Cultural Theory and Management of Common Property Resources

By: Susan J. Buck[1]

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ABSTRACT:
Cultural theory utilizes concepts drawn from social anthropology, sociology, and organization theory to explain the social and cultural biases of policy actors and interest groups. Certain ideas of nature are associated with each cultural bias; these ideas of nature are in turn associated with types of resource management institutions. By identifying an actor or group's culture bias, analysts can explain the success or failure of different management activities. This paper explains the evolution of cultural theory from its anthropological roots to its applications in ecological management. It then applies cultural theory to a typology of common property resources and illustrates its usefulness by examining grazing subsidies in the American southwest.

KEY WORDS: common property; cultural theory; resource management.

ARTICLE:
INTRODUCTION
This paper has two objectives. The first is to demonstrate the relevance of cultural theory to environmental management. The second is to show, through a preliminary discussion of grazing subsidies in the American southwest, how cultural theory may inform political decision makers, aiding them in achieving permanent and politically legitimated policy changes. This particular case shows how a "tragedy of the commons," rather than dragging to its presumably inevitable conclusion, may be changed to a more sustainable management approach.

CULTURAL THEORY
Although "cultural theory" as an aspect of cultural anthropology has existed for some time, the genesis of a theory of political cultures can be traced to the work of Mary Douglas (1982). She uses the two dimensions of group and grid to describe four types of social environment (Fig. 1). Group is defined by "the claims it makes over its constituent members, the boundary it draws around them, the rights it confers on them to use its name and other protections, and the levies and constraints it applies" (Douglas, 1982, p. 191), while grid describes the number and intensity of rules. Strong grid imposes, for example, rules on gender roles and status, while an example of weak grid is a free market where only the rule of contract remains valid. The operative level Douglas uses is "that at which excuses are required for individuals and made by them and where moral judgments materialize into pressures from other persons to act in certain ways . . . . [The] relevant level of analysis is that at which people find it necessary to explain to each other why they behave as they do" (Douglas, 1982, p. 201). Thus, her analysis is conducted at the level of the individual as a social being. As will be shown, Thompson (1984, 1985) relies as well on an individual level of analysis, but Wildaysky (1987) does not.

In a number of works, Aaron Wildaysky has developed Mary Douglas' individually based cultural theory to include political actors. Rather than viewing the concerted actions of individuals as defining a cultural context, he considers the result of their activities as the culture, and uses this to predict other behaviors of the same group. In this way, he advances the theory from primarily one of description to one that allows prediction.

Wildaysky defines political cultures as "shared values legitimating different patterns of social practices" (1987, p. 5). These values cannot be separated from social relations, and the two together generate political preferences.

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                          GROUP

              weak                    strong
         +-------------------+-------------------+
         |                   |                   |
         |    insulated      |   strong group    |
         |       B           |        C          |
 strong  |                   |                   |
         +-------------------+-------------------+
 GRID    |                   |                   |
         |                   |                   |
 weak    |   individualist   |   strong group    |
         |       A           |        D          |
         |                   |                   |
         +-------------------+-------------------+

                          GROUP
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Fig. 1. Four types of social environment (Douglas, 1982, p. 191).

Number and Variety or Prescriptions	Strength of Group Boundaries	
	Weak	Strong
numerous and varied	Apathy (Fatalism)	Hierarchy (Collectivism)
few and similar	Competition (Individualism)	Equality (Egalitarianism)

Fig. 2. Models of four cultures (Wildavsky, 1987, p.6).

The shared values indicate preferred ways of life, and the cultural preferences help individuals and groups to choose policy alternatives. What distinguishes this approach from the common economic or political science orientations is that the source of the preferences is internal; they "emerge from social interaction in defending or opposing different ways of life" (1987, P. 5).

Wildaysky follows Douglas' four categories derived from grid-group dimensions. He has, however, changed the labels, and to some extent the characterizations of the categories (Fig. 2).

The individualists seek open competition. They support social differences and avoid hierarchical categories of class or economic status. The market is used to achieve maximum individual gain. It is these highly competitive entrepreneurs who, others insist, risk the "tragedy of the commons" in their use of resources because they have such low affinities for group norms or for cooperative regulation.

The hierarchs favor institutionalized authority. They believe that organized inequality, which perpetuates social and economic class systems, is helpful in establishing division of labor and role specialization, both of which enhance social harmony and stability. Hierarchs are inclined toward technical fixes for resource problems, and they seek regularized control of the system in which they operate.

Egalitarians, who have strong groups but few prescriptions, share a "life of voluntary consent without coercion or inequality" (Wildaysky, 1987, p. 6). They prefer to reduce differences among people, and they tend to be small groups and short-lived (for an example of an egalitarian group, see Davis, 1985). Because egalitarians are inherently suspicious of the external "system," they resist external controls; because they value equality, they will impede a peer's progress rather than see him get ahead of the remainder of the group.

The fourth group, the fatalists, are not of great interest in setting policies. They are apathetic and under the virtually complete control of outside forces. Thus, there is "no point in their having preferences on public policy because what they prefer would not, in an event, matter" (Wildaysky, 1987, p. 7).

CULTURAL THEORY AND THE ENVIRONMENT
Michael Thompson (1984), using the work of C. S. Holling and others, has integrated work from ecological sciences into the cultural theory approach. In cultural theory, there are no resources that are inherently common property. Everything can be privatized or, conversely, communalized (Thompson, personal communication). The resource management scientists must explain why, when faced with similar natural situations, management institutions vary in their intervention strategies. The ecologist copes with this variability by deducing varying myths of nature which are "the minimal representations of reality that have to be ascribed to the various management institutions if these institutions are to be granted the dignity of rationality" (Thompson, 1984, p. 20). If one can correlate myths of nature (identified with types of management institution) with ideas of nature (identified with cultural biases), then one may begin to correlate management institutions with cultural biases. Management institutions which are congruent with the cultural biases of the resource users are most likely to be effective and accepted.

Holling (1978) has described four views of nature: nature benign, nature ephemeral, nature perverse/tolerant, and nature resilent. *Nature benign* views natural resources as existing only through the action of ingenuity and skills on raw materials. The magnitude of the resources available has little to do with their supply, which largely derives from human skills; hence, any use of resources will have no effect on global stability. *Nature ephemeral* sees the natural world as limited and fragile; resource users who hold this view prefer "fine-scales, local autonomy" (1978, p. 100) in resource allocation and management. *Nature perverse/tolerant* sees the natural world as forgiving (tolerant) of resource depletion but only to a limit. Once that limit is exceeded, the natural world falls apart (perverse). Finally, *nature resilient* can absorb and utilize change, achieving a balance despite almost any user abuse.

Thompson (1984) has incorporated these myths of nature into the Douglas/Wildaysky approach to cultural theory. He notes that culture is dynamic and is subject to negotiation (adaptive behavior) and change (adoptive behavior). One of the factors that brings about cultural change is nature, which forces individuals to test their views of rational behavior against the real world. *Surprise* occurs when the accumulated weight of evidence in disagreement with a cultural view breaks through the cultural filter, thereby contradicting existing ideas. When the natural world regularly demonstrates an anomaly, the prevalent view of nature must be modified, which may in turn lead to a modification in positioning on the grid-group model. For example, the nature benign model would lead one to expect watercourses and land masses to absorb infinite amounts of nontoxic waste. When the waters become so polluted that fish can no longer survive and recreational swimmers must be prohibited, it is necessary to consider an explanatory model of the natural world which allows for some degree of regulation of the resource users, a situation not expected in the nature benign model.

Using the grid-group model, Thompson generates a model of five social contexts, each of which is associated with an "idea of nature." These often parallel the myths of nature developed by Holling but differ in their theoretical origins. The ideas of nature "have been deduced from the different kinds of moral justifications needed to stabilize different patterns of social relations [but] the myths of nature are arrived at entirely by ecological argument" (Thompson, 1984, p. 19).

Thompson's five social contexts represent five distinct social beings: the hermit, the entrepreneur, the ineffectual, the hierarchist, and the egalitarian. These contexts are associated with only three kinds of organization, each of which has a separate idea of nature. The first organization type is the *ego-focused network* in which lie all the individualist (weak group) social biases. These three biases (hermit, entrepreneur, and ineffectual) see nature as a cornucopia. For the ineffectual, access to the cornucopia is beyond his control; it is a lottery where skill has no impact. The enterpreneur, in contrast, believes that with skill and a little luck, he can gain access to the resources.

His tragedy is the "tragedy of the commons." The hermit, who has managed to be free of social constraints, is also free to draw upon the cornucopian resources as needed (Thompson, 1984, pp. 6-9)

The second kind of organization, the *bounded egalitarian group*, sees nature as both subject to depletion and accountable. This is because the egalitarians have two great moral justifications: absolute equality of result *within* the group (unlike the individualist who seeks equality of opportunity) and system (outside the group) blame for abuse of nature. If nature were inexhaustible, there would be no need for equality of result since one person's gain would not automatically imply another's loss. Because the egalitarians believe they are properly using natural resources, the depletion can only be explained by asserting that nongroup members, i.e., the system, is at fault (Thompson, 1984, p. 10). The tragedy of this system, unlike the tragedy of the commons that characterizes the cornucopian model, is *crabs in a barrel*:

> In the West Indies fishermen will put their day's catch of live crabs into a barrel. Though crabs are good climbers, the fishermen do not bother to put a lid on top of the barrel because no sooner does one crab climb up toward the rim than it is immediately pulled back down by its fellows. All the crabs could escape if only they were prepared to allow some to go first. But they are not, and they all perish (Thompson, 1984, p. 10).

Finally, the hierarchists are found in the *hierarchically nested* group. They cannot subscribe to a cornucopian model; if nature were limitless, there would be no need for a structured, discriminating organization. Hierarchists do not want equality of result or equality of opportunity. In the egalitarian-bonded group, everyone finishes equal; in an ego-focused network, they begin equal. The equality stressed in a hierarchy is equality before the law: "a hierarchical law that embodies the premise of inequality and entitles those of high rank to be tried by their peers. Peer review, the established method of assessment in the scientific community, provides a nice example of this moral principle at work" (Thompson, 1984, p. 10). The hierarch's solution is an *isomorphic nature*. Nature, in this view, mirrors the complexity, order, and predictability of society. The hierarch's tragedy is the triumph of technique over purpose: when the maintenance of ritualized class and status overcomes reasonable utilization of resources (Thompson, 1984, pp. 10-11).

Relying on both Holling (1978) and Holling, Walters, and Ludwig (1981), Thompson maps the myths of nature into the ideas of nature (Fig. 3).

Nature Ephemeral requires self-sacrificing human behavior and requires effective group sanctions; it fits very neatly with the bounded egalitarian view of Accountable Nature. Nature Benign fits the ego-focused individulist view that encourages bold experimentation; it maps easily onto the skill-controlled cornucopia idea of nature. Nature Perverse/Tolerant "encourages the pursuit of certainty and predictability" (Thompson, 1984, p. 21). This mapping, however, is incomplete; lottery-controlled (ineffectual) and freely available cornucopia (hermit) ideas are not accounted for.[2]

Thompson adds two myths of nature: Nature Capricious and Nature Truly Benign. Nature Capricious fits the lottery-controlled cornucopia view of the ineffectual. However, the entrepreneur does not truly believe in Nature Benign: it is only the "public face of the entrepreneurial cultural bias" (Thompson, 1984, p. 21). It is the hermit who owns the myth of Nature Benign; the entrepreneur really sees Nature Red in Tooth and Claw behind the benign facade.
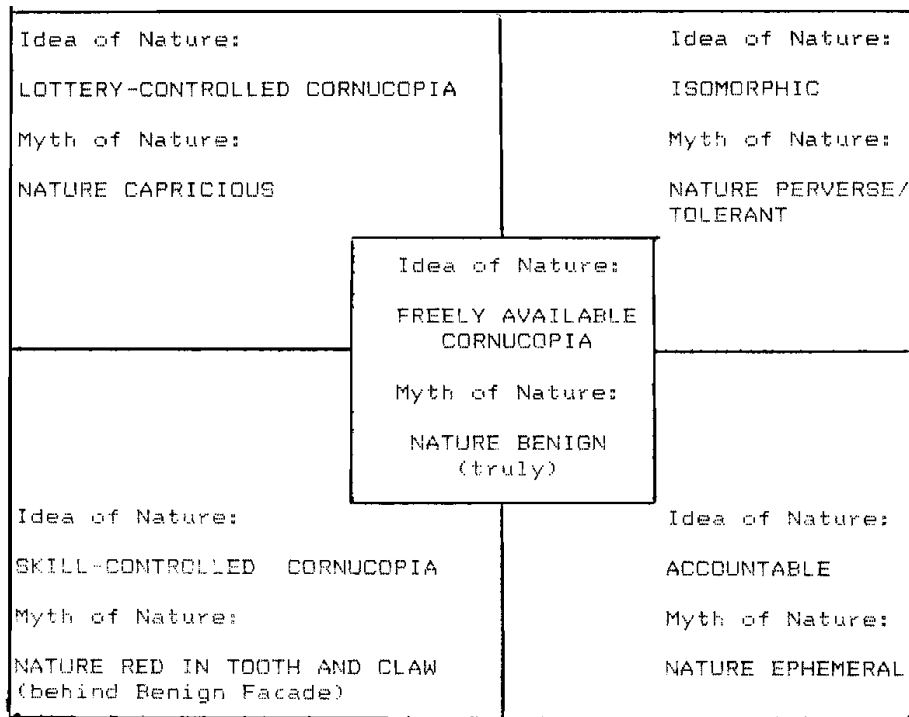
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┌──────────────────────────────────┬──────────────────────────────────┐
│ Idea of Nature:                  │ Idea of Nature:                  │
│                                  │                                  │
│ LOTTERY-CONTROLLED CORNUCOPIA    │ ISOMORPHIC                       │
│                                  │                                  │
│ Myth of Nature:                  │ Myth of Nature:                  │
│                                  │                                  │
│ NATURE CAPRICIOUS                │ NATURE PERVERSE/                 │
│              ┌───────────────────┴─┐ TOLERANT                       │
│              │ Idea of Nature:     │                                │
│              │                     │                                │
│              │ FREELY AVAILABLE    │                                │
│              │    CORNUCOPIA       │                                │
│              │                     │                                │
│              │ Myth of Nature:     │                                │
│──────────────│                     │────────────────────────────────│
│              │ NATURE BENIGN       │                                │
│              │   (truly)           │                                │
│ Idea of Nature: └─────────────────┘ Idea of Nature:                │
│                                  │                                  │
│ SKILL-CONTROLLED  CORNUCOPIA     │ ACCOUNTABLE                     │
│                                  │                                  │
│ Myth of Nature:                  │ Myth of Nature:                  │
│                                  │                                  │
│ NATURE RED IN TOOTH AND CLAW     │ NATURE EPHEMERAL                │
│ (behind Benign Facade)           │                                  │
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Fig. 3. Myths of nature and ideas of nature (Thompson, 1984, p. 22).

CULTURAL THEORY AND COMMON PROPERTY RESOURCES

Common property resources are a special case of natural resources that often generate peculiar management problems. They are limited resources which may be renewable or nonrenewable, and they have a pool of users whose access may be restricted, i.e., governed by prescriptions or rules, or not restricted. Usually, the problems of managing common property resources arise when enforcement of the rules or prescriptions is hindered, when the size of the legitimate user pool exceeds the capacity of the resource, or when the demands made by the users exceed the capacity of the resource. It is important to note that by definition, common property resources are not the same as open-access resources which have unrestricted entry by the users (Buck, 1988).

A typology of common property resources was developed in an earlier work (Buck, 1989).[3] In its simplest form, this typology is based upon three factors: the nature of the resource itself, the property right involved, and the scale of the user pool. Both the property right dimension and the scale of user pool are clarified when cultural theory is applied.

Property rights are either *transferable* or not. Transferable or individual rights are saleable for goods or money, or are subject to bestowal and removal for services rendered. *Nontransferable* rights have been removed from individual control and rest with the government or with the community of users. These rights may be assigned to individuals but the individual may not transfer the right to another. For example, in medieval villages, a householder could not sell his right to use common pasture and still retain his house and property. The house could be transferred, thus inevitably transferring the right to common but the right to common was not severable (Gonner, 1966, pp. 3-4).

Similarly, property rights may be *exclusive* or *nonexclusive*. Exclusive rights imply a limited access to the resources; grazing permits for public land are exclusive in that only a limited number are issued, and access to public grazing is restricted to those holding permits. A non-exclusive right gives access to the resource to a defined pool of users rather than to individuals; anyone may use the municipal parks. In discussing these rights, the cultural biases of the managers must be taken into account. For example, grazing permits for public rangelands were originally issued by managers who perceived the range as virtually limitless, and the exclusive rights were granted on a rather free-wheeling basis. As the range managers became more professionalized and

therefore more hierarchical, their views on the quantity of the resource changed. Grazing permits are now fewer, carry more restrictions, and periodically generate intense conflict between the entrepreneurial ranchers and hierarchical bureaucrats over increasing fees to true market costs. Resources with non-exclusive property rights are often governed by a group with egalitarian propensities toward that particular resource. For example, commons areas in apartment or condominium complexes are regulated by residents, municipal parks by officials only one step removed from a voting public. One might speculate that, at least in democratic societies which accord an almost religious significance to the idea of "one man, vote," resources that are governed by elected managers, or that are seen as the property of a discrete set of voters, will tend to be subject to non-exclusive property rights. However, considering the social biases of the resource regulators (institution makers) raises the dilemma created when a group behaves one way and argues another. Policy makers do not necessarily endorse policies that reflect their own cultural bias. They may, for example, be entrepreneurs who for political reasons endorse egalitarian policies. Also, any successful management policy must be congruent with the users' preferences. Otherwise, the users will seek to subvert the policy.

It is in a discussion of the scale of the user pool that cultural theory will be most useful. While the scale of the user pool is not strictly synonymous with political jurisdiction, the two are intertwined. At one end of the scale are small, self-contained communities such as were once found in medieval Europe and are now virtually restricted to developing countries (although some see new commons emerging in such unlikely places as the inner cities where parking privileges are restricted to area residents). In these communities, the traditional commons system (Cox, 1985; Gonner, 1966, Hoskins and Stamp, 1965) has the most chance of success (Berkes, 1981; Berkes and Pocock, 1981; Ruddle and Akimichi, 1984; Ruddle and Johannes, 1985). At the opposite end of this scale are the virtually unrestricted user pools comprised of users from many nations and ethnic groups. These user groups have little formalized political control, largely because the resources, e.g., high seas fisheries, they use are outside political jurisdiction. In this category, restraints and management restrictions of any kind are difficult to apply because of a lack of agreement among participants, a lack of political jurisdiction, and the extreme difficulty of consistent enforcement.

Between these two extremes lie a wide variety of user pools, such as localized user pools that are part of a wider political community which impinges upon use of the resource. Fishing towns such as Gloucester, Massachusetts in the nineteenth century are an example of this level of user pool. Access here is rarely restricted because the user pool from any one community is small compared to the resource; the resource becomes endangered by the combination of many such user pools. Here restraints are often self-imposed (Berkes and Pocock, 1981; Pringle, 1985).

Another possible category is the regional user pool which is, once again, controlled by an external political community. Examples of this category include river basins, larger coastal areas such as the New England region of the American eastern seaboard (Dewar, 1983), or interstate regions such as the Chesapeake Bay area.

A fifth category is the national user pool; this community of users has an internal political control in that the users are drawn from throughout the political jurisdiction exercising control. Visitors or national parks come from the entire nation and the regulations they face have been devised by a national process, unlike consumers of municipal water who are constrained by state and federal regulations as well as their own municipal ordinances.

Quite clearly the discussion of the user pool can benefit from cultural theory. Just as all common property resources cannot be lumped into a single resource type, resource users and regulators are culturally variable. The cultural hypothesis is that

> individuals exert control over each other by institutionalizing the moral judgments justifying their interpersonal relationships so they can be acted upon and accounted for (Wildaysky, 1987, p. 8).

This implies that individuals devise institutions not only to control behavior within their own social context but also to create political environments which inhibit the exercise of other social contexts.

MANAGING COMMON PROPERTY RESOURCES
Some common property resources are managed successfully. Others are not. The task here is to test cultural theory against other modes of explanation. This would seem first to involve three concerns: how "successfully" is to be judged, how the management institutions are categorized, and how common property resources are categorized. The first question can be answered without much difficulty, although the response may certainly generate some controversy.

Successful management of a renewable common property resource maintains a ecological sustainability while reducing the traditional user pool as little as possible.[4] This definition is open to a multitude of market-based criticisms. My basis here is that for most common property resources, a user pool already exists with expectations of access. Most schemes to limit access involve initial access rights for current users with incentives, disincentives, and entry regulations to manipulate the user pool size in the future. One could also argue that because of capital investment costs, the rational person will deplete the resource quickly, then move his investment to other enterprises. However,

> Much of human history stands in disproof of the argument that the structure of political institutions and their legitimacy can be explained by simple reference to rational self-interest. Surely that rational self-interest of social class and of ethnic and religious groups is a powerful dynamic illuminating political movements and conflicts, and contributing significantly to historical outcomes. But patriotism, community loyalty, religious values, and simple habit and tradition obviously enter into the explanation of political structure and legitimacy (Almond, 1980, p. 30).

It is necessary here to acknowledge that viewing economic rationality as an insufficient basis for decision making is a concomitant of other cultural biases. This definition of "successful" certainly reflects the author's bias, an influence which seems unavoidable. The problems this generates will be seen in the discussion of western ranchers below.

The problem of categorizing institutions is not dealt with so easily. First, there is little agreement as to the meaning of the term "institutions" (Ostrom, 1986a). The field of possible definitions, if we exclude the insights of cultural theory, is dramatically limited, and this limitation "to either 'the market' or 'the state' means that the social-scientific 'medicine cabinet' contains only two nostrums" (Ostrom, 1986, p, 7). It seems probable that the form a management institution or organization takes will be dictated in part by the culture which constructs and legitimizes it. Therefore, rather than developing another typology to categorize common property resource management institutions, let us set aside this question and see how cultural theory applied to the resource user pool can inform our understanding of institutions.
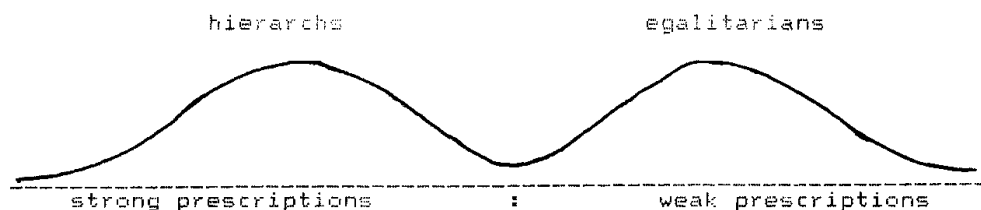

Fig. 4. Bimodality of strong group distributions (Thompson, 1985, p. 380).

This brings us to the third concern: how can the common property resources best be categorized? And a corollary question is how to incorporate cultural theory into the categorization.

First, if we intend to use cultural theory, we must find some way to operationalize *grid* and *group*.

Group is a fairly easy concept to identify. We need to recognize that the distribution of individuals who share a strong sense of group will be bimodal (Thompson, 1985, pp. 380-381; but see also Gross and Rayner, 1985; Rayner, personal communication). That is, they will form two reasonably normal distributions, separated by their strength of prescriptions (see Fig. 4). Similarly, the low-group, strongly individualized continuum is bimodal although the separating factor here is the strength of the group boundaries (Thompson, 1985, p. 388). This means that relatively few individuals or groups of individuals exist at the borders of the categories. A scattergram of cultural distributions would place most points in the middle of each quadrant. Thus, for any single individual or group of individuals, we need only find a powerful identification along one of the two dimensions, and the second will be relatively easy to determine. For example, crab fishermen in the Chesapeake Bay, who have organized a watermen's association to fight state residency requirements, quite clearly have a strong sense of group identity and solidarity (Goldsborough, 1981; Warner, 1976). We have only to determine how strong their prescriptions are to place them within a cultural context. Role differentiation is slight; there is no clearly identified leader. We can place the leadership core of this group in the egalitarian block.

It is much more difficult to measure grid. The most complete effort to date is found in Gross and Rayner's *Measuring Culture* (1985). They note in their discussion of Multiple Hierarchy (p. 67) that the number of rules is not necessarily an indication of strength of prescriptions. Groups may use multiple and contradictory rules to weaken prescriptions; the important consideration is the extent to which rules enhance hierarchy. Recent work by Elinor Ostrom and her associates is also helpful (Ostrom, 1986a, c). Ostrom's work is designed to apply to institutions, but there is no reason not to apply it to cultures as well.

Ostrom outlines seven kinds of rules that structure action arenas which consist of the action situation (the environment) and the individual actors (Ostrom, 1986c, pp. 460-461). In our cultural theory terminology, these rules govern social relationships; they are the operational form of the culture. The seven types of rules are: (1) what positions participants may, must, or must not hold (position rules), (2) what characteristics participants may, must, or must not have to enter positions (boundary rules), (3) the authorized actions participants may, must, or must not take independently (authority rules), (4) the formula that participants may, must, or must not use for decision making when multiple persons must decide (aggregation rules), (5) the information that participants may, must, or must not reveal to others (information rules), (6) the state of the world that participants may, must, or must not affect (scope rules), and (7) the rewards or penalties which may, must, or must not be assigned to actions or outcomes (payoff rules) (Ostrom, 1986b, p. 23). One very interesting characteristic of this list is the "may, must, or must not" nature of each rule. This flexibility makes room for the opposing viewpoints in the three active cultural biases. For example, the authority rules could as easily prohibit assumption of leadership (egalitarians "must not" be leaders) as allow it (individualists "may" be leaders) or require it (hierarchs "must" seek leadership). To be consistent, some terminology should be changed. Boundary rules would become *eligibility* rules, authority rules become *leadership* rules, and aggregation rules become *decision* rules. By simply determining whether certain rules exist, the strength of prescriptions or grid can be measured comparatively. Take, for example, a group such as the cattle ranchers in the western states who rely heavily on Federal Bureau of Land Management (BLM) grazing permits to subsidize their livestock operations through grazing on public lands. While there are organizations to which such people belong, there is no one group which draws a boundary around them, give them rights and protections, and applies levies and constraints (Douglas, 1982, p. 191). Being a weak group, they are either ineffectuals or entrepreneurs. How might we ask about their strength of prescriptions?

1. *Eligibility Rules*. Do the ranchers set the conditions under which a person has access to BLM grazing rights? No, these rules are set by external forces (Department of Interior) although the ranchers certainly bring strong lobbying to bear. Ultimately, however, they are bound by BLM decisions made in Washington. Until the rangelands became obviously abused, and this abuse was brought to public attention, ranchers were content with BLM decisions, largely because the conditions for access were satisfactorily few.
2. *Leadership Rules*. May ranchers decide, independent of each other, how they will manage their permits? Yes. The only control comes from the Federal Government and that control is very weak. Ranchers do not interfere with their neighbors' management techniques.

3. *Decision Rules*. Are group decisions made by a pre-existing formula? No, the few group decisions that are made are on an *an hoc* basis with the most prominent (oldest and richest) taking temporary leadership.

We could go through the entire rule list in this fashion, but it hardly seems necessary in order to confirm what we knew all along: western cattle ranchers have minimal prescriptions and are therefore entrepreneurial individualists. What does this tell us about their world views on nature, the likelihood that they will manage a common resource wisely, and the best way to ensure the resource has successful management?

Enterpreneurs are ego-focused. Their idea of nature is Skill-Controlled Cornucopia and their myth is Nature Benign, neither of which will encourage resource conservation or preservation. They prefer to minimize leadership, they tend to exploit their environment, and the tragedy they are most likely to face is the tragedy of the commons. This is in fact what has happened on most of the public (common property) grazing lands of the west. Each rancher follows the economic rationality of squeezing as many cattle as possible onto his allotment.

Cultural theory indicates that the ranchers are only behaving as their cultural bias prescribes. For range managers (probably hierarchs) or conservationists (probably egalitarians) to ask "what can be done" exposes their cultural biases as well. For argument's sake we have assumed that successful management (defined above) is an acceptable goal. To achieve successful management, one of two things could be done.[5] First, managers and conservationists could try simple education and conversation; neither is likely to do much good in the absence of a strong challenge to existing biases. To change the entrepreneur requires the *surprise* mentioned by Thompson (1984): an accumulation of negative feedback that challenges existing biases. In fact, the deterioration of the public range almost past recovery forced some ranchers to realize that nature was not endlessly abundant. They did not assume the egalitarian position of an ephemeral, fragile nature. Instead, they developed new techniques and technology to structure the environment; they shifted from exploitation to control.

The second option, to force change on the ranchers, is the imposition of external controls, i.e., regulation, by the hierarch. Cultural theory would predict several possible outcomes here. The first would be a concerted effort of resistance through organizing into strong lobbying groups. The ranchers have been able to do this but once the immediate threat is removed, their dislike of prescriptions and groups allows disintegration of the lobby. A second possibility is that the egalitarians (many environmental groups) could form a temporary alliance with the hierarchs (see Thompson, 1985, p. 393 for an elaboration of this process). The hierarchs, disliking the disorder of depleted ranges and the insult to their control mechanisms, did indeed accept the egalitarian political power and for a short while the specter of a non-subsidizing fee structure (equality of result for the egalitarians and imposition of status for the hierarchs) was a strong possibility. As one would expect, the *surprise* based change, small as it is, had endured, but once the hierarch-egalitarian coalition disbanded, the entrepreneurs who reacted under pressure reverted to their old, individualistic ways. Thompson (personal communication, see Footnote 5) argues that this solution failed not because it was inevitable but rather because it was incorrectly designed.

Thus, one lesson we learn is that unsuccessful management institutions that are supported by the appropriate cultural context are unlikely to change unless the cultural context is changed. Common property resources being used or largely controlled by weak group-weak grid entrepreneurs will fall prey to the tragedy of the commons unless either the entrepreneurs can be converted to hierarchs or a sufficiently strong opposition can be mounted to maintain a balance of power and a constant state of tension or conflict.

In a similar fashion, we could demonstrate that those common property resources that are managed successfully are controlled by users with either the egalitarian or hierarchical ideas of nature.

This brief use of cultural theory explains why ranchers faced the tragedy of the commons on public grazing lands and why some remedies have succeeded while others failed. Although this may have been an easy example (chosen partly because most of the readers will be familiar with both the situation and the cultural biases involved), there is no canon of theory development that requires us to test only hard or obscure cases. The explanation offered is intuitively satisfying.

The biggest difficulty with applying cultural theory to common property resource management is the paucity of good ethnographic data.[6] Resource management information is usually focused on the resource itself and not on the users. What data on users are available often are economic (pounds of crabs landed per year, animals grazed per acre per month) and rarely are concerned with such non-technical parameters as group affiliation. Finally, as the user pool increases in size, the permutations of cultural biases also increase, and finding one management strategy for the whole is increasingly problematic. However, cultural theory is relatively new. Detailed ethnographic information would not be difficult to accumulate once the criteria for the model are developed.

ACKNOWLEDGMENTS

FOOTNOTES

1. Department of Political Science, University of North Carolina-Greensboro, Greensboro, NC 27412.
2. Thompson and several co-workers at the Institute for Management Research and Development at the University of Warwick have remedied these problems by adding Nature Capricious to Holling's myths and by putting Nature Resilient to one side as a meta-myth that has a different status from the primary four (see James, Tayler, and Thompson, 1987).
3. Since developing my typology, I have read Ronald Oakerson's (1986) excellent article, "A Model for the Analysis of Common Property Problems." He bases his model on four components: technical and physical attributes, decision-making arrangements, patterns of interaction, and outcomes or consequences. His approach differs from mine in his emphasis on economics literature and theories of collective choice, while I have incorporated biological characteristics and political jurisdictions. As the reader will see, our outcomes are quite similar.
4. Successful management of a non-renewable resource requires consideration of equity, duration of exploitation, alternative technologies, and even, upon occasion, intergenerational justice. In the essay, I have focused on renewable resources.
5. Michael Thompson (personal communication) suggests a third alternative. He writes: "What would be rational would be for [the ranchers] to welcome an externally generated solution that would prevent the outcome and, by ensuring that the restrictions applied equally without fear or favor, enabled them to continue as individualists. This suggests a different interpretation of the tragedy: the hierarchists did not offer their controls in a form that was culturally congenial to the ranchers. . . . It is this sort of analysis of institutional re-design that is my version of how [cultural theory] should be applied."
6. One of the reviewers of this paper noted that for western ranching, at least, a great deal of good information exists. A colleague and I are indeed working on a paper exploring the Sagebrush Rebellion, using the cultural theory approach. I did not mean to imply that no good data exist. Rather the problem is that the data are not readily available (one must hunt through journals, newspapers, interviews, etc.), and since they are "soft," i.e., not-technical, data, resource managers are reluctant to make policy decisions on that evidence.

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