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**COMMON PROPERTY REGIMES AS A SOLUTION
TO PROBLEMS OF SCALE AND LINKAGE¹**

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Most of us would agree that efficient resource use enhances welfare and is environmentally desirable compared to less efficient resource use, because it means that we invest, get the most out of the least, and waste little. But this proposition creates a paradox between two very well accepted principles of economics: (1) private property rights and markets allow for more efficient use of resources than does government ownership (so yield desirable environmental results), and (2) private property systems and markets are chronic underproviders of public goods like environmental health (so yield inadequate environmental results). The paradox, I would submit, is a result of mismatch in scale between institutions and natural ecological systems. That is, private property rights and markets are socially and environmentally efficient only insofar as externalities are internalized.

Virtually every environmental problem indicates a failure to create institutions that internalize externalities. Often we have failed to define property rights at all. Or we have vested ownership in too large an entity (e.g., governments, particularly highly centralized ones, but the same problem can occur in firms that become too large), creating severe principal-agent problems when owners and managers can separate themselves from the consequences of their actions. Or, finally, we have parcelled up private ownership rights to resources into units that are smaller than ecological boundaries, thus guaranteeing negative spillover effects between units. What follows is a theoretical justification for using common property regimes as a way to internalize environmental externalities and align property boundaries with ecological ones, and an addendum outlining a historical example from Japan of communities that arrived at a complex mapping of common property rights to match ecological and geographic realities.

Although full internalization of externalities is probably impossible (and extreme fine-tuning not worth the effort), the severity of environmental problems today indicates that trying harder would not be a waste of time. We need to aim at more complete capture of benefits, so that resource owners who invest in the productivity

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the good (see Table 1).³ The privateness of a right refers to the clarity, security, and especially the exclusivity of the right: a fully private right specifies clearly what the rights-holder is entitled to do, is secure so that the holder of the right is protected from confiscation by others, and is exclusively vested in the holder of the right and definitely not in non-holders of the right. It is important to note here that the privateness of a right has to do with the right, and not the entity holding it; there is no requirement that this entity be a single individual. Finally, the privateness of a body has to do with its representational claims, in that a public body claims to represent the general population and not just one interest within that population, whereas a private body represents only itself.⁴

Table 1

Type of Good, by Physical Characteristics

	Exclusion easy	Exclusion difficult or costly
Subtractible (rival in consumption)	Private goods trees, sheep, fish chocolate cake	Common-pool goods forest, pasture, fishery any environmental sink over time
Non-subtractible (non-rival in consumption)	Club or Toll goods Kiwaniis club camraderie	Pure public goods defense, TV broadcasts lighthouse beams an environmental sink at a given instant a given level of public health a given level of inflation

³ The nature of a good can change with technology. Thus TV broadcasts from satellites are pure public goods when the satellite signals are unscrambled. The advent of scramblers, cable services, and purchasable descrambler boxes converts TV broadcasts into excludable and non-subtractible goods (thus toll goods or club goods). The advent of cheap illegal descramblers converts TV broadcasts back into nearly public goods again. But at any particular technological moment, the nature of a good is indeed a given.

⁴ This definition obviously does not include all governments. Many autocratic governments neither intend nor accomplish the representation of the general public, and would be better described as private government.

This confusion of goods (a natural given), rights (an institutional invention), and owners of rights has led to serious errors. First, we fall very easily into the habit of thinking (a) that public entities own and produce public goods while private entities own and produce private goods; (b) that anything produced by government is a public good and anything produced by private parties is a private good; and finally (c) that we have established private rights to private goods and public rights to public goods. In fact, of course, there is no intellectual reason for this simple pairing off. Public entities are perfectly capable of owning and producing private goods, and private entities occasionally produce public goods (though not often intentionally). Similarly, we often attempt to create public rights in subtractible goods and private rights in pure public goods or common-pool goods, with tragicomic effects (e.g., awarding an infinite amount of rights to an exhaustible resource, or awarding exclusive rights to resources that cannot be exclusively held). This results from another error, which is to think too often of only two types of goods (public and private) and to ignore the crucial differences between pure public goods and common-pool goods.

Pure public goods are those whose consumption does not reduce the quantity available to others to consume; they are therefore ubiquitous, and in being non-rivalrous or non-subtractible or joint in supply (all synonymous) they cannot be depleted. That's the good news. The chief problem with pure public goods is provision -- who has the incentive to produce them and how will they get produced? - - and not with depletion of whatever supply happens to materialize. But common-pool goods pose both challenges for provision or supply and the risk of depletion. Not only is it difficult to get them produced, but it is easy to deplete the supply of whatever does get produced. And in spite of the enormous literature describing environmental quality as a public good, we are slowly discovering that many of the goods we thought were pure public goods are in fact finite in supply and subject to crowding: they are really common-pool goods, difficult to supply and easy to deplete. That's the bad news.

Given the distinctions among privateness of goods, rights, and rights-holders, it is theoretically possible to conceive of most of the possible combinations and permutations of resource types, property rights types, and rights holders. Surprisingly, there is very little agreement about which of these combinations and permutations are wise or efficient. There is overwhelming consensus on only two points: (1) that private goods are best held as private property, and (2) that private property rights are an inadequate arrangement for public goods/bads (i.e., where we have positive or negative externalities). There is also consensus, though weaker, on the inefficiencies (principal-agent problems and rent-seeking) that inevitably follow from vesting ownership in any entity other than a single individual with a central nervous system. Thus there is considerable controversy over when it improves matters to vest ownership in public entities or collectivities. And we are left with a gnawing problem: what kind of property rights arrangement should we design when we know that simple individual private property is inadequate or impossible?

ADVANTAGES OF COMMON PROPERTY REGIMES

I argue here that common property regimes -- that is, private property rights shared by individuals in a group -- may be what we need to create for the management of common-pool resources. Common property regimes can reduce enforcement costs, make resource protectors out of potential resource-destroyers, and offer us a way to reap the advantages of private property rights in resources without parcelling resources that are most productive when kept intact. First, sharing rights can help resource users economize on enforcement costs through collective enforcement of restraints on use and users. They can patrol eachother's use, and they can band together to patrol the entire resource system and protect it from invasion by persons outside of their group. Solving the exclusion problem then begins to solve the problems of provision and maintenance.

Second, vesting these shared rights in those who live nearest the resource enhances the incentive to protect the resource among those who face the lowest enforcement costs and who could, given inappropriate incentives, destroy the resource most easily. It follows that we can achieve the greatest improvement in incentive structures -- reducing incentives to destroy and enhancing incentives to protect -- by making sure that all, or at least primary, rights in a resource go to the community living nearest the resource. Where people still live near such resources and depend upon them, they have a built-in strategic advantage over other people in that whatever the arrangement of rights, they still possess the physical opportunity to use (and to destroy) these resources. If the people who live nearest such resources and have ample opportunity to use them then lose property rights in the resource to others, they also lose any incentive they might have felt to manage these resources for maximum long-term benefit. Now they might as well -- indeed must! -- compete with eachother and new users and claimants in a race to extract as much short-term benefit from the resource as possible. Vesting property rights in a resource's nearest neighbors strengthens the incentive of those most capable of enforcing rules about access to the resource to design rules that protect and enhance the resource. Vesting those rights in others instead destroys these incentives and converts those nearest the resource into likely poachers. Any rights scheme needs to consider the strategic importance of vesting resource rights to the communities living closest to the resource.

Finally, common property rights can operate as a way of privatizing rights to things without dividing the things into pieces. If two people want to share a typewriter or a chain saw or an automobile, they would be foolish to chop it in half and try to use their halves separately. Natural resource systems are often similar to complex machines: they can be far more productive when left intact than when sliced up. Common property regimes offer a way to parcel the flow of skimmable or harvestable "income" (interest) from an interactive resource system without parcelling

the stock (capital, principal, the resource system) itself. There are several reasons why we cannot or should not chop a resource system into individual parcels the way unthinking "privatizers" might recommend.

Sometimes the common-pool resource is physically indivisible or unboundable (the high seas, the atmosphere, tuna) so we cannot parcel up the system or stock no matter how hard we try. Sometimes the location of the productive portions of the system are highly mobile and variable, and sometimes unpredictable as well (grazing or water supply in arid lands), so resource users may prefer to share the entire area and decide jointly where to concentrate use at a particular time, rather than parcel the system and thereby impose terrible risks on some individuals. Sometimes the administrative infrastructure that would be needed to support individual property rights may not exist -- no cheap fencing, no courts -- so a community finds that sharing rights to a large resource system is an economical way to provide enforcement of the group's rights.

But another reason for using common property regimes is that they permit the internalization of externalities on a large resource system, and can improve the "fit" between institutional and ecological boundaries. In many resource systems, hilly ones for instance, uses in one zone immediately affect uses and productivity in another: deforesting the hillside ruins the water supply, uphill productivity, and downhill soil quality. If this ecological zone or resource system is divided into individually-owned parcels, then different persons may own the uphill forests and the downhill fields -- or for that matter small adjacent patches of forest and pasture -- and make their decisions about resource use independently and separately. But in doing so, they may well cause harm to each other. If these externalities are substantial, they will want to negotiate Coaseian contracts with each other (Coase, 1960). Either the downhill farmers would pay uphill forest-owners not to cut all the trees they might want to, or uphill forest-owners would cut all the trees they want to and instead compensate downhill farmers for damaged fields with the extra earnings from timber sales. Coaseian bargains assume that all parties know and can eventually agree on who is suffering, who is causing harm, what the harm-causing activity is that needs to be remedied, what the value of the losses due to damage is, and what the cost of preventing the damage would be. As Coase himself acknowledged, these bargains become impossible as transaction and information costs mount.

An institutional alternative to this series of bilateral exchanges is to create a common property regime to make resource management decisions jointly, acknowledging and internalizing the multiple negative externalities that are implicit in resource use in this setting. People who use a common property regime to manage their uphill forests all share ownership of the upland forests, restrain timbering to prevent soil erosion and damage to fields below, and earn more from their downhill farms than they sacrifice by not cutting as much uphill timber. Just as a Coaseian exchange permits people to enhance their joint efficiency by dealing directly with an

externality, so joint resource management through common property regimes may enhance efficiency by internalizing externalities. Common property regimes may become desirable when more intensive resource use multiplies Coaseian considerations due to externalities between parcels, or when individuals face insurmountable transaction and information costs in such bargaining. Coordinated management, prudent use, and prevention of externalities from arising in the first place may well be possible even when bilateral contracting to compensate victims for externalities after they occur is not. There is probably some flashpoint at which economies of scale in negotiating take over, and collective decisionmaking, collective agreement on fairly restrictive use rules, and collective enforcement of those rules become easier (less time, lower transaction costs for the owners) than endless one-on-one deals.

Finally, common property regimes for very large ecological systems can be nested (we could call this "resource federalism"), so that small collectivities manage subsections of the resource but that federations of these collectivities can be called into action if externalities among subsections arise. This is the conventional method of grouping resource users in complex irrigation systems, and it could reasonably be applied to large forests and grazing lands as well (Ostrom 1990, Tang 1992).

Even in resource systems that seem eminently divisible, where risk and uncertainty are low and uniform across the resource system, where externalities seem minor or manageable through individual contracting, and where administrative support for individually owned parcels is ample, environmental externalities resulting from uncoordinated and conflicting uses may be reasons to maintain common property at least at some level. Natural resource systems are fundamentally interactive -- forests provide watershed control, species are interdependent in ways we are often unaware of, etc. -- and may well be more productive in large units than in small ones. In order to optimize the productivity of their own parcel, owners of individual parcels may want to guarantee that owners of adjacent parcels stick to compatible and complementary uses on their parcels, maintain wildlife habitat and vegetative cover intact, allow wildlife transit, refrain from introducing certain "problem" species, and so on. In effect, owners of individual but contiguous parcels may have an interest in mutual regulation of land use -- the equivalent of zoning. In fact, zoning and urban planning are actually the creation of common or shared property rights in choices over land use, and the vesting of those rights in the citizens of a municipality. Just as zoning in a frontier area where population density is low would be an absurdly unnecessary effort but increasingly desirable to control externalities in more densely populated areas, so common property becomes more desirable, not less, with more intense resource use.

To review then: a common property regime consists of joint management of a resource system by its co-owners, and is increasingly desirable when the behavior of individual resource users imposes high costs on other resource users -- that is, as

mutual negative externalities multiply, and as resource use intensifies and approaches the productive limits of the resource system. The more completely people depend on extracting as much out of a resource system as the system can sustainably offer them, then careful mutual fine tuning their resource use becomes essential. This means that common property arrangements -- careful coordination of potentially conflicting resource uses -- should increase, not decrease, in frequency as population density and intensity of resource use increase. Collective governance is not always easy, but if the price of resource degradation is greater still, then we simply have to put up with the inconvenience of negotiating over environmental externalities: before the fact in common property regimes or after the fact otherwise. This is the price of living on a small planet.

ADDENDUM: A JAPANESE EXAMPLE

It is odd in a way that advocates of community resource management and community ownership of resources have to fight such a battle to win a hearing today, as if the "natural" or "inexorable" historical trend is toward ownership by states or by individuals. In fact, there have been times and places in history when national governments -- even harsh and dictatorial ones with burgeoning absolutist ambitions and a perverse interest in regulating some of the tiniest details of daily life through sumptuary legislation -- found community resource ownership obvious, "natural," and convenient. In the parts of the world that we now call developed -- in Europe, Britain, and Japan -- community resource management and ownership were quite widespread from the medieval period through early industrialization. And in Japan, which I know best, community resource management was valued after the 17th century in large part for its environmental benefits -- in effect, for its ability to create a good "fit" between institutional and ecological boundaries. Thus the upland commons needed to be kept under vegetative cover in perpetuity, not only as a source of kindling and fertilizer and occasional timber, along with many other forest products with agricultural and commercial value including game, but also to prevent soil erosion and control water flow.

There are three separate aspects of the evolution of community ownership of resources, which in the Japanese case occurred in the following sequence over several centuries, not all simultaneously. First emerged the notion that groups or communities (as opposed to individuals and governments) may own resources. The phenomenon of community ownership and management probably appeared first among the self-governing villages (sōson) of the early 15th century in central Japan (Troost 1990). Later came the idea that resources are finite and need to be managed conservatively by their owners, accounting for the emergence of cautious management regimes in some of these communities. But other communities may well have seen no need to adopt conservative use rules themselves until they observed

deterioration of their own resources.⁵ Thus there was probably an era of poor commons management in many areas, and more cautious resource rules probably did not spread until after Japan's 17th century crisis with deforestation (see Chiba 1956, Chiba 1970, Totman 1989, and Wigen 1985). Thirdly, the definitions and boundaries around particular forests changed over time continually as rival communities challenged each other (just as there can be disputes between individuals over where the property lines really lie or who really owns what). We may view these changes - at least in the instance cited below -- as an effort to improve the fit between institutional arrangements and ecological realities.

As forest resources became more valuable to their users, fighting over ownership and boundaries also became more worthwhile. Thus the boundaries of particular community forests were continually shifting. Generally, during the Tokugawa period (1600-1867), multi-village forests were renegotiated by the participating communities into single-village forests. My guess is that this partial parcellization occurred where transactions costs (for negotiating use rules) were high and the ecological losses or efficiency losses due to partial parcellization were negligible. So instead of an entire valley being owned by all of the villages within it, each village ended up owning only the slope above it, up to the ridge line. But if there were compelling historical or ecological reasons, a multi-village commons might persist even in the face of some conflict. I offer an example below of an area where individual households held rights to arable land, and where single villages or groups of villages held shared rights to upland meadows and forests. I have written elsewhere about how these villages manage their communal resources and design rules that discourage free-riding and shirking (McKean 1981, 1986, 1992a, 1992b). The quick review provided here focuses only on which village(s) owned which commons, and demonstrates that who owned what made enormous sense in terms of internalizing externalities and achieving "fit" between institutional arrangements and ecological boundaries.

The area in question is a valley containing three villages (Yamanaka, Hirano, and Nagaike) around a large lake (Lake Yamanaka), nestled against Mount Fuji. Documentary evidence from the late 1500s and early 1600s indicates that the principal users of the uncultivated uplands of this valley then were people who resided in the valley, not people who lived further away (Hôjô 1979, 35-38). Dwellings and individually owned cultivated fields are located near the lake's edge. Three sides of the valley slope upward a short distance to the ridges of the mountains that embrace

⁵ I see no reason to argue that pre-capitalists are innately or self-consciously conservationist. Some pre-capitalist cultures espouse the notion that the natural world is infinitely abundant (see Berkes 1987 and Brightman 1987). But even such societies may produce conservationist outcomes in their resource use simply through practices that optimize yield per effort (see Hames 1987 and Stocks 1987).

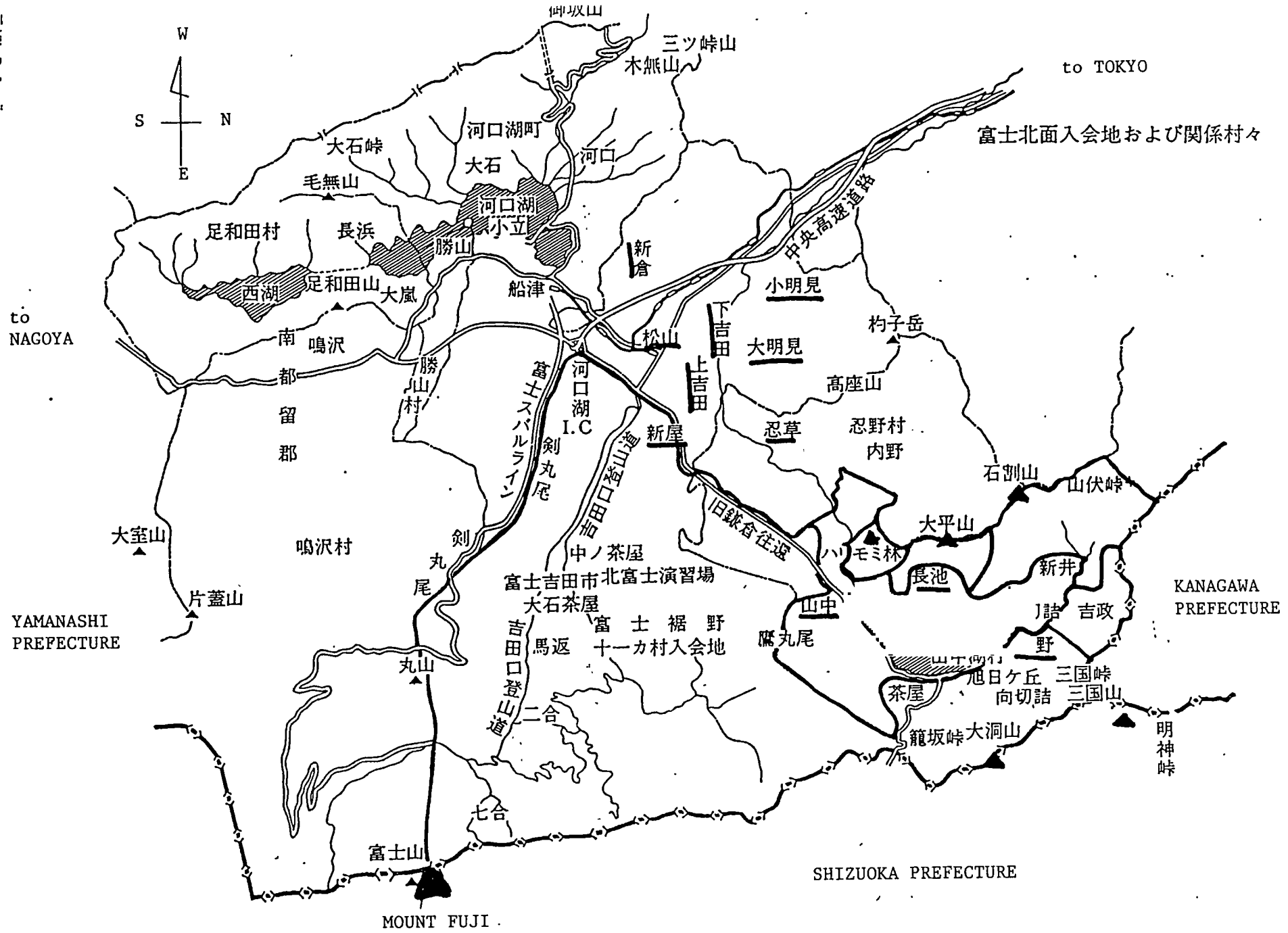
the valley. The forests and meadows of these three sides are divided into patches that ring the lake; each patch runs from lakeshore to ridge line (see Map). Each village now has exclusive ownership of the patch that is essentially directly uphill from the village itself, and adjacent villages share the patches between them. In this way the community with the greatest stake in maintaining vegetative cover above it owns that forest, and forests between villages are jointly owned and managed by the two or three villages with the greatest stake in coordinating their uses.

But the fourth side of the valley is the Fuji slope, much more extensive in area than the slopes on the other three sides of the valley (because Mount Fuji is so much higher than the mountains around it). This slope extends directly above the village of Yamanaka, so applying the implicit rule discovered above we would expect to find that Yamanaka has exclusive use of this slope. However, this is not quite so. In spite of the Tokugawa trend of parcelling multi-village commons due to conflict between villages over how to manage the land, this slope survives today as a commons co-owned by 11 villages: by the 3 within the valley (Yamanaka, Hirano, and Nagaike) and the 8 beyond the valley that claimed traditional use rights. This arrangement was finalized in a series of lawsuits from 1709 to 1736, during which one or more of these eight "outsider" villages sued the "inner" three for attempting to block their traditional access to the large slope (Hôjô 1979, 39-332).

In the 1736 settlement, the court declared that five of the villages had well-established senior rights to use the slope as they wished, including the right to extract products for sale to others: Yamanaka, Hirano, Nagaike, and two villages separated from these three and the Fuji slope only by a low ridge, Shinogusa and Shin'ya [Shin'oku? Niiya?]. Moreover, among these five, the two located closest to the slope itself, Yamanaka on the lakeshore and Shin'ya halfway up the slope but just over the western ridge of the valley, had the highest rights of all, and were essentially allowed to enforce this settlement by excluding others. The remaining six villages, well beyond the western ridge and further away from the slope than Shin'ya, had more limited entry and use rights. They could take only grass and kindling for their own consumption, and were not allowed to "work the mountain" [yamakaseqi] for income-generating purposes (Hôjô 1979, 122-128).⁶

The three villages near the lake were the smallest of the eleven in terms of population and agricultural production (see Table 2). Their power in negotiations and the courts came not from any economic power but from the fact that they were

⁶ The 1736 decision did not settle all conflicts of course. Disputes continued over how to divide income from the North Fuji commons, over the invasion of the five senior villages' rice fields by the six "junior" villages, over the division of cultivable portions of the commons into arable fields, and so on. See Hôjô 1979, 145-287, 363-371.

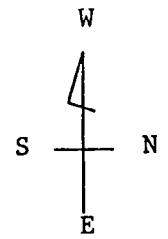


MOUNT FUJI .

to TOKYO

富士北面入会地および関係村々

to NAGOYA



KANAGAWA PREFECTURE

YAMANASHI PREFECTURE

SHIZUOKA PREFECTURE

足和田村

長浜

河口湖町

大石

河口

西湖

南都留郡

船津

新倉

小明見

杓子岳

松山

大明見

高座山

勝山村

富士スバルライン

河口湖 I.C.

新屋

忍草

忍野村

石割山

山伏峠

大室山

鳴沢村

丸尾

中ノ茶屋

富士吉田市北富士演習場

旧鎌倉往還

大平山

モミ林

長池

新井

KANAGAWA PREFECTURE

吉政

大石茶屋

富士裾野

十一カ村入会地

山中

鷹丸尾

野

吉政

吉田馬返

二合

茶屋

旭日ヶ丘

三国峠

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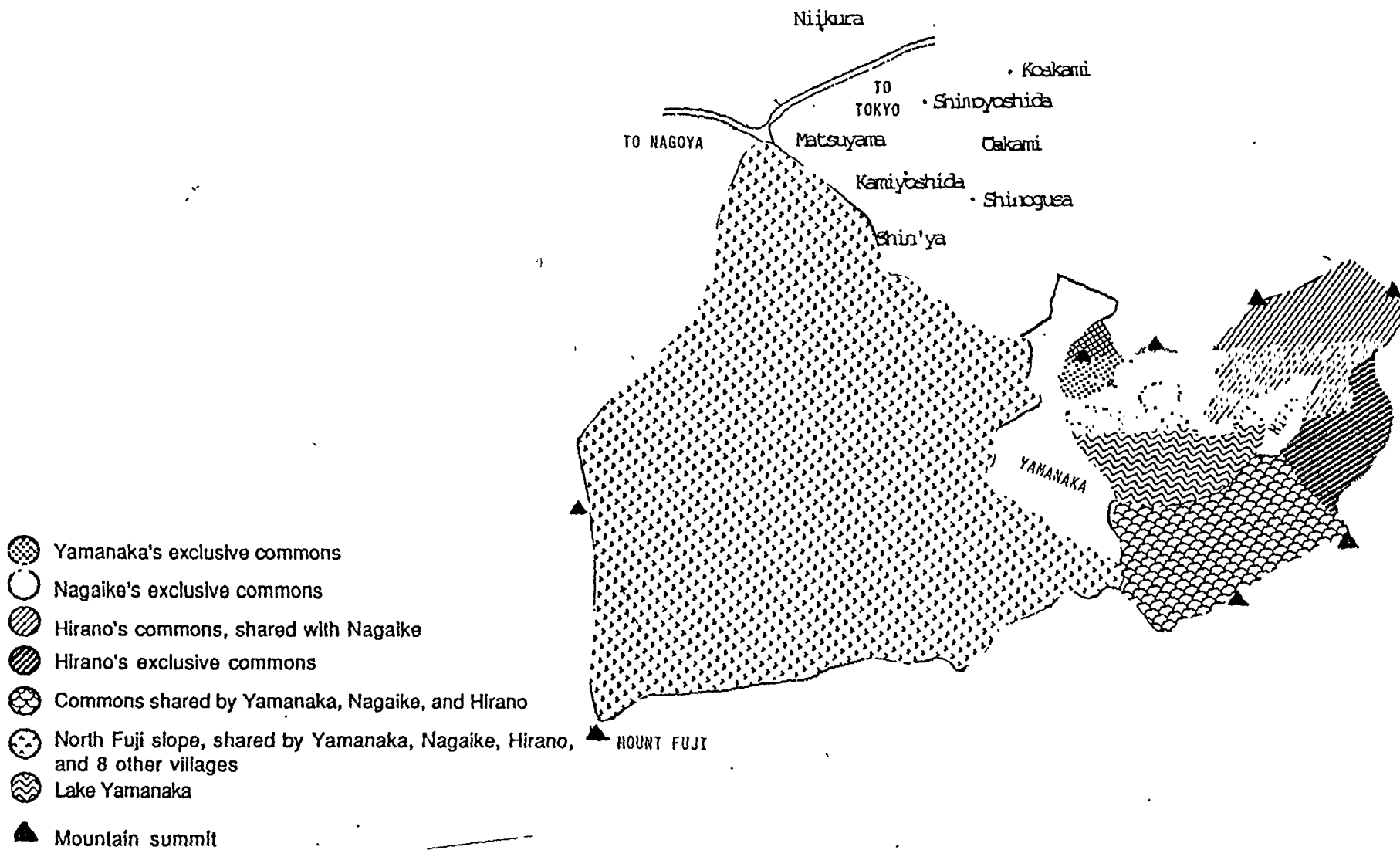
大洞山

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IRIAICHI SURROUNDING THE COMMUNITIES OF
YAMANAKA, HIRANO, AND NAGAIKE



strategically located at the resource, and in the case of Yamanaka and Shin'ya right on the routes most likely to be used by anyone entering the valley from its western entrance. For these geostrategic reasons they had been the earliest claimants, had the greatest incentive to enforce and patrol their claims (and relatively lower costs for this effort), and thus had the strongest legal claims.

Table 2

The Eleven Villages Sharing the North Fuji Slope (circa 1814)

Village	Assessed Agricultural Yields [<u>sondaka</u>]*	Households	Population	Horses
Yamanaka	26.5.4.9	76	360	75
Hirano	24.6.1.5	62	250	30
Nagaike	3.1.0.4	34	172	30
Shinogusa	30.2.3.6	123	429	79
Shin'ya**	56.4.8.3	135	529	30
Kamiyoshida	628.5.1.1	335	1,304	26
Shimoyoshida	898.1.8.6	508	2,025	60
Matsuyama	35.8.8.6	111	451	25
Shinkura**	285.7.5.5	229	944	40
Ooakami**	155.8.2.9	149	604	52
Koakami**	205.9.7.0.8	249	871	71

*Yields are measured in the classic Tokugawa agricultural (decimal) units of koku.to.shô.gô (10 gô equal 1 shô, 10 shô equal 1 to, and 10 to equal 1 koku). One koku equals 180 liters or 5 US bushels.

**Pronunciation of these names uncertain.

Source: Hôjô 1979, 60

These three villages, as well as Shin'ya, also made use of these areas in ways that also increased their incentive to pursue their claims. The villages in the valley did not have particularly good soils, or much flat land, on which to cultivate crops, and their agricultural production was low. But the hilly meadows made good grazing land for packhorses and the forests provided important income in the form of fuel and useful materials, all fairly nearby. These mountain commons were somewhat less important as a contribution to livelihood for the more distant villages beyond the valley and at lower altitudes, which had much more arable land, fewer animals (only those needed to work the soil, no additional horses offered for commercial transport over the mountains), and a greater distance to cover in bringing back any cumbersome high-bulk items from the mountain. Thus the three/five villages closest to Mount Fuji had the greatest incentive to preserve senior if not exclusive access to the slope. The six junior villages outside of the valley had less need for the slope and found it more troublesome to use. Moreover, they would suffer very little -- because of their location beyond the immediate watershed -- if the slope were depleted or if poor

management caused environmental problems within the valley. These six were powerful enough to demand some official participation and junior rights, but were not interested enough to fight for more than that. Yamanaka needed their cooperation and did not want an invasion by these villages. Thus a bargaining "space" existed for compromise on hierarchically layered rights, all to the benefit of the environmental health of the North Fuji slope.

The common property arrangements for this valley offer a near-perfect "fit" with ecological and institutional considerations both. First and most obviously, the commons in question occupy one complete watershed basin, and the principal rights-holders are the villages that lie in or near the strategic access to that basin. Second, the uphill areas within the basin are owned and managed by the communities immediately below, which would be those with the greatest stake in the environmental quality of those areas AND the greatest ability to enforce their will. Thus the patches of commons ringing the lake on three of its sides consisted, in order and proceeding clockwise, of Yamanaka's exclusive commons, Nagaike's exclusive commons, a commons shared by Nagaike and Hirano, Hirano's exclusive commons, and a commons shared by Hirano (including Nagaike, a village originally founded by Hirano residents) and Yamanaka.

The fourth (southern) side of the valley was the North Fuji slope, a huge expanse of forest and meadow probably too large for the single village below it, Yamanaka, to patrol alone. We might have expected to see a parcelling of this slope into village-sized portions as on the other three sides of the valley. There would then be 11 sections, one for each of the 11 co-owning villages. To insure that the owner of each section would have a stake in the environmental health of the lowlands, each section would be a strip running vertically from lakeshore to the Fuji summit, after the manner of the patches around the other three sides of the lake. But this did not happen. Unlike the rest of the valley, which undulated around corners and had obvious sub-ravines and sub-sections, parcelling the Fuji slope would have been ridiculous in ecological terms. Even to the untrained eye, the slope is one smooth unit with a broad swath of meadow running horizontally across it. This meadow requires annual firing, so the 11 co-owning villages would have to coordinate their actions anyway -- parcelling would not reduce negotiations or transactions costs, and could reduce productivity.

So instead of further parcelling, a system of nested and layered rights shared by multiple villages emerged on this particular portion of the valley. Yamanaka and Shin'ya, strategically located so as to be able to control the access of others to the slope, had the highest or most senior rights to the slope. Hirano, Nagaike, and Shinogusa (somewhat further beyond the western ridge than Shin'ya) held "medium" rights in the slope. They were closer to the slope than any other villages outside of the valley, but their members still had to pass through the village of Yamanaka to reach it and thus had to defer to Yamanaka to some extent in their use of the slope.

Finally, the six "outside" villages were able to hold on to junior rights to the slope. They were powerful enough (in terms of population and economic strength) to invade the slope if they wanted to, and this fact made it necessary for the higher rights-holders to strike a bargain with them. In return for junior co-ownership rights and judicious use of the North Fuji slope, the six junior rights-holders cooperated with resource management rules agreed upon by all eleven villages (as confirmed by the 1736 court), rather than invade and destroy the slope.

Thus these communities struggled to define shared or common property rights in their commons over several hundred years. During this process they resorted to local and national (Tokugawa) courts to pursue their grievances and claims, and the courts relied on documentary evidence and legal precedent (and perhaps a bit on political reality) to determine which community (ies) owned which rights to which commons. But at no point before 1867 did the national government display any interest in asserting any claims of its own over this much-contested land. Rather, the national government's principal interest was in collecting taxes, and regardless of lawsuits over the land, at any given instant there was an owner who could be dunned for taxes. In contrast to the land-hungry regimes in developing countries today, the national government in Tokugawa Japan-as-former-developing-country considered community resource management appropriate and convenient. Communities like those in the Fuji basin negotiated amongst themselves and took each other to court. They eventually arrived at an arrangement that took both ecological and strategic political realities into account and lodged property rights in ascending order in the greatest stakeholders, those who would suffer most from environmental deterioration if it occurred, and those who also had the greatest advantage in enforcement. In the end, the choices of communities like these helped the Japanese archipelago recover from deforestation.⁷

⁷ Chiba (1956, 1970) and Totman (1989) suggest that community management was part of the problem during 17th century deforestation, and I agree that either direct or vicarious experience with poor management is the only thing that will cause a community to develop prudent sustainable management. But I have argued elsewhere that whatever role community management played in contributing to the deforestation of 17th century Japan, surviving commons were part of the recovery (McKean, 1988). In addition it is vital to acknowledge that perhaps the greatest contribution to recovery was the development, by feudal lords for use on their own domain forests, of scientific silviculture (Totman, 1989).

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