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WHEN "COMMUNITY" IS NOT ENOUGH: INSTITUTIONS AND VALUES IN COMMUNITY-BASED FOREST MANAGEMENT IN SOUTHERN INDIANA

by

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When "Community" Is Not Enough: Institutions and Values in Community-Based Forest Management in Southern Indiana

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Community-based management is increasingly viewed as the most appropriate arrangement for promoting sustainable development of natural resources. A common assumption is that the values of community members, often assumed to be homogeneous, foster successful outcomes. However, analysts often treat these values and their homogeneity as exogenous factors, ignoring the community's potential role in managing members' values. This study of community-based forest management in two southern Indiana sites examines how the members of the two communities created institutions to screen, maintain, and defend their values. Analysis reveals that different institutions shaped members' preferences and led to different levels of community stability, conflict management, and natural resource condition. We argue that understanding community-based management processes and outcomes requires careful attention to how institutions facilitate or hamper the construction of community members' values.

KEY WORDS: community-based management; forest management; homogeneity; institutions; Indiana; values.

INTRODUCTION

The Maple and Oak[3] communities of southern Indiana possess strikingly similar characteristics: the members of both groups value the benefits of living in a small community; they have chosen lifestyles that place high importance on conserving their natural resources; they own and manage

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forests communally; and they have used their forests in similar ways, emphasizing spiritual rather than material benefits. Given these characteristics, especially regarding the appropriate use of a forest, an observer might claim that each community boasts members with relatively homogenous values.

At first glance, the conditions of these communities' forests testify to the strength and homogeneity of their members' values. Located in the same biome, each forest contains similar tree species of about the same size and age class. Diversity and vegetative abundance are similar. In fact, most forest ecologists would judge them to be nearly identical: two relatively undisturbed, secondary-growth stands typical of southern Indiana. This outcome matches the expectations described in numerous studies concerning community-based natural resource management: scholars and policy makers argue that community members' values, often assumed to be homogenous, are crucial to successful collective outcomes.

Yet despite the similarity of values and forests in Maple and Oak, the institutions that govern each community are quite different, especially the formal and informal rules that relate to the screening of potential members, as well as the maintenance and defense of the community's values about appropriate forest use. The differences between these institutions have generated distinct and important consequences for both the communities and their forests. Maple's institutions have prevented widespread dissension within the community. Members enjoy a relatively stable membership and collective decisions characterized by compromise and consent. Maple institutions also have prevented the fragmentation of their community forest, which has remained the same size as when the community purchased it. In contrast, Oak's institutions have not succeeded as well in mitigating conflict, facilitating compromise, or keeping their forest intact. Some Oak members have sought resolution of intra-community conflict through the courts. Others have exercised their right to obtain private plots within the community forest, contributing to the gradual decrease in the forest's original size. One member even logged his land.

In this paper, we argue that values alone within a community are insufficient to protect natural resources in most empirical settings. Even in the case where strongly-held beliefs about the importance of both nature and community-based decision making exist, individuals do not always succeed in constructing institutions that provide incentives to use resources sustainably. In Maple and Oak, where members share a strong value for the nonconsumptive use of forests, differences in outcomes reflect the dissimilar institutions they have constructed to govern themselves.

This study seeks to contribute to the discussions of scholars, policymakers, and officials from governmental and nongovernmental organizations who advocate "community-based" natural resource management programs. Our central argument is that achieving a successful collective outcome requires communities to do more than just share values; they also must possess institutions to translate their values into rules that members follow. Further, we argue that communities can actively "manage" these value to increase the likelihood of better collective outcomes. While many institutions may contribute to successful outcomes, in this study we focus on institutions that identify, maintain, and defend members' values in ways that reinforce particular values and facilitate reaching desired social ends.

The study, like much of the work dealing with community-based management, does not offer a definitive conceptualization of what constitutes a community; in fact, we would argue that none exists (Agrawal and Gibson, forthcoming). A great deal of work, however, uses the term "community" as a holder for value homogeneity. This analysis attempts to demonstrate the weakness of this use of the term "community" by focusing on how the values of communities may or may not be translated into outcomes.

Our approach is in no way meant to deny the importance of values: too much theoretical and empirical data exist that demonstrate how values are crucial to outcomes. Rather, this analysis explores that while necessary, values alone may be insufficient for producing collective goods. Further, it also demonstrates how communities intentionally can construct institutions that foster systems of values consonant with natural resource management. Although our cases are from the United States, we believe the theoretical foundations of this analysis have broader significance, and thus we place our discussion in the context of work from around the world.

We develop this paper in five sections. First, we discuss how contemporary studies regarding community-based natural resource management incorporate community values in their explanations, and how values and value homogeneity often emerge as central, but exogenous, factors in explanations of successful resource management. We argue for the endogenization of values (and their assumed homogeneity), i.e., an investigation into what characteristics are shared and how they are linked to the questions being explored. As part of the task of unpacking values and the concept of homogeneity, we assert that a community can manage their resources in part by screening for, maintaining, and defending their values. Next, background information is provided about Maple and Oak, two forest-owning and managing communities in Indiana. Since an examination of forests and institutions requires using methods from both the natural and social sciences, we examine the condition of each community's forest in section three. Then we compare and contrast the institutions of the two communities that pertain to screening, maintaining, and defending values about their forests, and we examine the consequences of these institutions for the communities and their forests. The study concludes with a discussion

of the importance of these findings for the self-governance of natural resources.

COMMUNITY, VALUES, AND THE SELF-GOVERNANCE OF NATURAL RESOURCES

Conventional wisdom regarding the appropriate locus of authority for conservation has undergone a remarkable *volte face* in recent years. Many scholars and practitioners have viewed local communities as the despoilers of nature. According to this tradition, local communities are groups of people whose unconstrained consumption of natural resources needs to be reigned in by enlightened central governments. Some contemporary work still echoes this tradition (e.g., Eckholm, 1976; Pearce, 1988; Raven, 1991; Wilson, 1992), but recently scholars and policy analysts have seen the values and practices of local communities to be critical in conserving natural resources (e.g., Arnold, 1990; Clugston and Rogers, 1995; Dei, 1992; Douglass, 1992; Fellizar, 1994; Ghai, 1993; Perry and Dixon, 1986; Robinson, 1995; for a review, see Wisner, 1990). It is easy to understand why: centralized conservation efforts generally have failed, the resources necessary to impose top-down strategies are dwindling, and a demand for more inclusive decision-making structures is growing (Agrawal and Gibson, forthcoming).

The promise of community-based conservation is a montage of facts, ambiguity, and hope. The facts include examples of communities that have managed their resources relatively well over long periods of time (Berkes, 1989; Bromley, 1992; McCay and Acheson, 1987; Netting, 1981; Ostrom, 1990; Peters, 1994). The ambiguity stems from our lack of knowledge about why some communities appear to manage their resources well, while others do not (Ostrom *et al*, 1994). And the hope of many activists is that governments, after realizing that top-down conservation efforts have failed, will devolve power over natural resources to local communities, where members will use their resources sustainably.

On the basis of this promise of community, advocates of locally-based conservation argue that communities are the best place to vest authority over the management of natural resources. International organizations such as the World Bank, the Worldwide Fund for Nature, The Nature Conservancy, the Ford Foundation, and the United States Agency for International Development have "found" community and now pour significant resources into community-based conservation projects and research. Conservationists now realize that without the word "community" in their proposals, they are far less likely to receive funding for their projects.

When speaking at the level of community, however, the current approach often implicitly or explicitly makes several important assumptions. One is that the values of a community are important to community-based

resource management (Kleymeyer, 1994). Another is that a community's values are consonant with such management (or can be made to be consonant, given the right education, conservation programs, incentives, etc.) (Redford, 1990). Still another is that the members of a community share homogenous values and that this homogeneity plays a critical role in successful group outcomes. While a great number of case studies exist to support the first assumption, and debate continues about the second, it is the last assumption which may be the weakest, and which we explore here.

Groups located in rural areas are, in fact, quite likely to share similar characteristics along several social dimensions. People of the same ethnic group or caste tend to live together in the same area, indicating that the individuals share fundamental values and might endure less conflict over social goods than do people of different ethnic groups or castes. People living in the same locality often engage in similar occupations, which reduces income disparity among individuals. Research also shows that the type of social interactions found within some communities facilitates collective decisions. In small, rural groups individuals tend to have many interactions with each other. These interactions, in turn, produce public and interconnected reputations among community members, facilitating trust and shared understanding (Boulding, 1972; Ostrom, 1990; Runge, 1981; Taylor, 1982). Consequently, it generally is taken for granted that a community's homogeneity implies a set of shared values, which leads to optimal social outcomes (e.g., Johnson and Libecap, 1982; Singleton and Taylor, 1992).[4] Such an approach treats value homogeneity as a central, yet exogenous, explanation for successful community-based management.

[4]Indeed, the theoretical and empirical literature regarding group homogeneity and successful social outcomes is decidedly less clear than the community-based management literature infers. Many have speculated that differences in group size, individuals' assets, individuals' information, and individuals' payoffs should be negatively related to successful collective outcomes. But theoretical and experimental work regarding collective action dilemmas do not lead to unambiguous results. As group size increases, it is thought that the ability to achieve cooperative outcomes decreases (Olson, 1965; Weissing and Ostrom, 1991). But size interacts with a number of other important variables (e.g., marginal value of contribution to the social outcome, marginal return to the individual, ability of the community to muster the resources necessary to protect their resource, and amount of collective good produced) which may diminish its effect. One encounters the same contingency with other measures of homogeneity. For example, while it may be thought that differences in assets decrease the ability of reaching cooperative social outcomes, such differences may, in fact, facilitate success, if certain members have stronger interests in achieving the outcome (Keohane, 1984; Olson, 1965). Moreover, while information about other people usually helps individuals to cooperate in collective action, the contingent strategies of individuals may preclude collective action altogether (Fudenberg and Maskin, 1986). Furthermore, while equal returns to participation may be intuitively pleasing, they may under-reward those who have worked the hardest to produce the social outcome, thereby imperiling it altogether. The only unambiguous finding from such work is that the homogeneity of any single factor does not lead to any socially desirable outcome.

There are at least three problems with this conventional view. First, while researchers are quite willing to place the burden of explanation on the shoulders of the homogeneity of values, few attempt to wrestle with the difficult task of conceptualizing it. Which exact trait of community members is considered homogeneous? All human groups are stratified along numerous dimensions (Grusky, 1994; Rae, 1981; Sen, 1992). To assert a strong causal role for the homogeneity of a community requires that the analyst at least specify what is actually homogenous. The implication of most existing studies is that community members share something—and that something usually includes values. However, such studies rarely identify which exact value is shared.[5]

If value homogeneity emerges as a central explanatory variable in a study, it would also be helpful if attempts to measure the salient homogeneous characteristic. Suppose 90% of a group's members share a trait—is this good enough to warrant the label "homogenous?" Is the proportion important? Why? In the face of such difficulties many authors use the concept of "relative homogeneity"(e.g., Singleton and Taylor, 1992). This, too, is unsatisfying, for without numerous comparative cases to demonstrate what is meant by the relative state, such measures are empty. Unfortunately, the difficulty of comprehensive fieldwork at the local level means that most analyses of communities and natural resources remain focused on, at best, a few cases.

A second problem with this view is that if values and their homogeneity are central explanatory variables, their link to collective outcomes must be explored in detail. Although widely assumed to be important, few studies provide an explanation of exactly how the asserted homogeneity affects the actual management of a particular resource, even in the face of studies that show cultural proclivities for resource degradation (e.g., Ascher, 1995; Kiss, 1990; Park, 1992). For example, Western (1992) claims that the Maasai community's norms helped to guide them to successful collective outcomes regarding their use of natural resources. But throughout his study he consistently notes infighting, fraud, and a persistent lack of consensus within the ethnic group, as individuals clashed over different visions of natural resource use and management. While the Maasai may have similar or even perfectly homogenous preferences over numerous aspects of life, Western fails to explain exactly which type of homogeneity was the most important or how this was linked to successful outcomes.

A third problem, and central to this study, is that treating values and value homogeneity as exogenous factors overlooks how communities can "manage" their values. Values are not static givens, but can vary across individuals, time, and space—even the small space of a single rural community. For a community to possess a majority of members who hold specific values, it must identity members' preferences using rules that can help screen out or sideline those who hold contrary values, maintain the desired values over time, and defend those values against individuals whose values might have changed (Murphree, 1994).

[5]There is excellent work which does not assume homogeneity among community members (e.g., Poffenberger, 1994; Bromley, 1992; Agrawal, forthcoming). For a critique of this assumption, see Agrawal and Gibson (forthcoming).

If values, and especially homogenous values, are to shoulder any significant part of an explanation of successful collective action, they must be made endogenous to a study. And if they are made endogenous, we argue careful attention should be given to the institutions that communities can construct to deal with translating their values into outcomes in the face of contingencies. Studies must establish exactly how "community spirit" (Ascher, 1995, p. 87) and "collective commitment" (Western, 1992, p. 47) are critical to success. While institutions such as those that help communities to screen, maintain, and defend values may have evolved over centuries, it is highly likely that day-to-day activities are necessary for a community to be successful (Ostrom, 1990). These activities can be identified and examined.

Such an enterprise is not merely an academic exercise. As governmental and nongovernmental bodies allocate scarce development funds, work which espouses the similarity of community members' values as fundamental to successful outcomes (without explaining why or how) may help to reward communities whose members possess numerous cultural similarities over communities which, while less homogenous, may have a history of creating successful self-governing institutions. And given that the politics of developing countries often fracture along ethnic lines, development aid delivered with reference to homogenous values can quickly become more misdirected and politicized, all in the name of community-based resource management.

Of course, endogenizing homogeneity is not a new enterprise to the social sciences. Anthropologists have long been at the forefront of efforts to understand how local practices help to forge and to maintain values. For years theorists have been interested in how communities maintain a similitude among members (e.g., Cancian, 1989). Institutions of enforced philanthropy, for instance, act to level the incomes of community members (e.g., Wolfe, 1986). In some cases, a shared belief in the scarcity of desired goods promotes cultural institutions of shared poverty (Foster, 1965).[6] In

[6]One of the centra! debates in anthropology has been between the homogeneity and heterogeneity theorists. This debate is similar to, but different from, the arguments presented in this paper. Homogeneity theorists generally argued that peasants can be considered homogenous, and that **they** have institutions that maintain their relative homogeneity. Heterogeneity theorists argued that communities have significant differences among members, and that institutions do not completely level them. In these respects, this debate has relevance to this paper. But the anthropologists who entered this debate also differed over the open or closed nature of peasant communities, and the origin of the homogeneity and heterogeneity. Additionally, this paper addresses individuals who may not be considered peasants. For a review of the anthropological debate, see Cancian (1989).

the contemporary rush to validate the community as the appropriate locus of authority over natural resources, however, the variability and dynamism of community values that anthropologists have explored deeply are often ignored.[7]

The work of institutional analysts also has been instrumental in understanding how community members construct cooperative solutions to the problems of natural resource management, especially of common-pool resources (Ostrom, 1990). This institutionalist view focuses on the formal and informal rules that impede or facilitate collective action, such as village councils, traditional authorities, work groups, savings associations, etc. Included in the foci of institutionalists is the pattern of property rights over resources, which provides incentives for some behaviors while discouraging others. Indeed, this literature has shown that institutions provide incentives which can inspire conflict even among members of a group who may share fundamental norms and values, ethnic histories, language, or other social attributes. Institutional scholars focusing on common-pool resources have generated important insights into how, when, and why certain individuals choose to construct agreements about the use and management of their resources (Berkes, 1989; Bromley, 1992; McCay and Acheson, 1987; McKean, 1992; Ostrom, 1990, 1992; Peters, 1994; Stevenson, 1991; Wade, 1987).

While common-pool resource studies have approached the issue of homogeneity and natural resource management by investigating individuals' assets, use patterns, perceptions of risk (Ostrom, 1992), and feelings of reciprocity (Oakerson, 1992; Runge, 1981, 1984), these scholars generally focus on how institutions transform given individual preferences into outcomes; little of this work has investigated the reverse causal direction, i.e., how institutions may shape individuals' preferences (Eggertsson, 1990; Knight, 1992; North, 1990; Ostrom, 1990). By ignoring how communities might actively construct institutions to affect values—in this study, for example, to screen, maintain, and defend values regarding resource management—common-pool resource scholars are missing an important aspect of successful collective outcomes.[8]

To examine these links between values, institutions, and outcomes we examine two communities whose members manage forest resources in common. Like anthropologists, we do not assume that the communities are homogeneous along any certain dimension, but try to establish the extent of similar values with data. Like institutional scholars, we do not assume that values alone can drive successful collective outcomes, but try to explore how institutions help translate values into outcomes. Combining these approaches we seek to determine if, how, and in what ways communities construct institutions to preserve their values and how such activities impact their natural resources.

We selected these particular communities because of their similarity in values, resource use (primarily nonconsumptive), location, and physical aspects of the forest ecosystem. Our study uses data collected by two teams of researchers over the course of several months employing methods that included interviews, participatory rural appraisal exercises, archival data, county land records, and ecological field work in the forests (see Y773, 1996; De Castro *et al*, 1996). Data were collected using the set of protocols developed by the International Forestry Resources and Institutions Research Program (IFRI, 1996). The IFRI protocols, discussed below, are designed to collect both social and biological data in order to understand relationships between communities and their forests.

SEEKING NATURE AND COMMUNITY IN SOUTHERN INDIANA

Many individuals involved with social movements in the United States in the 1960s and 1970s questioned the materialist values they believed to be dominating mainstream culture. Some chose to live alternative lifestyles. The two groups in this study are outgrowths of such choices: members of Oak and Maple seek to lead lives based on spirituality, community reliance, and respect for nature.

Maple Community

The Maple community is situated in Monroe County, in southern Indiana (see Fig. 1). The community lies about 10 miles southwest of the city of Bloomington, where many members work and use public and private services. The community is located in a region characterized by rolling topography of low hills, averaging between 500 and 1000 ft above sea level. The underlying geological structure is the Interior Plateau, which is comprised of layers of sandstone, siltstone, shale, and limestone. Forests cover more than one-half of the county's land area. About two-thirds of the land in the county is privately owned (Spencer *et al.*, 1990, pp. 48-50).

The community was established in 1975 when members of two different groups seeking to live alternative lifestyles joined together to form a corpo-

[7]Of course, a problem arises for local management advocates if a community's homogeneous preference happens to include practices that destroy one or more of their resources (Western and Wright, 1994). Such cases, however, receive less attention than those studies which demonstrate that communities can hold a conservation ethic. The tension is generally ignored or assumed away with the argument that community members will revert to or become conservationists when they receive the additional benefits based on their new rights to the resource, and/or when their destructive practices are countered by an "education" program that will help locals acquire an ecologically appropriate (and homogenous) preference.

[8]This is not to suggest a unidirectional relationship from institutions to values; clearly institutions are themselves a product of values. This interaction between values and institutions does not mean, however, that the two cannot be meaningfully separated and examined.

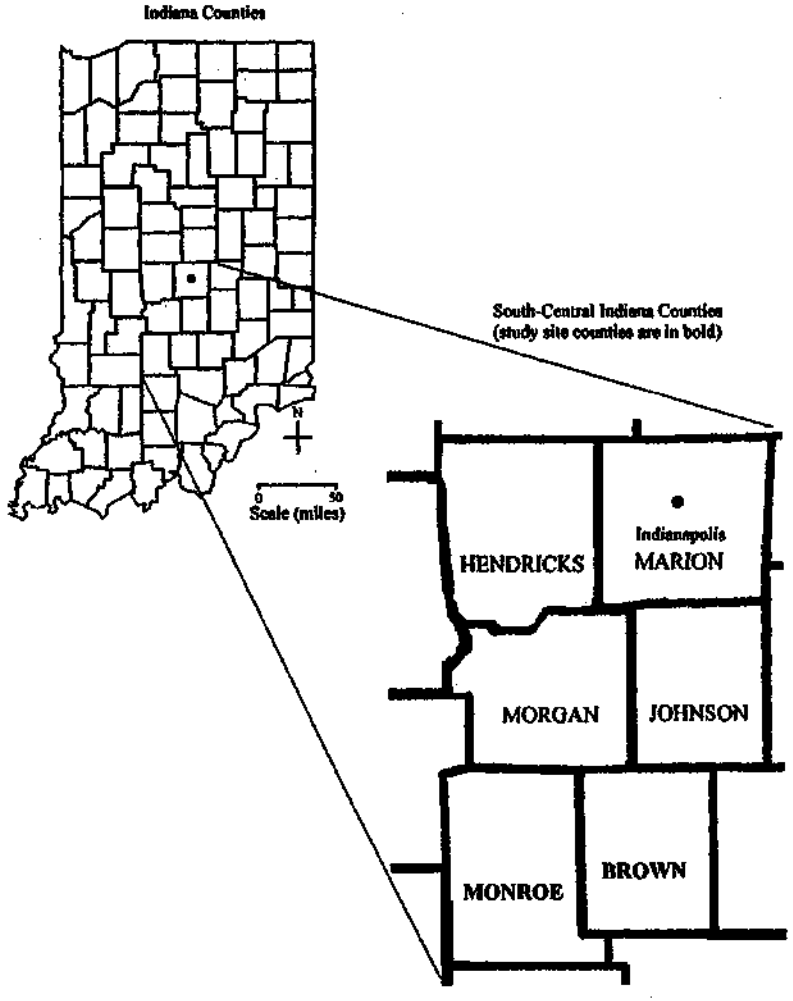

Fig. 1. Location of the study sites.

ration in order to purchase a 304-acre tract of land. The members of Maple had little money: after paying 10% down on the land purchase, they lived in tepees, cooked over wood stoves, and hauled water from cisterns. An early community acquisition was a truck, named "Alice," used in the creation of a community garden in 1976. Members went on to plant a community orchard and build a community kitchen and a communal dwelling.

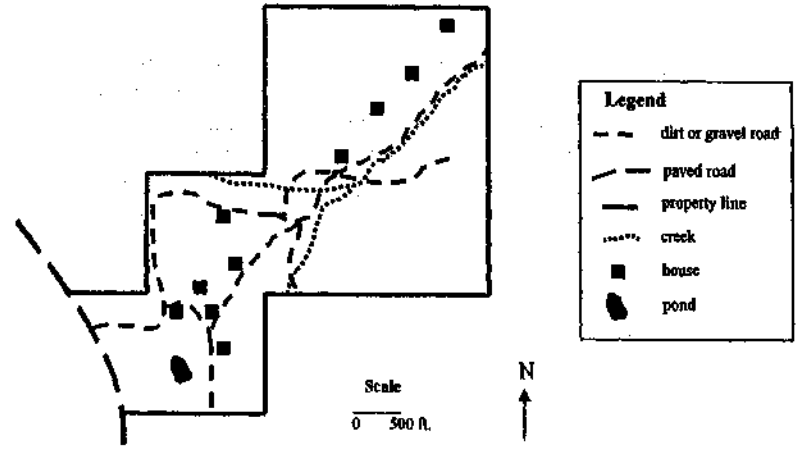

Fig. 2. Map of Maple community.

Currently, most of Maple's total area of 304 acres is forested. The property includes a series of 15 private plots totalling 104 acres, which run along a gravel road and a creek (see Fig. 2). Thirty individuals currently live in Maple, distributed among ten home sites, all of which have electricity and telephone connections. Five home sites are owned by people who do not reside within the community. Maple experiences a small influx of individuals in the summer from those who desire to camp on the land or come to visit community members.

Oak Community

The Oak community is located in Brown County, in southern Indiana (see Fig. 1). The closest larger towns to Oak are Nashville, which lies about 6 miles distant, and Bloomington, about 15 miles away, where most of the members work. The community is officially designated as a nonprofit corporation within the state of Indiana.

Brown County is characterized by narrow ridges, steep slopes, and narrow bottom streams. Like Maple, the underlying geological structure features layers of sandstone, siltstone, shale, and limestone. Soils are generally poor for agriculture, and the county is now predominantly forested. Federal and state governments own almost half of the county's land (Spencer *et al.*, 1990, pp. 48-50).

The community began in the late 1960s, when two individuals sought to create a community where people could live together in cooperation and ex-

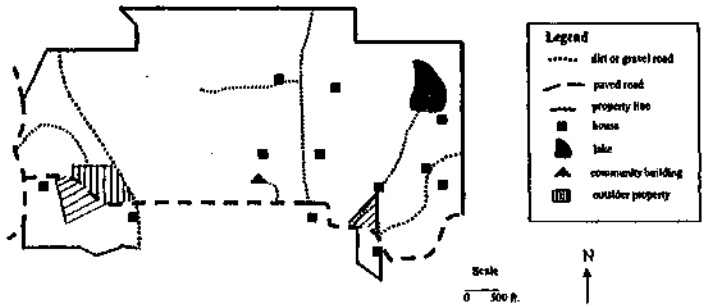

Fig. 3. Map of Oak community.

perience alternative, environmentally-oriented lifestyles. To this end they purchased 1600 acres of forested land in Brown County and posted signs in a public park in nearby Bloomington, inviting people to participate in their vision. Many people accepted their invitation and took up residence on the land. In 1971, the two founders, dissatisfied with the direction of the community, sold half of the land and gave the other half to the remaining residents. Of the hundreds of individuals who came to be part of the community, the population stabilized at around 40 individuals in the 1970s.

Oak is dispersed among 489 acres of land with elevations ranging from 600 to 800 ft above sea level. Homes are located on the western, southern, and eastern ridges and along roads (see Fig. 3). Oak currently has a population of 35 individuals, organized into 17 households. Ten households have families with two or more members, while seven households have only one occupant. Most households have electricity and phones. The population in Oak is seasonal; in the summer, there can be over 100 people living on the community's lands, while in the winter, the population drops to around 20.

The Relationship Between Community Members and Their Forests

Members of Maple and Oak share virtually identical values regarding their forests. Interviews with nearly all of each community's members revealed strong beliefs in preserving their forest resources. In both communities, every respondent cited the nonconsumptive product of "nature appreciation" as the most important benefit provided by the forest. Moreover, activities discussed below illustrate members' commitment to preserving nature and gaining benefits from the natural surroundings.

Residents of Maple do not rely on their forest for economic benefits. Most individuals derive their income from jobs outside their settlement, and they buy almost all of their goods from local markets. Members do collect products such as ginseng, mushrooms, and dead tree limbs from the forest. Access to the communally-owned forest land is open to all community members, while those wanting to harvest a product on another person's home site generally ask the owner for permission. Outsiders occasionally poach small quantities of ginseng, mushrooms, and timber. Because some residents do not work outside the community, the informal monitoring of Maple is strong, and resource "poachers" often are caught. On occasion community members have called county law enforcement officials to protect the community's right to exclude outsiders from their forest.

The amount of products gathered by locals and outsiders has little impact on overall forest conditions or benefits available to community members. Rather, Maple members value their forest's spiritual benefits far above the material. Individuals have chosen to live within the community to experience being close to nature, which is manifested in actions ranging from living in tepees and gardening organically, to planting trees and participating in religious ceremonies celebrating nature.

Like the members of Maple, Oak residents use their forest mainly for spiritual purposes. A primary goal of the community is to maintain respect for nature and to preserve the natural forest on their property. Members enjoy simply living next to or within the forest, as well as more active pursuits, such as constructing temporary sweat lodges in the forest. Similar to Maple residents, Oak residents collect certain products from the forest for their own consumption, including dead tree limbs for firewood, limbs to be used for garden stakes, mushrooms, and wild fruits and nuts.

Oak community members also protect their forest from outsiders. Intruders are often warned about trespassing. Vigilance within the community is high and augmented by the dispersed locations of home sites. As in Maple, the amount of products taken from the Oak forest is minimal. Community members' strong belief in nature preservation is evident from their discussions with state officials about voluntary classification of the Oak forest as a protected area.

THE FORESTS OF MAPLE AND OAK

Because members of both communities emphasize non-consumptive uses of their forests, it is not surprising that biological data from both sites suggest robust forests. This section examines the physical and biological characteristics of the two forests, showing that forest conditions do not differ substantially between the two sites. Data indicate similarities in several

key characteristics, including forest type,[9] species diversity, structural diversity, and vegetative abundance.

Forest data were collected in randomly-selected, nested, circular plots with radii of 10, 3, and 1 m. The species type, height, and diameter (at breast height, or DBH) of trees above 10 cm diameter (hereafter referred to as trees) were recorded in the 10-m circle; species and maximum stem diameter were collected for saplings and shrubs (vegetation with a diameter greater than 2.5 cm and less than or equal to 10 cm) in the 3-m circle; and species and percentage of ground cover were collected for herbs and grasses in the 1-m circle (IFRI, 1996). We used these data to calculate standard forest measures such as abundance, dominance, and importance values.

The resulting measures indicate that Maple and Oak have very similar forests types and structures. Table I shows that three tree species (sugar maple, white oak, and tulip poplar) appear among the five highest importance values in both forests. Overall, 17 of Oak's 24 species are also found in Maple's forest. These results support the categorization of both forests, with slight differences in the specific species present, as a mixed hardwood type.

Another similarity between Maple and Oak forests is species diversity. The tree species with the highest importance value at both sites was the sugar maple *(Acer saccharum):* 0.16 at Maple and 0.18 at Oak. In both forests it is clear that no single species dominates. Further, the 29 different tree species discovered at Maple and 25 found at Oak indicate similar species diversity.

Of course, a biotic forest community includes more than just trees. Another indicator of species diversity is the plants that comprise ground cover on the forest floor. Data collected from the 1-m plots indicate similar ground cover diversity across the study sites. At Maple, 105 different plant species were found, with no single or group of species dominating the ground cover. The most abundant species, running cedar *(Juniperus horizontalis),* covered just 3.19% of the forest floor, followed by cut-leaf toothwort *(Dentaria laciniata),* which covered 2.65%, and mayapple *(Podophyllum peltatum),* which covered 1.92%. Similarly, at Oak, 92 different plant species were counted across 15 plots, with no species dominating. The most abundant species, maple-leaf viburnum *(Viburnum acerifolium),* covered only 3.07% of the forest floor, followed by American beech *(Fagus grandifolia)* seedlings, which covered 2.27% and mayapple *(Podophyllum peltatum),* which covered 1.87%.

[9]Forest type refers to the mix of tree species present in a forest community. The oak-hickory group comprises 41% of forest cover in both Monroe County (Maple community) and Brown County (Oak community) (Spencer *et al.* 1990, p. 52), Maple-beech is the second-most dominant type, representing 26% of forest cover in Monroe and 23% in Brown. Other common forest types include cherry-ash-yellow poplar and elm-ash-soft maple groups.

Table I. Comparing Forest Types Across Study Sites

Oak study site[a]		Maple study site[b]	
Tree species	Importance value[c]	Tree species	Importance value[c]
Sugar maple[d]	0.16	Sugar maple[d]	0.18
White oak[d]	0.14	Tulip poplar[d]	0.18
American beech	0.13	Eastern red cedar	0.12
Tulip poplar[d]	0.12	Sassafras	0.07
Northern red oak	0.05	White oak[d]	0.07
Black oak	0.04	Shagback hickory	0.07
White ash	0.04	White ash	0.04
American elm	0.03	Chinkapin oak	0.04
Unknown oak sp.	0.03	Flowering dogwood	0.03
Red maple	0.03	Slippery (red) elm	0.03
Pignut hickory	0.02	American elm	0.02
Sassafras	0.02	Black walnut	0.02
Red elm	0.02	Northern red oak	0.02
Bitternut hickory	0.02	Unknown hickory sp.	0.02
Chestnut oak	0.02	Eastern redbud	0.02
Shagbark hickory	0.02	American beech	0.01
Black cherry	0.02	Unknown maple sp.	0.01
Black walnut	0.01	Sycamore	0.01
Pin oak	0.01	Honey locust	0.01
Sycamore	0.01	Unknown oak sp.	0.01
Mockernut hickory	0.01	Persimmon	0.01
Flowering dogwood	0.01	Black oak	0.01
Persimmon	0.01	Hackberry	0.01
Overcup oak	0.01	Unknown ash sp.	<.01
Black gum	0.01	Ohio buckeye	<01
		Black cherry	<.01
		Sumac sp.	<.01
		Scarlet oak	<.01
		Chestnut oak	<.01

[a]Data collected from 15 plots.
[b]Data collected from 37 plots.
[c]Importance value is a combined measure of a species "importance" at a given site, calculated by summing the relative frequency, density, and dominance values for a given species and dividing the sum by three.
[d]Appears in top five in both forests.

The forests of Maple and Oak also share similar structural diversity, i.e., the variety of tree sizes that provide habitat needs for different organisms. Sapling and mature trees heights ranged from under 5 m to well over 30 m for both sites. Figure 4 shows the proportion of the total number of mature trees and saplings at each study site that fall into different size classes, showing that tree and sapling heights are fairly evenly distributed across classes.

Finally, vegetative abundance, i.e., the amount of plant biomass or cover present, is also very similar at both sites. Tree biomass is compared by measuring dominance, which is calculated by combining tree stem area

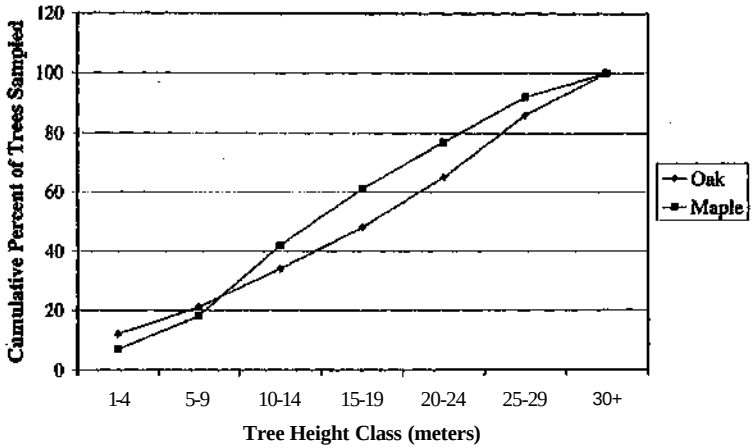

Fig. 4. Comparing structural diversity across study sites.

with density (number of trees per hectare). Ground cover is compared through visual estimates in each plot. Data shown in Table II indicate similar levels of vegetative abundance across the two study sites. Mature tree dominance is 23.8 m^2 per hectare at Maple and 27.7 m^2 per hectare at Oak. An estimated 23.3% of the forest floor at Maple has ground cover, close to the estimated 27.6% found at Oak.

With similarities in forest type, species diversity, structural diversity, and vegetative abundance, the physical and biological conditions do not differ significantly between these two forests. Data indicate that the standing forests in both communities are relatively undisturbed, second-growth stands typical of southern Indiana.

THE INSTITUTIONS OF MAPLE AND OAK

As described above, members of the Maple and Oak communities seek lifestyles that diverge from the mainstream. These individuals value participating in small, communal living arrangements with others who derive

Table II. Comparing Vegetative Abundance Across Study Sites

	Maple	Oak
Mature tree dominance[a] (square meters per hectare)	23.8	27.7
Ground Cover[6] (Proportion of forest floor in ground cover)	23.3%	27.6%

[a]From 37 plots at Maple and 15 plots at Oak.
[b]From 37 plots at Maple and six plots at Oak, measured in spring.

spiritual benefits from nature. While members of both Maple and Oak share such values, the institutions that they have created differ significantly. In particular, we focus on institutions related to screening potential members, maintaining preferences about forest use, and defending the community against members whose preferences threaten the majority's goal of preserving forest resources.

Maple Community

Screening for Values

Rules that screen potential members provide a first step for shaping the distribution of preferences among community members. Such rules aim to prevent the membership of individuals whose preferences are known to be at odds with the rest of the community members.

Potential members of the Maple community face a variety of institutions that help to identify individuals with values similar to the community's members, and screen out those whose values differ. First, applicants must complete several rounds of informal interviews while they attend community meetings over a 3-month period. Applicants also are invited to community functions during this time. Second, if accepted by the community, applicants must purchase a home site (or "share") of the Maple Corporation for a non-trivial price (approximately $20,000)—equivalent to the annual salary for many semiskilled jobs in the region. While the Maple community allows its members to own their home sites privately, several restrictions on ownership provide barriers to purchasing and selling sites for short-term gain. Any member who wants to sell or give his or her home site must obtain the approval and consent of the Maple Community Corporation. The corporation also retains the right of first refusal on all sales. In the event of a member's death, heirs are also bound to the terms of the membership agreement.

Maintaining Values

Screening rules alone, however, are not sufficient to ensure similar preferences. Individuals who act strategically may choose to hide their true preferences from a community. Moreover, even where screening rules are effective, individual preferences are not static. Over time, individuals' views and values change as they encounter new life experiences. For example, becoming a parent may increase one's concern over long-term conse-

quences of natural resource management. Thus institutions are important in maintaining members' similar preferences.

Several institutions at Maple help to maintain community members' values, including the rotation of community officers (the Maple community has an Executive Committee Board with six positions: president, vice-president, secretary, treasurer, and two at-large members) and the distribution to all new members of membership documents, including Membership Agreement, Corporation and Zoning Status, Business Meeting Methodology, Maple Community Rules and Regulations, and Bylaws. The most important mechanism through which the community maintains its values, however, is its elaborate system of meetings. The community holds three types of regular meetings: council meetings, community meetings, and annual meetings.[10] At council meetings, held monthly, Executive Committee members meet to discuss general issues regarding finance—especially management of members' share payments—and community infrastructure. Although the Executive Committee has the legal authority to make major decisions, it generally decides only on minor issues. For significant decisions, the Council seeks to clarify choices through research and discussions with other members.

The community also holds monthly community meetings open to all members. In winter members take turns hosting this meeting in their homes, and in summer this meeting is held in the community's outdoor shelter. About two-thirds of the members attend each meeting. Before the meeting starts, members join hands and participate together in a brief meditation to prepare for a focus on the community. Members can add to the agenda during the meeting itself.

The Maple annual meeting, established in the corporate statement, normally takes place around the anniversary of the community's founding, May 1. During this meeting, members make general evaluations about the state of the community and discuss goals for the upcoming year. In addition to these types of regular meetings, special meetings can be called by members at any time to discuss particularly urgent or important issues. For all meetings, attendance and decisions are recorded and published in the community's monthly newsletter.

Defending Against Threatening Values

Even with screening and maintaining rules in place at any given time, a community may include members who, for whatever reason, hold values that are at odds with the preferences of others. Maple members have developed rules to defend against members whose preferences may be uncertain or change over time. The Membership Agreement includes specific provisions to protect the natural environment of Maple. Specifically, the

[10]Maple Community, *Rules and Regulations,* Section I (7/87).

Agreement prohibits the clear cutting of forest, the selling of timber without council approval, the use of nonorganic pesticides and fertilizers, and any land alteration "that would have a significant environmental impact."[11] It is important to note that these rules apply to the individually-owned home sites as well as the communal lands.

Oak Community

Screening for Values

An individual becomes a member of the Oak Community through a 1-year period of sponsorship by a current member. During this period the applicant may live on the Oak property in exchange for a monthly dues payment of $75, but he or she is not required to do so. He or she also may attend community meetings but cannot vote. Applicants must have sponsors from within Oak who agree to pay for any debts incurred by the applicant. After the sponsorship period is complete, full membership requires the assent of at least two-thirds of community members. A crucial benefit of membership in the Oak Community involves land ownership: after 5 years, full members are allowed to purchase up to ten acres of community land at a price that is substantially below market value.

Maintaining Values

Positions of decision-making authority at Oak have evolved over the years. In the early days of the community's development, all members met every 6 weeks to participate in making management decisions and resolving disputes. When such general meetings were held this frequently, turnout was often low. As a result, members changed the community's bylaws in the mid-1970s to create seven trustee positions, elected annually. Modeled after Native American leadership councils, trustees were empowered to make decisions on behalf of the community. Business at trustee meetings was conducted with a majority-vote rule, with veto power available by a two-thirds majority vote of all full members of the community.

The current decision-making structure is similar to the trustee system created in the mid-1970s. However, due to a decline in membership and conflict among trustees in 1985, the elected trustee model is no longer used. Instead, any full member is considered to be a trustee. The community also elects a president, secretary, and treasurer to handle day-to-day operations, although there is little turnover in who holds these positions.

[11]Maple Community, *Rules and Regulations,* Section II (7/87).

Oak community members hold biweekly meetings, in which, typically, about one-third of the members participate. If members need to address an important issue between regular community meetings, they can take a "phone vote" until they have majority approval. This is done regularly as a decision-making tool for most issues.

Defending Against Threatening Values

As described above, all members of Oak are allowed to use the community's land. No restrictions about harvesting forest products are stipulated in the bylaws, except that members are not allowed to gain personally from the sale or lease of any community property. While the community shares the ethic that the forest is not to be cut, this is not stipulated in the community's bylaws; nor are there formal encumbrances on the use of land that is sold to community members.

CONSEQUENCES OF INSTITUTIONAL DESIGN

The institutions for screening potential members, maintaining values about forest use, and defending against members with threatening values have generated particular patterns of incentives and outcomes at Maple and Oak. Maple's membership has been relatively stable, with a turnover of only five shares in the last 10 years. This stability has been enhanced by the rules associated with membership. The three months of meetings, as well as the large, up-front monetary commitment in buying a share, help to deter individuals who otherwise might not take membership in Maple seriously. Additionally, anyone buying a share must agree to abide by the rules of community, which include first rights to shares put up for sale. Restrictions on share resale constrain the ease of exiting the community. Together, membership rules screen potential new members and hinder individuals from achieving short-run profits through joining and leaving the community. (They do not, however, provide insurmountable obstacles to departure for those with a strong desire to do so, as five shares have changed hands since the inception of the community.)

The number, type, and character of meetings convened within the Maple community contribute to the maintenance of preferences about forest use. The numerous meetings of different types (council, community, and annual) facilitate communication of diverse kinds of information. Locating community meetings within homes encourages member participation. Moreover, starting each meeting with a clasping of hands promotes a focus on collective rather than individual goals. Finally, publication of meeting

minutes and a regular newsletter serves the important function of informing and including those not present at a meeting. Members expend great effort to keep everyone up to date on significant as well as minor issues of their community, and members are included in every aspect of decision making. As discussed above, studies indicate that frequent interactions between community members facilitates cooperative outcomes. Maple members do not depend on the screening process alone to identify the values they want in their community. Rather, the repeated interactions of meetings allows the sharing and reinforcement of core values. As in any community, disagreements and conflicts do arise. But at Maple, the variety of meetings provides different forums for addressing any disputes that can not be resolved successfully one-on-one. Members report that, in most cases, disputes are resolved through individual communication. So far, these steps have been sufficient for resolving all conflicts within the community.

In addition to maintaining similitude among individuals' values, institutions can defend the community from those who might use the forest for personal gain at the expense of the community. The community's Membership Agreement includes explicit language about the duties and rights of individuals vis-à-vis the forest. As described above, it forbids timber cutting on privately held home sites as well as on communal lands. A series of articles in the Agreement spells out other duties and responsibilities regarding land use, ranging from the storage of raw materials on Maple land to the size and construction of homes. Further, the community may fine those who violate the rules. While exceptions to these rules may be granted, such an act requires assent from at least two-thirds of the members. As a result, the common understanding among Maple members is firmly buttressed by a specific and clear list of rules and sanctions.

Maple community's institutions have led to a relatively stable membership, mechanisms that are able to resolve conflicts internally, and a protected block of forest in good condition. In contrast, the institutions of Oak have proven less successful in promoting community stability, internal conflict resolution, and a protected block of forest in good condition.

Oak membership rules do not require a substantial monetary investment. Rather than purchasing a share with accompanying private property rights, potential members pay only $75 per month during the 1-year sponsorship period, which permits them to live on the community property. While the sponsorship period does represent a significant time investment, it is nevertheless easy for someone to exit the community without losing a substantial monetary investment. One result of these rules is that Oak's membership and residency have fluctuated widely throughout the community's history. Maximum population was estimated to be about 300 individuals, while at other times the population has been less than two dozen.

In any communal endeavor, communication is key to successful problem solving and dispute resolution. Institutions can, potentially, aid communities in overcoming such challenges and maintain members' values. For example, meetings can be structured to enhance opportunities for members to share concerns, ideas, and other information. But the biweekly meetings at Oak are attended by only about one-third of the community. Moreover, no regular publication documents these meetings' minutes for those who do not attend. Thus there are fewer opportunities for the whole community to share the same information firsthand.

With fewer costs to membership and fewer forums for communication, it is not surprising that there is more evidence of conflict among community members at Oak than at Maple. During the mid-1980s, Oak experienced strong dissension among members regarding the community's leadership and values. The disagreements were accompanied by charges of mismanagement of community finances, failure to pay taxes, and changes to bylaws that disadvantaged senior members. These conflicts could not be resolved internally, so some members resorted to outside court intervention to determine who would lead the community and by which institutions.

A critical rule that affects Oak's forest conditions is one that allows an individual who has been a community member for at least five years to purchase up to ten acres of community land at a price that is substantially below market value. Apparently, this rule was established to attract members to the community. Its incentives, however, also encourage individuals to act in ways contrary to the community value of nature preservation. At least six members have exercised their right to gain plots on the communal land. In 1993, one member not only exercised this option, but violated a central community value. Although the community expected that this person would continue to follow community norms of protecting the forest and not cutting trees, the language found in the purchase contract did not explicitly forbid tree cutting, and the purchaser subsequently cut trees on the acquired property. A lawsuit ensued, in which a court ruled that the community had no legal power to prohibit cutting on land severed from the community property. Unlike at Maple, where individual owners shared a value and agreed in writing to abide by rules constraining tree cutting, Oak relied only on shared norms to prevent opportunistic tree cutting. As the court ruling shows, norms alone are not always sufficient to foster sustainable use of forest resources.

IMPLICATIONS FOR COMMUNITY GOVERNANCE OF NATURAL RESOURCES

The foregoing analysis of these cases highlights the importance of institutional arrangements for managing community values. Evidence from

Maple and Oak indicates that both communities share very similar values regarding the appropriate use of, and appreciation for, their forest resources. Moreover, the settings in which these communities exist share similar populations, geographic locations, topography, forest types, diversity, and vegetative abundance. Despite these similarities in physical conditions and community norms, differences in institutions and outcomes are evident. Maple and Oak have created different rules regarding screening members, maintaining their values, and defending against individuals whose actions may damage forest resources. These varying institutional arrangements have led to differences in community stability, conflict resolution, size of community forest, and, ultimately, forest condition. Maple's forest is the same size as it was at the community's inception, while Oak's forest has already lost dozens of acres to private plots, five of which have been timbered. The community's rules imply that additional acres can be excised from communal holdings and cleared by individual land owners as well.

Clearly, values are an important part of these cases, and to any analysis of a community's governance of its natural resources. As reviewed at the beginning of this study, existing research indicates that the more homogeneous individuals' values are, the more likely successful collective outcomes are to be reached. Theoretically, in the case where a community is comprised of members who each maintain a strong preference for not cutting down any trees, such homogeneity should be sufficient to protect the property from anthropogenic deforestation.

But such perfect homogeneity of values is unlikely to be achieved in most empirical settings, especially over time. Even in cases where there exists a high degree of shared values over certain resources, the continued penetration of economic and political markets challenges the stability of the shared value system. We should expect that communities have at least one person who does not hold the same value in the same manner at the same level of intensity. (In Oak, a single person's value difference made a substantial impact on the forest. We do not know if any members of Maple hold values significantly different from the community's avowed set, but they might.) In fact, as researchers it makes more sense to assume value *heterogeneity* rather than value *homogeneity* over valuable natural resources. Explaining how a community manages values and protects its resources from members with threatening values, therefore, should be included in contemporary, community-level studies of natural resource management. Assuming that community members hold homogeneous values ignores the nuances of that homogeneity and leaves unanswered important questions that are crucial for building knowledge about community-level management.

Treating values and their apparent homogeneity as exogenous also robs us of the opportunity to examine how communities may shape preferences

through conscious design. Institutional arrangements are important not only in structuring given values into outcomes, as described by institutional scholars, but also in affecting the set of preferences within a community. It is through careful analysis of the interactions of institutions and values that we can better understand the outcomes from the self-governance of natural resources.

Our analysis also has important implications for community-based natural resource management in other, less-developed countries. In fact, although located in the United States, Oak and Maple confront many of the challenges faced by their counterparts elsewhere: constructing successful collective outcomes, dealing with membership, coping with the change of member's values about important resources, defending resources from extra community threats, and responding to the short and long term effects of institutions. We demonstrated that even in the case of a community where there exists a relatively clear and enforceable property rights system, where individuals generally do not need to consume forest products as a primary economic activity, and where members had the opportunity to select members based on values, community-constructed institutions still had a significant effect on outcomes. Such institutions may have an even more important role in sites where property is less well defined, where forest products are more critical to livelihoods, and where communities have inherited rather than selected memberships.

Of course, these institutions may look quite different in other settings. Institutions for screening members may be based on kinship, performance of social obligations, or other criteria. Institutions that maintain values may have deeper religious roots than those examined in this case. And institutions for defending values may be tied closely to cultural symbols (e.g., Cohen, 1985). Although their origin and structure may differ, such institutions may still have crucial roles in the transformation of values into outcomes.

Paying closer attention to the role of institutions in creating or fostering similar value arrangements also raises fundamental questions about what interventions help to foster sustainable community management of natural resources. For example, if homogenous communities are indeed better at management, then should only those communities which are homogeneous receive scarce development aid? If so, how is homogeneity to be measured? Which type of homogeneity will be most preferred by donors? What happens if the homogenous value shared by a community's members is to convert forests into pastures? How can intervention increase "appropriate" homogeneity? Without a better understanding of the relationship between values and institutions, simplistic approaches towards community-level natural resource management may not only offer disappointing outcomes in the short term, but damage in the long term the credibility of arguments calling for the devolution of responsibility over resources to the local level.

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