elects members to 2-year positions as business manager, head of finances, head of logging operations, and volume documentor. Similar elected positions exist in San Miguel Peras, but the UCEFO model includes an additional oversight mechanism, an auditing committee composed of commoners elected in community assembly (Lopez Arzola and Gerez Fernandez 1993; Castaneda 1992).

FAPATUX also held a monopsony on the forests of Ixtlán and the UZACHI communities from 1956 to 1982. 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 to FAPATUX. University-trained activists from outside the region assisted the communities in this effort, and some of them later formed 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 has no need for 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. Later, the community saw its forests abused by small rental firms in the 1950s and 1960s, and participated in a government-imposed forestry union during the 1970s. Dissatisfied with limited economic benefits and forest mismanagement, the community left the union and formed its own communal enterprise in 1981. 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 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).

### ***Communal institutions provide accountability***

Vigorous, regular, and well-attended community assemblies are standard features of these successful communities. San Andres' 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 labor obligation. Each of the four communities forming UZACHI have their own community assemblies which meet approximately every two months, as needed. 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 1000 registered commoners 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 Andres, UCEFO provided initial training to the commoners elected to run the logging business. Currently, ASETECO, a grassroots support NGO trains community members elected each year to the auditing committee. San Andrés 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 commoners 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 commoners. 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. "Commercial forest exploitation is completely regulated in UZACHI, and there are effective mechanisms of oversight and control. For example, a president of the commissary 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" (Ramirez and Chapela 1995:31). Ixtlán has also replaced a commissary whose president misdirected funds.

### ***Fair distribution of forestry benefits and restrictions***

The successful communities distribute the benefits from logging fairly. San Andres invests forest proceeds in new public buildings, including a school, shrines, and communal office buildings. In 1994 each commoner received N\$2,500 (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 and clearing the debris left by logging. The community constantly seeks ways to increase job opportunities for commoners, and for this reason members are interested in acquiring a sawmill.

In UZACHI communities, commoners 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 and temples. 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 Ixtlan, forestry proceeds have allowed diversification into transport, agricultural promotion, and ecotourism (Lopez Arzola in process). These communities balance plans to modernize sawmills and displace workers with projects to re-hire them in downstream activities, like 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 whose previous tenure rights were negatively affected. San Andrés 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. Commoners 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 aluminum roofing materials and lumber when needed. Similarly, commoners maintain their rights to take trees from communal forests for house building, but must coordinate this traditional right with the commissary 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 commissary facilitates transport with communal trucks – the user just buys the gasoline for the truck. Commoners 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 wood for raw materials at reduced prices to the family-owned workshops (Alvarez Icaza 1993; Sanchez Pego 1995).

### ***Forest management***

The forest benefits from democratic community control. As a result of forest restrictions and reforestation efforts, the communities' forest areas have increased. San Andres 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 and Chapela 1995). In Ixtlán, forest fires, timber smuggling, and clearing are also under control, while tree planting advances at the rate of 10 ha a year (Lopez Arzola in process). 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 Parícutín volcano.

The successful communities invest in future forest productivity, despite the increased costs and short-term decreased timber production these efforts imply. In San Andres, 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 high-grading 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 areas in a low-impact manner (Chapela and Lara 1995; Chapela 1997). 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 FAPATUX it was take and take and leave only wreckage."

### **Discussion: analyzing success, failure, and struggle**

Ostrom's (1990) institutional choice perspective provides an important theoretical lens on the process of changing commons institutions. According to Ostrom, 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 six factors favoring collective action. First, commoners share the judgment that lack of change will harm them. Second, they have similar interests and will be affected in similar ways by change. If not, powerful individuals or sub-groups may inhibit rule changes.<sup>7</sup> Third, the resource users highly value the continuation of benefits from the common property resource and have a sense of a common, valued future. Fourth, they face relatively low information, transformation, and enforcement costs. Fifth, 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 small and stable (Ostrom 1990:211).

This framework indicates that San Miguel Peras is less likely to embark on a course of rule changing than the other six communities because it faces higher costs and lower benefits (See Table Six). For example, the ratio of population to forest resources, which provides a very rough measure of the benefits from collective action, is roughly the same for both San Miguel Peras and the majority of the UZACHI communities. The UZACHI communities are much smaller, however, and, due to cultural homogeneity, they share stronger initial "social capital" than San Miguel Peras; presumably, their costs of collective action are lower. Similarly, Ixtlán and Nuevo San Juan Parangaricutiro are much larger than the other communities considered, but these higher costs of collective action are accompanied by much more favorable ratios of 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.

San Miguel's stratification further complicates matters. The items of the institutional choice framework considered most influential in predicting successful change are that commoners "share a common judgment that they will be harmed if they do not adopt an alternative rule" and that most commoners "will be affected in similar ways by the proposed rule changes" (Ostrom 1990:211). These conditions are not met in San Miguel Peras. Change will likely harm the interests of the forestry elite by limiting their access to forestry profits, while restrictions on wood cutting and timber smuggling interfere with an important component of livelihood for many commoners. But this very division into groups is crucial for understanding events in San Miguel Peras, where poor commoners from the outlying settlements block logging roads, demand audits, and mobilize to resist the domination of a forestry elite in the community's capital village.

### **Motivations and struggle**

The institutional choice perspective does not explain why the situation in San Miguel Peras has reached the point of paralyzing conflict. In Ostrom's framework, individuals *decide* to change rules, lost is the perspective of groups *struggling* over access to resources. The institutional choice perspective correctly indicates that commoners in San Miguel Peras face significant hurdles in effecting institutional change, but it misses the dynamics of change. It fails to explain why so many members of the community have taken action against the forestry elite when the costs of collective action are high and the benefits low. What motivates commoners to engage in struggle over the forest?

One aspect is environmental, but institutional choice restricts the environmental question. It takes a deterministic view of the environment, in which commoners forge rules to adapt their behavior to environmental determinants. Lost is the idea that natural resources can have different uses and different styles of use – i.e. the forest may be for grazing, for logging, or even for contemplation of wildness. The approach pays little attention to the social construction of environmental problems.

For the peasants of San Miguel Peras, the forest is a vital part of their livelihood, and they share in its fate. Wood for domestic fuel and housing materials and the commercial opportunities of wood cutting and timber smuggling are obviously important foci of struggle, but nonconsumptive environmental values also shape the way commoners clash over forest use. The community is a farming community, and many farmers depend on stream-diversion irrigation; the water-regulating capacity of the forest is of crucial importance to the community. In Pensamiento Liberal Mexicano, 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 commoners debate forestry issues in community assemblies, farmers demand that cutting avoid springs and stream sides, and protect watercourses. Dissident commoners refer to these issues in statements justifying their actions, but environmental concerns are only a part of the struggle.

### ***Legitimacy and the moral economy of struggle***

In discussing the importance of adequate enforcement mechanisms for common property management rules, Ostrom argues 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, she argues, 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

1990:95). 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” (Ostrom 1998) :8). An important function of these rules is to solve the assurance problem (Runge 1984).

The institutions and distribution of power in the successful forestry communities achieves something more than this. Because commoners 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 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 provides a framework for the creation of norms favoring cooperation, restraint, and investment in the common pool resource. The institutional choice perspective fails to capture the richness and energy of commoners’ motivations. Ideas of community, cultural norms, and moral motivations lie outside the model. It overlooks the cognitive and normative sides of institutions (Jentoft 1997:8).

Struggle often derives shape and energy from 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 academic exchanges (Thompson 1966; Thompson 1971; 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” (J. Scott 1976):vii).

The moral, normative, code underlying an array of customary rights or tenure rules can generate powerful motivations for action, to the surprise of analysts relying solely on the legalistic institutional choice model. Recent work on rational choice theory 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 (Ostrom 1998). The possibility that the norms themselves motivate behavior remains outside the model of bounded rationality, however. The issues of misappropriating common property resources or restricting customary uses, for example, often motivates more complex behaviors than the concept of “free-riding” would suggest.

The comparative case study bears this out. The issue of legitimacy seen in the successful logging communities but lacking in San Miguel imparts a strong moral character to dissent. In San Miguel, commoners 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 inter-generational cultural project. Commoners are keenly aware that the common properties of San Miguel Peras will someday belong to their children. “We are just here temporarily.

We are not *owners*,” they say. Common properties are for the benefit of all, especially the poorest. Fair access to the commons is near the foundation of an embattled moral economy (J. Scott 1976). 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 additional meaning. 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 – galvanized dissent amongst the poor commoners. The denunciation that “just a few are using our resources while the rest are in abject poverty!” becomes a call to action. Perceptions of unfairness and hypocrisy in enforcement of restrictions on timber smuggling, clearing, and other forest uses exacerbates the feeling. In the successful communities, restrictions on customary forest access have legitimacy. In San Miguel they do not.

The sense of injustice and lack of legitimacy provide powerful motivations to commoners excluded from the benefits of the forest. Alicia explained that the participation of women in stopping the bulldozer in Pensamiento Liberal Mexicano was related to their exasperation with the unfairness of controls on woodcutting and clearing, exercised by corrupt authorities without legitimacy.

Here there are poor people who can't plant their maize. The people from San Miguel Peras Village persecute 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.

More than a calculation of costs and benefits of action motivate the dissidents in San Miguel; a sense of outrage moves them to take action.

### ***The environmental and social goals of struggle***

This concern for justice and the defense of livelihood rights associated with common property meld with concerns over the broader environmental values of the forest. When irrigation and water management concerns enter into debates about the organization of forestry, for example, they nearly always accompany the issue of legitimacy and the distribution of benefits.

It is clear that exploitation has not been of general benefit. The forest is our only patrimony and we are fed up with so many lies. Exploitation is finishing off the flora and fauna, and even more alarmingly, our rivers are now trickles. Under no circumstances will we allow *them* to exploit the forest in *our* community, either officially or clandestinely. (Letter of 14 November 1995 from Pensamiento Liberal Mexicano to Oaxaca Governor. Emphasis added)

For the people in Pensamiento Liberal Mexicano, the chain keeping the communal forestry enterprise out was necessary to protect forest resources on which they depend, which provide important environmental benefits, and to which they have legitimate, but violated, rights. “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,” argued Rodrigo, the village's elected leader while defending the chain against the communal authorities from San Miguel Peras Village. “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 minutes of a local meeting in Pensamiento Liberal Mexicano 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.”

In the struggle for the forest, dissident commoners amalgamate issues of legitimacy, justice, and livelihood rights with those concerning environmental values. Commoners in San Miguel Peras struggle to forge a consensus about what the forest is for and whose interests it will serve, and their motivations to do so come from deeper than a rational calculus of individual costs and benefits. The situation is more complex than the institutional choice perspective, in which commoners choose whether or not to invest in rule change needed to bring their use of a common property resource within some environmentally-determined limits.

In San Miguel Peras, 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. Dissidents facing the forestry elite across the chain justified their actions not only in terms of livelihood rights and environmental values, but also in terms of legitimacy and justice (see (Jentoft 1997). The struggle is to forge a new consensus about what the forest is for, and whose interests it will serve (Romm 1993; Pinkerton 1997).

### *Community, power, and the role of struggle in common property change*

The individualistic basis of institutional choice perspective also obfuscates the role of community in commons struggles. 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 the question of how people create, maintain, change, and struggle over community.

In San Miguel Peras, economic differentiation and ethnic heterogeneity undermine community, in the sense of a group with shared normative beliefs, stable membership, and the expectation of continued interaction<sup>8</sup> (Singleton and Taylor 1992). Through claims for equity and appeals to a moral economy, dissidents struggle to re-establish a damaged sense of community. Struggle also re-establishes a sense of mutual interdependence<sup>9</sup> (Singleton and Taylor 1992). Through blockades and calls for audits, dissidents remind the forestry elite of their vulnerability to community sanction.

Similarly, the institutional choice framework only indirectly acknowledges the importance of the distribution of power within a group of commoners. Ostrom (1990) points out that collective action is more likely where commoners they 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.

Struggle over access to resources affects the outlook for change in common property forest management. Because of their struggle, poor commoners, 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 1990:211). Struggle directly confronts the imbalance of power in the community.

## Conclusion

This comparative, contextualized, case study suggests the need for a thicker theory to explain change in common property management systems. Common property management theory must sally forth out of the details of rules-making and parsimonious models of rational choice. It must provide a richer approach to understanding the dynamic of struggle around natural resources. The metaphor of struggle, rather than choice, better captures the process of change in the commons.

Research on change in the commons must address history and the context of processes outside of (and below) the group of resource users. The comparative case study reaffirms the need to look at history and the way commons are situated in broader social processes. The evolution of community forestry in the eight communities took place in the context of changing government policies. The relative failure of San Miguel Peras, 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, played important roles in these struggles. Processes rooted outside of communities deepened divisions in stratified rural society, with profound effects on the evolution of commons institutions.

Second, the experience of these communities demonstrates the need for commons theory to enrich its view of the environment, which the rational choice perspective reduces to a subtly deterministic tableaux, such that rational actors adapt their actions to a limiting environment. It must capture the process of resource users struggling to determine their environmental management goals.

This research supports calls to re-evaluate the role of community in commons management. The perspective that community is set of people with shared beliefs, normative ideals, direct interactions, and mutual interdependence (Singleton and Taylor 1992), suggests that the social definition and maintenance of such interactions, and the confirmation of mutual interdependence, may be both motivating factors and loci of struggle. “Community exists, it counts, and it shapes the nature and outcomes of commons problems” (McCay and Jentoft 1998) :23). Within communities, power relations between stratified groups profoundly affect the possibility and direction of change, but power relations are subject to modification via a process of struggle.

Fourth, commons theory must confront institutions as more than rules setting out a framework for a game played by rational actors. Social, moral, and cultural institutions give tenure meaning. They solve the assurance problem by showing individuals that they are part of a stable, equitable, and well-adapted set of rights and duties (White and Runge 1995). 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; McCay and Jentoft 1998:8).

Fifth, this research reaffirms the need for theory-building to capture the ability of people to come up with new institutions governing their commons (Ostrom 1998). It suggests that normative, socially-constructed institutions are themselves subject to change and evolution through a process of social, cultural, and political contestation we might call struggle.

The general directions of refinements to rational choice theory have greatly expanded the theoretic possibility for successful commons management and collective action to achieve results better than the narrowly rational outcome (Ciriacy-Wantrup and Bishop 1975; Runge 1986; Ostrom 1990; Ostrom 1998). The experience of San Miguel Peras and the seven successful forestry communities suggest that normative institutions do more than provide cheap sanctions and provide norms discouraging 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. This research suggests that there may be even more hope for collective action around commons management than even the bounded rationality arguments suggest.

Figure 1: Map of SMP. (not available electronically)

Figure 2: Organizational Chart of the Communal Institutions of San Miguel Peras,  
 their Relationships and Functions

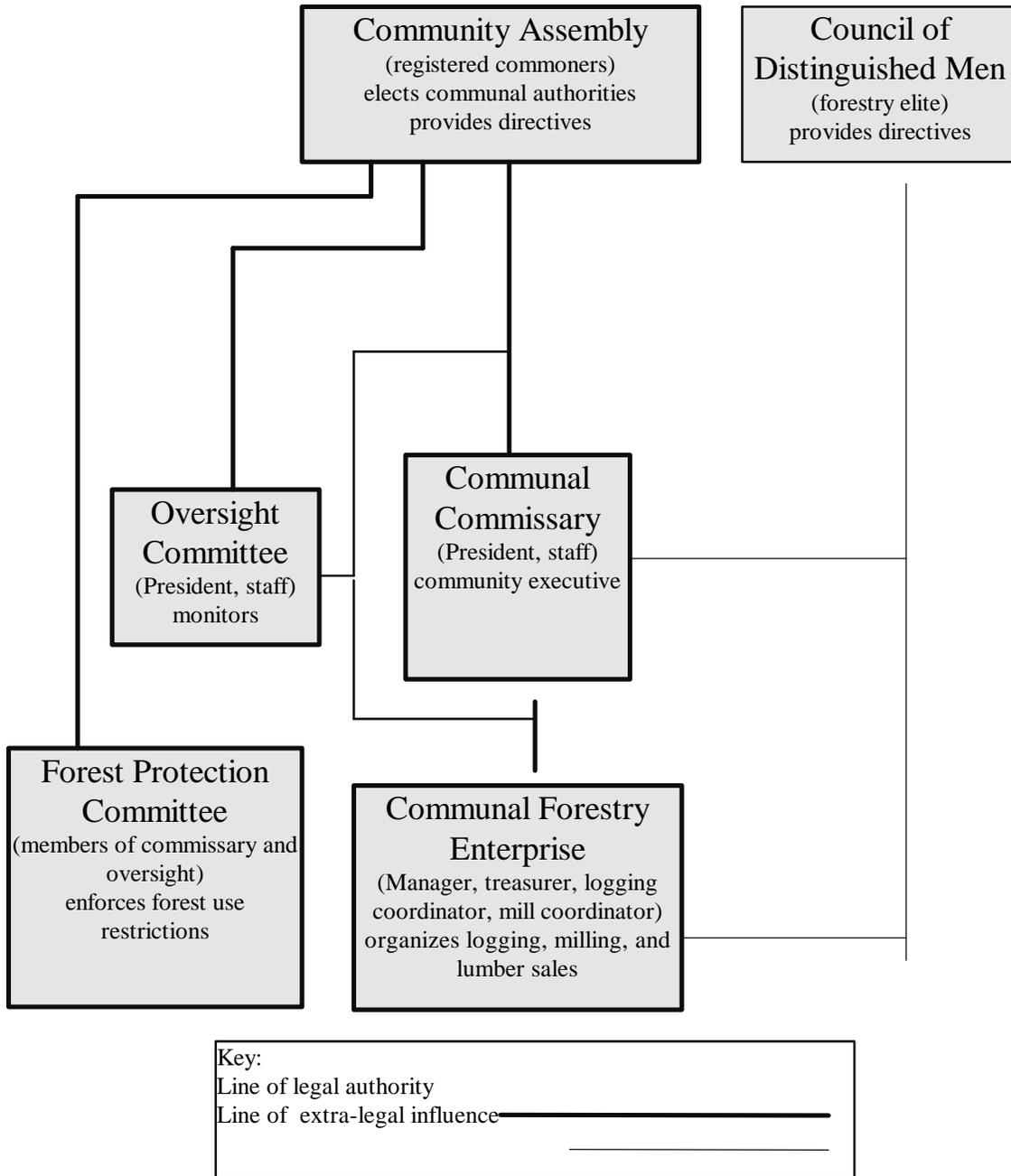


Table One: Population of Villages in the Community of San Miguel Peras

Settlement	Population	Percent of total
San Miguel Peras Village	1,512	45
La Soledad Peras	571	17
Pensamiento Liberal Mexicano	510	15
El Temescal	301	9
La Brujeria	251	8
El Manzanito	184	6
Total	3,329	

Source: INEGI 1990.

Table Two: Number and Percentage of Mixtec Speakers in San Miguel Peras Community

Village	Population	Mixtec Speakers <sup>a</sup>	Percent Mixtec
San Miguel Peras	1,512	27	2
La Soledad Peras	576	417	72
Pensamiento Liberal Mexicano	510	52	10
El Temescal	301	196	65
La Brujeria	251	36	14
El Manzanito	184	88	48
Total	3,329	816	25

<sup>a</sup>Includes less than 12 Zapotec speakers.

Source: INEGI 1990.

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Table Three: The Distribution of Forestry Wages Among Workers from San Miguel Peras Community

Wage category (N\$)	Earnings (N\$)	Share of total wages (%)	Number of workers	Share of all workers
0-250	14,822	3%	103	28%
250-1000	71,995	15%	126	34%
1000-3000	168,835	35%	96	26%
3,000-5,000	65,741	14%	17	5%
5,000-7,000	98,975	21%	17	5%
7,000-10,600	61,252	13%	7	2%
TOTALS	481,620		366	

Table Four: The Distribution of 120 Workers from San Miguel Peras Village Across Wage Categories

Wage Category (N\$)	Number of workers from San Miguel Peras Village	Share of workers in category from SMP Village
0-250	16	15%
250-1,000	41	33%
1,000-3,000	41	43%
3,000-5,000	6	35%
5,000-7,000	10	59%
7,000-10,600	6	86%

Table Five: Community Comparisons

Community	Population <sup>a</sup>	Location	Ethnic group	Assembly + oversight	Internal legitimacy	Successful? <sup>b</sup>
San Miguel	3,329	Sierra Sur	Mestizo, Mixtec,	weak	no	no
San Andrés	295	Sierra Sur	Zapotec	strong	yes	yes
Xiacuí <sup>c</sup>	767	Sierra Norte	Zapotec	strong	yes	yes
Trinidad <sup>c</sup>	800	Sierra Norte	Zapotec	strong	yes	yes
Comaltepec <sup>c</sup>	1,125	Sierra Norte	Chinantec	strong	yes	yes
Capulalpam <sup>c</sup>	1,427	Sierra Norte	Zapotec	strong	yes	yes
Ixtlán	1,894	Sierra Norte	Zapotec	strong	yes	yes
NSJ Parangaricutiro	9,765	Michoacan	Purépecha	strong	yes	yes

<sup>a</sup> Population figures are from the 1990 census (INEGI 1990), except for San Andrés, where data from communal records are substituted and Nuevo San Juan Parangaricutiro, where data come from published reports (Sanchez Pego 1995; Lemus 1995). López (in process) gives a population of 6,230 for Ixtlán, but this may refer to the entire district. Abardía (1995) gives the 1994 Ixtlán population as 3,000.

<sup>b</sup> Successful communities are able to enforce restrictions on individual uses of the forest, such as clearing and wood cutting, while running logging businesses that operate under effective community controls.

<sup>c</sup> A member of UZACHI, a union of communities which manages its own professional forestry services.

Table Six: Community Resource Endowments and Institution Building

Community	Population <sup>a</sup>	EAP <sup>a</sup>	Pine permit m <sup>3</sup>	Pine m <sup>3</sup> / EAP	Successful? <sup>b</sup>
San Miguel	3,329	733	16,000	22	no
San Andrés	295	71	4,000	56	yes
Xiacui <sup>c</sup>	767	162	2,660	16	yes
La Trinidad <sup>c</sup>	800	156	3,299	21	yes
Comaltepec <sup>c</sup>	1,125	180	7,672	43	yes
Capulalpam <sup>c</sup>	1,427	340	8,000	24	yes
Ixtlán <sup>d</sup>	1,894	421	50,000	119	yes
NSJ Parang.	9,765	1,227	100,000	81	yes

<sup>a</sup> Population figures are from the 1990 census (INEGI 1990). EAP refers to the Economically Active Population and is a surrogate for the number of registered commoners. Exceptions include San Andrés el Alto, where data from communal authorities is substituted, and Nuevo San Juan Parangaricutiro, where data comes from published reports (Sanchez Pego 1995; Lemus 1995).

<sup>b</sup> Successful communities are able to enforce restrictions on individual uses of the forest, such as clearing and wood cutting, while running logging businesses that operate under effective community controls.

<sup>c</sup> A member of UZACHI, a union of communities which manages its own professional forestry services.

<sup>d</sup> López (in process) gives a population of 6,230, but this may refer to the entire district of Ixtlán. Abardía (1995) gives the 1994 population as 3,000. Both López and Abardía give the figure of 421 registered commoners, compared to the 1990 census figure of 507 as the economically active population. A member in the community states that only 278 commoners are active, and the presence of 140 constitutes a quorum.

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<sup>1</sup> For many, Hardin's formulation remains *the* commons problem, in spite of a great deal of work debunking it (Taylor 1992: 633-4). Hardin's idea continues 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 1992:194). 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 (Ostrom 1990: 23, 178; Ascher 1995: 27-30; Azhar 1993).

<sup>2</sup> E.P. Thompson (1991) discusses agrarian custom in 18<sup>th</sup> Century England and the evolution of the exclusive property rights that Westerners now take for granted. At the time, commoners – ranging from nobility, to cottagers, to copy holders and neighbors – had a plethora of different coincident usages, including gathering firewood or peat, cutting timber, putting livestock on a common pasture, gleaning after the harvest, pasturing geese along footpaths, and many others, with substantial difference from place to place. Over several centuries, the evolution of ruling ideology and court precedent increasingly favored the nobility over the less powerful commoners. By the late 17<sup>th</sup> Century, courts began to assert that the lord's waste or soil was his personal property, restrained by usages and custom. Over time, usages also became reified as properties that could be rented or sold. In this way, the novel notion of exclusive property in land developed (Thompson 1991).

<sup>3</sup> Data for this section comes from participant observation and interviews, enriched with archival research in the Oaxaca Agrarian Reform archives, financial audits, and the 1995 payroll for the forestry business (see Klooster 1997).

<sup>4</sup> It contrasts with other definitions of co-management, where government 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 and Jentoft 1996).

<sup>55</sup> In 1995, the exchange rate averaged 6.4 new pesos to the U.S. dollar, according to IMF statistics.

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<sup>6</sup> El Imparcial, (Oaxaca City newspaper). June 4, 1995.

<sup>7</sup> Subsequent refinements in theory recognize the possibility that internal difference might foster cooperation because of the gains possible through trade. "Heterogeneity can facilitate or hinder cooperation, depending on the type of heterogeneity and the context" (Keohane and Ostrom 1994: 425).

<sup>8</sup> 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 and Taylor 1992: 315).

<sup>9</sup> Mutual vulnerability is a condition of inter-dependence, such that each actor in the group values something that can be offered or withheld by others in the group, creating the possibility of sanction (Singleton and Taylor 1992).