Incentive for Collective action

THE VILLAGE AGAINST THE CENTER: RESOURCE DEPLETION IN SOUTH ASIA

Daniel W. Bromley
Department of Agricultural Economics
University of Wisconsin-Madison

and

Devendra P. Chapagain
Ministry of Agriculture
Kathmandu, Nepal

Paper presented to a joint meeting of the American Agricultural Economics Association and the Association of Environmental and Resource Economists, Cornell University, August 7, 1984.

See pages 14 and 15 for key conclusions

We are interested in the institutional environment that defines the resource-use behavior of villagers in South Asia. It is that environment--consisting of the conventions, norms, and rules--that dictates daily behavior with respect to the natural resource base on which villagers are so dependent. Our title emphasizes tension between the village level and the "center." It is our hypothesis that this tension has been ignored in much of the literature on development in general, and particularly in that literature concerned with the role of natural resources in economic development.

To ignore the tensions between the village and the center is to miss the essence of natural resource policy in many parts of the world--but especially is this the case in South Asia. By tensions we do not necessarily mean open hostilities--though that is possible. The sort of tensions we have in mind show up in terms of different priorities in resource use, different objectives regarding that use, and certainly different means for addressing conflicts among users at the local level--or between local and non-local users.

To understand resource use in South Asia it is essential to know something of the history of resource control, and also to explore the traditional relationship between a village and the natural resource base in which it is located. On the historical side, we suggest that resource control can be thought of in terms of several dominant eras or phases of resource utilization. We do not mean to imply that these eras fit all local settings in South Asia. But, the general themes can be considered pertinent for many regions.

For the bulk of history the village was the consumption and production unit for most natural resources. A few items were traded, but for the most part local production was driven by local demand. As villages became unified under a variety of rulers, production decisions often were dictated by tribute necessities. When those rulers made economic exchanges with other rulers the notion of "foreign trade" became an important aspect of natural resource use. Colonialism and imperialism

were two logical extensions of early trade agreements--both driven by varying degrees of concern for secure expectations on the supply side. Britain's interests in India progressed from mere trade, through colonialism (targeted administration and control), and on to imperialism (rule).

With the flood of independence for Asian and African countries following World War II, erstwhile royal and colonial administrations gave way to fledgling states. Many were guided in their conception and formation by democratic principles borrowed from--or forced upon them by--western nations with some experience in governance.

That the new governments of these countries, many of which attempted to aggregate extremely diverse ethinic, religious, and tribal entities, faced a formidable challenge cannot be denied. Missing in all of the concern for high-minded governance concepts was an equally pertinent recognition of the importance of administrative and enforcement mechanisms to replace those stripped away at independence.

It is the final era in the above sequence, namely state-building, that is of greatest interest to those of us concerned with resource depletion in South Asia. And it is here also that we encounter an essential ingredient in contemporary village resource-use matters. The Indian village today is characterized by the concept of "nistar". This term describes the fact that members of the village have certain "rights" to utilize some specified areas for the gathering of fuelwood, fodder, dung, and other products such as vegetative residues for their own subsistence. But here we must be careful. In our legal terminology a right is correlated with a duty; Alpha's right to some degree of protection is largely the result of Beta's duty to respect Alpha's interests. Nistar, on the other hand is what we would call a "claim RECIPIENT right" [Becker]. A claim RECIPIENT right is something that a member of the polity can claim, but no single member of the society is compelled by duty to be

the one that provides that claim. Women in the United States may have a "right" to receive an abortion, but no single doctor is compelled by "duty" to provide it.

In pre-colonial India, villagers had nistar rights to natural resources on lands that were called "waste" lands. We point out that this "open access" system bears absolutely no relation to the much-maligned--and mis-labeled--notion of a "commons" as introduced into economics over twenty years ago [Gordon]. In contrast to the commons, where definite institutional arrangements exist to regulate group size as well as utilization per member, nistar rights in South Asia more closely resemble those rights attaching to forests and wastelands of medieval times [Bloch, Duby].

The Asian village economy was one in which the very best agricultural and forest land was under the control of influential and wealthy landlords who were inclined to serve the interests of the rajas or their equivalent. But the village resource situation was one in which the masses who controlled no land still had access to the residual--to roadsides, to ditchbanks, and to other areas too poor or too isolated for effective control and cultivation. They "scavanged" as it were.
As colonial rule subsided, and as the nascent state took shape, the issue of resource control became of central importance. Lands that had formerly been controlled by local political entities came under the administration of the national or regional government. The use of those lands by villagers suddenly became subject to an entirely different set of reciprocal rights and obligations. While nistar lands may not have been much affected by the rise of the central state, forest lands whose control was transferred from a local ruler to the state became something apart from the local economy. No longer was resource access something that might be negotiated for. Now, legislative and administrative arrangements were determined at some remove from the village.

The revolution in Nepal (1951) replaced a monarchy with democratic ideals, promising much to a people that had long lived under an abundance of duties and obligations. A new constitution promised much, and placed the state in the position of guarantor of individual liberties and planned economic development. As is often the case, Nepal embarked upon a "five year plan" with grand themes and admirable objectives, the realization of which would require foreign assistance of both a technical and a monetary nature.

The rising expectations at the village level exceeded the ability of the state to deliver and as so often happens cynicism and distrust set in. Of course village governance was not attuned to the radical developmental themes emanating from the center and so in addition to their physical isolation from the center, there was a more serious isolation--one that roads alone could not overcome. While we can assume that those in the villages were as much interested in "development" as those at the center, the process was (and usually is) totally dominated by the latter. And that domination soon took the form of new institutional arrangements with a direct impact at the village level.

Our interest here is in one particular aspect of imposed institutional arrangement, namely the "nationalization" of all forest lands in Nepal. This action, taken in 1957, upset centuries of traditional patterns of resource control and of the village governance structure over resource use; the existing political structure--with its attendant rights and duties--was rendered quite irrelevant [Chapagain]. Prior to the Private Forest Nationalization Act villagers made use of contiguous forest lands for a variety of products. Although there was no binding legal claim attached to the lands, they were usually considered to be "private" and so that word appears in the legislation.

The state was moved to nationalize forest lands for several reasons. Medical technology had reduced infant mortality and so Nepal's

population was suddenly increasing quite rapidly--putting more pressure on local resources. Malaria control programs had made the terai lands (the lower hills and plains) inhabitable and so relatively pristine areas were being cleared for agriculture. And, the new conviction at the center that ultimate resource control should rest with the state rather than with a large number of isolated villagers.

As might be expected, nationalization in such a setting was destined to fail for two very obvious reasons: (1) villagers were left with no alternative source of supply for the many products formerly collected on such lands; and (2) the inability of the center to enforce the new institutional arrangement. The new structure was also hampered by the realization on the part of the villagers that it was intended as a revenue source for the state in the form of receipts from timber sales. There is some evidence that the Nationalization Act increased the rate of forest destruction as villagers hurried to convert affected lands into agricultural uses so as to exempt them from the transfer [Chapagain].

In the twenty seven years following the passage of the Nationalization Act there have been several other attempts to influence resource use at the village level through institutional change from the center; the record is not encouraging.

There is little doubt in our mind that the nationalization shifted the locus of resource concern from the village to the center. When responsibility for control is taken away there is little doubt that the village loses something in terms of its own sense of responsibility toward the resource. It is this perception on the part of villagers that has been of interest to us. While we cannot examine the impact of nationalization on the attitudes of villagers, we can investigate the current attitudes regarding resource use. To this end we recently conducted a number of interviews among households in a Nepal village. Our interest was in learning about intended resource use patterns, and in how

the expectations of what other villagers would do might influence those use patterns.

THE MODEL

The presumption among many economists is to suggest that resource depletion problems are best solved by the creation of private ownership arrangements over the threatened resources. The fact that serious resource depletion problems exist on private lands seems not to dampen the enthusiasm among those with a predisposition toward this particular institutional form. A second impediment is that privatization is also individualization and that the very existence of externalities rests in the individualization of decisions that carry collective implications [Bromley]. To individualize decision making in a cultural setting with centuries of collectivist tradition is not only to confront essential social norms, but it is to reintroduce the very spillover problems that joint action is so often called upon to mediate.

A South Asian village is, whether economists like it or not, a decision-making unit. In a sense we have the "private" control of resource use--where private is taken to mean the village rather than a single individual. After all, much that we call "private" in the West is controlled by more than one individual. The matter of private control over resources refers to the ability to exclude others, not to how many individuals share in the decision making by those not excluded.

As discussed earlier, much of the decision-making power of the village has been pre-empted in South Asia by the center. The only way in which that resource control can be rekindled and reinvigorated is to recognize the interests of the village as a management entity, and to search for ways to coordinate the independent actions of villagers.

We suggest that a necessary first step in that process is to

understand the nature of group choice over collective assets. Every sophomore in economics is convinced that the "rational" individual will free ride rather than contribute to a public good. This faith carries over into more advanced discussions about the behavior of resource users around the world. Observations by anthropologists that Asian villagers do cooperate on resource-use decisions are considered quaint anecdotes of doubtful generality for resource policy in the developing world. Economic theory says that individuals will free ride and therefore any data to the contrary is immediately suspect. Our interest, therefore, is to attempt to learn something of the free-riding tendencies of Asian villagers with respect to collectively used natural resources.

We take as our starting point the theoretical literature on institutions, of which the work of Frohlich and Oppenheimer, Runge, Schotter, and Sen are of the greatest interest. The essential social role of institutions is to reduce uncertainty by defining and stabilizing expectations of a group of economic agents. Institutions "...organize, process, and store the essential information required to coordinate human behavior [Runge, 1984, p. 162]." A single individual (or household) in the village must determine how much to contribute to a collective good; such contribution may take the form of cash or labor commitments to the maintenance of a village forest, or it may be in the form of foregoing an opportunity to harvest the resource so that depletion is prevented.

In this instance the individual in question may contribute at level D, while all others in the group contribute at level i. Let p_i represent the individual's subjective probability that he/she attaches to the contributions of all other members of the group, given that he/she contributes D. The expected utility to our j^{th} individual is then given by:

$$V_D = \sum_{i=0}^{k} U_{i+D} \cdot P_i - D$$

If individual j donates nothing, then his/her expected utility will be:

$$V_0 = \sum_{i=0}^{k} U_i P_i$$

The j^{th} individual will have an incentive to contribute to the collective resource as long as:

$$V_{D\neq 0} > V_{D=0}$$

or,

$$\sum_{i=0}^{k} U_{i+D} \cdot P_i - D > \sum_{i=0}^{k} U_i P_i$$

That is, the incentive for voluntary contributions from j will exist as long as the expected gain from the contribution exceeds the gain from riding free. It is clear from the model that the key to the contribution of individuals to a collective good is a mechanism whereby they might coordinate their expectations regarding the likely actions of others with respect to the same resource. To the extent that village level institutional arrangements include such mechanisms, and to the extent that they are reinforced rather than undermined by the center, then depletion of collective natural resources is not automatic.

THE FINDINGS

Our experimental work follows in the tradition of Marwell and Ames. We asked the heads of 140 households in Belkot Panchayat, Nepal about their intentions with respect to a willingness to contribute toward the enhancement of a village asset (the forest). It should be clear that we were attempting to measure their behavioral intentions rather than their actual behavior. Each respondent was presented with a hypothetical

situation in which they were told that they would receive an amount roughly equivalent to the current average annual tax burden. At the time of our survey (April 1983) this was Rs.100.

Each respondent was asked to allocate that windfall between a private use (one that would benefit only the household), and a public use (one that would benefit the collectively used village forest, or a community irrigation ditch). Both investment alternatives were said to return 10 percent per year. In addition, the public investment allocation from households would be exactly matched by the national government. It was stressed that all villagers would continue to benefit from the collective resource whether or not they agreed to contribute anything.

The mean investment in the collective good from the Rs.100 windfall was Rs.49.29, with the remainder going to private investments (Rs.50.71). That is, the 140 households split the windfall almost evenly between the collective good and their own private investment. Fifty-one households (36 percent) donated the full amount of the windfall to the collective good, and an additional 30 households (21 percent) donated Rs.50. Combined, 81 households (57 percent) contributed at least one-half of the windfall to the collective good. Only 48 households (34 percent) refused to contribute anything to the collective good.

We found an interesting relationship between the size of the contribution to the collective good and the caste of the household; since caste is also highly correlated with the size of private land holdings, the contribution to the collective good increased with the size of private holdings. Specifically, low-caste households with less than one-half hectare contributed, on average, Rs.31.25 as opposed to Rs.68.75 for high-caste households owning more than 3 hectares.

We asked all 140 respondents to indicate how much of the windfall would constitute a "fair" contribution to the collective good. While one-quarter of the respondents had no opinion on this, the mean of those who

responded (105) was Rs.61.5. This estimate of a fair contribution exceeds by 25 percent the mean contribution of all 140 households (Rs.49.29). Approximately 70 percent of the responding households considered it "fair" to contribute at least Rs.50 to the collective good. Two-fifths of the respondents (44) considered it "fair" to donate the entire windfall of Rs.100 to the collective good. Only one respondent considered it "fair" to donate nothing to the collective good.

In a slight variation on the above experiment, we attempted to determine how the household heads would respond to a situation of unequal windfalls. Specifically, we told 36 respondents that they would be given Rs.200 (rather than the original Rs.100), and that the other 104 households would be given Rs.66. The mean contribution of both groups to the collective good remained almost the same--at slightly under 50 percent of their windfall; a finding consistent with that of Marwell and Ames. Interestingly, the proportion of free riders increased to 40 percent (from 34 percent) among households receiving the small windfall (Rs.66) when compared to a uniform windfall of Rs.100 for all households. For the larger windfall (Rs.200), free riding went from 34 percent of the households down to 25 percent.

When concerned with renewable natural resources it is possible to contribute to their sustainable yield by refraining from use--or using the resource less intensively than one might otherwise consider. We were concerned about this aspect of "contribution" to the collective asset. This forebearance may also represent a more reasonable hypothetical situation than did our first group of experiments where we offered an imaginary windfall and asked the respondents to allocate it between their private investment and a collective investment.

Respondents were asked to imagine that a nearby forested area had been opened up to the village for the collection of firewood, and that 30 bundles of firewood per year per household could be harvested by

villagers on a sustained-yield basis; this quantity of firewood is slightly less than one-third of the annual firewood consumption by village households.

The mean quantity of firewood that respondents said they would harvest was 24, with nearly 60 percent of the respondents (82) indicating that they would harvest less than the sustainable yield of 30 bundles per household. An additional 30 percent of the households (48) said that they would take exactly 30 bundles; only 10 percent of the respondents indicated that they would take more than 30. Ninety percent of the households considered it "fair" to harvest at or below the sustainable yield. This intended cutting behavior was unaffected by another aspect of the interview that asked how their behavior would change if they new that a privileged group in the village was taking more than the sustainable yield.

Our final experiment concerned the grazing of livestock on a newly acquired pasture area near the village. Respondents were told that the pasture could support 1,200 cattle per year, or an average of 3 cattle per household in the village. It should be noted that the average number of cattle in the village is currently about 3.8 per household. Here, as opposed to the firewood case, one third of the households (45) indicated that they would exceed their "share" of the village use and that they would graze between 4 and 12 cattle. The remaining households (two thirds) indicated that they would graze three or fewer cattle.

The mean number of cattle that all households considered "fair" to graze on the pasture was 3.6, exactly the mean number for how many cattle all respondents would like to put on the pasture. As with the firewood experiment, intended grazing behavior was not affected by the prospect that a privileged group of villagers might exceed their share of the use.

IMPLICATIONS FOR NATURAL RESOURCE POLICY

The idea that free-riding is the dominant strategy among economic agents is a venerable one in the literature. Do Nepal villagers free ride? Even recognizing the limitations of our survey we are not persuaded that they do. The matter of how much influence the likely actions of others will have on an individual's response is also of interest in a policy sense; the model employed above placed some store in individual j's expectations of what others in the group would do. We asked the 140 respondents whether or not the likely behavior of others influenced what they would do with respect to their natural resource use and in each of the experiments, approximately 60 percent said that it would not. Thirty five percent of the households said that they would be influenced by the amount of contribution made by other households in the case of the Rs.100 windfall, but when it came to cattle grazing only 19 percent of the respondents said that they cared what others would do. We stress that this independent behavior exists regardless of whether the respondent intends to free ride, or to be "a good citizen."

A very frequent response for why the villager intended to act independently of what others would do was that the respondent "could not read others' minds." Many respondents also indicated a strong desire to "make their own decisions."

It seems safe to conclude that we find a substantial interest on the part of our respondents to contribute to a collective village asset, and to refrain from exploitive behavior with respect to a village asset. At the same time, a majority indicated that their behavior was not much affected by the likely behavior of others. A clear majority do not free ride, nor would they if they thought that others would. Village resource use behavior seems to be very much influenced by a sense for the collective well being. This does not mean that some would not overuse

collective resources--especially in the case of grazing. But the magnitude of that overuse is not considered to be large.

The model that guided this investigation links one individual's contribution to a collective good to the anticipated actions of others in the same social unit. Across all of our experiments we found that approximately one-third of the respondents considered the likely actions of others to be decisive in their own resource-use decisions. This might be taken as rather weak support for the model. At the same time we found that a majority of the respondents said they would make contributions to the collective good. Hence, while the villagers seem to imply that they do not much care about what others intend to do, we believe it is reasonable to assume that the villagers know what is expected of them, and that others know likewise. Hence while claiming that the actions of others are not generally of concern to them, they may be secure in the knowledge that the resource-use decisions of the others will not be greatly out of line with some accepted norm.

We hypothesize the presence of a "background ethic" or norm that influences collective resource use decisions. This norm has evolved over time as the members of a village struggle with the daily task of making a living. The majority care about the collective welfare, a minority will take more than is "safe or fair", and both will do so irrespective of what they think others will do. This is not striking unless one believes that all individuals are greedy free riders.

But working against this background ethic are two serious threats--one coming from the villagers themselves, and the other from the state. The first is population pressure. The second is the kind of resource policy formulation discussed at the outset; government passing laws and formulating administrative policies that threaten the existence of individual households. Such external influences are critical in the process of pitting villagers against themselves, and of ultimately

shifting resource stewardship away from the village. When resource responsibility is taken away from the village, so is the concern for the viability of the resource. It is the "patron syndrom" turned on its head; villagers do not care much for things that the state gives to them, and the same thing would seem to apply to the things that the state takes away. We should not be surprised.

We find a residue of concern for collective natural resources in a country that has been characterized as one of the most seriously exploited, and where the state has usurped local resource management in name but not in deed. The lessons for the formulation of resource policy would seem to be several. First, the state must not decree what it cannot enforce; to nationalize the forest in name, yet to leave it unmanaged and unadministered is probably worse than having done nothing. Second, supply-side policies that restrict local resource access must be matched by innovative policy on both the supply side--in the form of providing alternative supplies--and on the demand side in the form of helping to develop techniques and institutions that will dampen the need for the threatened resource.

In the absence of these aspects of a resource policy, the center is simply exacerbating an already serious situation. More critically, it is undermining its possible future role for providing solutions to problems that will surely get worse before they get better.

REFERENCES

Becker, Lawrence R., Property Rights, London: Routledge and Kegan Paul, 1977.

Bloch, Marc, Feudal Society, Chicago: University of Chicago Press, 1961.

Bromley, Daniel W., "Land and Water Problems: An Institutional Perspective." Amer. J. Agr. Econ. 64(1982):834-44.

Chapagain, Devendra P. "Managing Public Lands as a Common Property Resource: A Case Study in Nepal." Ph.D. thesis, University of Wisconsin, 1984.

Duby, Georges, The Early Growth of the European Economy, Ithaca, New York: Cornell University Press, 1978.

Frohlich, N. and Joe Oppenheimer. "I Get By With a Little Help From My Friends." World Politics 23(1970):104-20.

Gordon, H. Scott, "The Economic Theory of a Common-Property Resource: The Fishery." J. of Political Econ. 62(1954): 124-42.

Marwell, Gerald and R. Ames. "Economists Free Ride, Does Anyone Else?: Experiments in the Provision of Public Goods IV." J. Public Econ. 15(1981):295-310.

Runge, C.F., "Common Property Externalitites: Isolation,

Assurance and Resource Depletion in a Traditional Grazing Context." Amer. J. Agr. Econ. 63(1981):595-606.

Runge, C.F., "Institutions and the Free Rider: The Assurance Problem in Collective Action." The J. of Politics 46 (1984):154-79.

Schotter, Andrew. The Economic Theory of Social Institutions, Cambridge: Cambridge University Press, 1981.

Sen, A.K., "Isolation, Assurance, and the Social Rate of Discount." Quarterly J. Econ. 81(1967):112-24.