DISCUSSION PAPER

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COMMON PROPERTY RESOURCE MANAGEMENT IN SOUTH INDIAN VILLAGES

by

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Summary

How do Indian villagers manage common property resources, such as canal irrigation water and grazing? In one small area of South India I found a remarkable variation between villages in the degree to which village units organised themselves to undertake such management functions. Some villages were more highly organised than anything hitherto reported in the literature on (non-tribal) villages; others, perhaps only a few miles away, had no village-level organisation at all. This paper sets out in broad terms the argument I use to explain this pattern of variation. The presence or absence of village-level organisation has a great deal to do with the degree of risk of crop loss faced by many or most farmers of the village; which is in turn related to ecological conditions of soil type and water scarcity.
"Indian society today", says the sociologist V.R. Gaikwad, "is an atomised mass, composed of individuals who are not in any organized fold except the family and the extended kin-groups which form the sub-caste" (1981:331). Much the same has been said not just of Indian peasants, but of peasants-in-general. Such writers as Foster (1965) and Popkin (1979) have given great stress to the unimportance of the village as a focus of collective action and sentiment. This theme of the peasantry literature resonates with the theme of the "public choice" literature, which stresses the difficulties of voluntary collective action in any kind of society other than, perhaps, certain kinds of communes. If common-sense suggests that people who perceive a joint interest will join to pursue the interest, and hence that a perceived common interest is a basic element in explaining collective action, the public choice theorists say that common-sense is wrong. The rational individual will not voluntarily contribute to a common goal if the group is large and if he cannot be excluded from enjoying the benefit. He will, instead, seek a free ride. As a result, any collective action which is not based on coercion or on the availability of selective incentives tends to be fragile; and tends to supply fewer public goods than the members would be prepared to pay for on the market (Olsen 1965).

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Not everyone would agree that collective action and the voluntary supply of public goods must be explained only in terms of the behavior of rational, self-interested individuals. We do after all observe a good deal of voluntary collective action which seems on the face of it difficult to explain simply in terms of the selective benefits provided to participants (ecological lobby groups, for example). In any case, whether the axiom is accepted or not there remains the empirical question of the conditions in which varying types and degree of collective action are found. Yet many writers on peasantry have been so concerned to emphasise the difficulties of collective action that questions of degree and difference have been overlooked.

Much of the literature on collective action and public choice has dealt with the question of under what conditions individuals will make voluntary financial contributions to the provision of a public good. We can turn the same kind of analysis to common property resource management by rephrasing the question as: under what conditions will individuals formulate, and agree to abide by, a rule of restrained access to common property resources. In this case too, as in the case of financial contributions to the provision of a public good, there seems to be an in-built incentive for the rational, self-interested individual to free ride -- to cheat on the rule of restrained access while everyone else abides by it, on the assumption that others will not notice; so there seems to be an inner imperative for regression from rule-abidingness to unrestrained use. Certainly the literature contains many examples of where rules of restrained access to common property resources (such as grazing, irrigation water, and trees) are violated and the resource depleted. But
the literature also contains many cases of where local groups have been able to agree upon rules of restrained access and upon mechanisms to enforce the rules using authority from within the group rather than imposed from outside by a government. In these cases we can talk of a "public realm" within the group, which consists of the rules and roles involved in common property resource management.

**Indian Villages**

The conventional understanding of Indian villages is that they do not have any real public realm. A number of men are usually regarded as "big men", as being in some sense first in the village. But there is no clearly defined social domain or institution separate from state authority where activities of a "public" nature are carried out, no centre of community management other than the bottom levels of the state apparatus itself, and no machinery for raising resources for public (village) purposes other than through state-sanctioned taxation.

My research suggests a more complex picture. I compared 41 villages in an upland part of South India in terms of the range and strength of their public realm. Thirty-one of the villages are irrigated from a large canal system; ten are dry. A significant number of the 41 do show a common purposefulness and ability to provide public goods and services. The arrangements are local and autonomous. They are not integrated with, initiated or sustained by outside bodies, whether government or voluntary agencies. The scope and degree of local collection action in these villages exceeds that reported previously in the literature and
Indian (non-tribal) villages. On the other hand, such villages are not in a majority; most villages in my sample do fit (roughly) the "atomized mass" characterization, and only a few miles may separate a village with a substantial amount of corporate organization from others with none.

The Public Realm

The public realm consists of four main institutions: a village council (quite distinct from the statutory Panchayat of local government legislation, which is moribund in all villages in my area); a village standing fund (distinct from local government moneys); a work group of village field guards, employed by the council to protect the crops from the depredations of livestock and thieves; and a work group of "common irrigators", employed by the council to distribute water to the rice fields and to help bring down more water to the village through the government-run irrigation canal. The council, and through it the field guards and common irrigators, are loosely accountable to an annual meeting of all the village's cultivators. In addition to the central services of crop protection and water distribution, the council also organizes the supply of many other public goods and services, such as well-repairing, monkey-catching to rid the village of monkies, donations to help meet the cost of a new primary school or of a building where sick animals can be treated, and so on. All these services except water distribution are financed from the village standing fund, which the council administers; the standing fund is fed by a variety of income-raising devices which the council also administers.
Take K village as an example. (I and my research assistant, Jeremy Jackson, lived in K for several months during 1980-1982.) It has a population of just over 3,000. Its council consists of about nine members (the number is fixed for any one year, but varies slightly from year to year). Together they have authority to take decisions affecting all the village. The village's standing fund spends about Rs. 10,000 a year (in an economy where a male agricultural labourer gets about Rs. 4 a day outside of seasonal peaks). The standing fund pays the salaries of the field guards. Four field guards are employed full-time for most of the year, and another two to four are added near harvest time. As for common irrigators, about 12 are employed for up to two and a half months, for about 1,200 acres of first season rice. At harvest time the common irrigators, no longer needed for water, supplement the field guards, giving K a total of some 20 village-appointed men for harvest crop protection.

In the sample of 31 canal-irrigated villages (all in Kurnool district of Andhra Pradesh) eight villages have all four of the main corporate institutions -- council, fund, field guards, common irrigators; eleven have some but not all; and twelve show no trace of any of them. The sample was drawn not randomly but with an eye to ease of access and a representative range of water supply situations, so no conclusions can be drawn from these proportions about how frequent the corporate forms are in the area as a whole. But they are clearly not rare. Moreover, many dry villages have some of the same institutions. In a sample of ten, eight have field guards; six have a village council; and six have a village fund. So some of the dry villages have a more clearly defined centre of community management than some of the wet villages.
Kurnool district is semi-arid; average rainfall is 620 mm per year, in a unimodal distribution. Population density averages 105 people per square kilometer (1971), up from 53 in 1870. Seventy percent of the cultivated area is under foodcrops; only 12 percent of the gross cultivated area is irrigated. Thirty four percent of villages are supplied with electricity (1971). There is one tractor per one or two irrigated villages, and many fewer in rainfed villages (1980). Most variation is real wage rates is contained within the range of 3 ± 1.5 kilograms of foodgrain per day. It is a poor district, in no way untypical.

The Management of Grazing

The impetus for central control at village level comes primarily from two distinct sources of social conflict and production loss in the vital agricultural sphere. Trespassing animals and thieves are one sources. Unrestrained taking of canal irrigation water is the second. I discuss these in turn, using K village by way of example.

K has a population density of 159 people per square kilometer, or 9 on the Boserup scale (1981), at which one would expect to find from Boserup, and one does in fact find, a farming system characterized by "annual cropping" (at least one crop per plot per year) and "multiple cropping" where irrigation permits. Little waste or yearly fallow land is left; the village has no "common", in the sense of a largish area available for common grazing for a year or more. But oxen and buffalo are needed in this agriculture for traction; and they must be fed. During the crop growing season they perforce graze close to standing crops, on the verges or on small areas of fallow, which are treated as "commons". With no
fencing, reliance for crop protection has to be placed on shepherding or tethering. The problem is that the incentives for careful shepherding or tethering are distinctly asymmetrical; I may not be unhappy to see my animals get fat on your grain. The open-field system of husbandry familiar during the medieval and early modern period in Europe was a response to the same problem. But whereas the open-field system met it primarily by regulating the cropping, these Indian villagers meet it mainly by regulating the livestock. The rationale of the field guards is to make the incentives on tethering and shepherding less asymmetrical.

What the field guards do is to patrol the village area and make sure no animal is grazing a standing crop. If they catch an animal in the act, they take it to the village pound, where it remains until its owner pays a fine. If just a few animals are involved the fine is a flat rate per head, Rs. 2 during the day, Rs. 4 at night. The council sets the rate. The field guards collect and keep the fine, dividing it equally amongst themselves. If large numbers of animals are involved, the council decides the fine case-by-case. It may run into hundreds of rupees. The field guards collect the fine, keep 25 percent, and hand over the balance to the standing fund. (In most villages the owner of the damaged crop is not compensated.)

What the field guards do not do is to enforce a "stinting". The decision about how many animals to own and graze is left to each individual.
The discussion so far has dealt with the grazing of the village's own stock of animals. Limited year-round grazing in the village or its environs means that most of the village's grazing animals are "big" stock, oxen and buffalo needed primarily for draught power. Relatively small numbers of "small" stock -- sheep and goats -- are owned by villagers. However, after the harvest of (most of) the rainfed crops in February large areas of stubble become available for grazing. (It needs to be noted that all the irrigated villages have some area under rainfed crops as well, and in most irrigated villages the area under rainfed crops is greater than the irrigated area.) It would be possible for each landowner to reserve the stubble on his own land for his own animals or those he chose to allow in, if owned by others. He could do so by posting guards around each field, or by fencing. The cost of either method of exclusion -- the cost of privatizing the stubble -- is very high, however; all the more so given that (as is commonly the case in peasant societies) any one landowner has his holding divided into a number of scattered plots (McCloskey 1975). So, like in the open-field system of Europe, the stubble is put in common, and private rights to the product of the land extend only to the crop, not to the crop residues.

How, in the "corporate" villages, is this commons managed? Recall that the village's own stock of animals is adjusted to the year-round grazing, which is much less than the grazing which becomes available after the harvest of the rainfed crops. There is thus an opportunity for the village -- for a village authority -- to earn revenue by renting out the village's surplus grazing. Large tracts of Kurnool district are hilly and arid, covered in scrawny scrub, and unsuitable for more than desultory cultivation of sorghum and millets. Here live people
for whom the herding of sheep and goats is a major source of income. After the harvest of the rainfed crops, they come down into the irrigated tracts seeking grazing for their sheep and goats. They want the grazing (and water). The farmers want their fields cleared of stubble and manured.

The market for grazing and manure is organized in two distinct ways. In one way, a small group of herders comes to a village and bargains with the village council for exclusive access to the village’s grazing. The bargain states how many sheep and goats they will bring, when they will come, how long they will stay (in terms of a date before which they will not leave and a date by which they will be gone); and most importantly, how much they will pay for the franchise. Once the bargain is made, that group of herders have exclusive claim to the village’s grazing, and others can enter only as some leave. Their flocks graze over the stubble by day. By night, when the animals drop most of their manure, they are folded, flock by flock, on the plots of particular landowners, who pay them an agreed rate per head for the manure. So the herders as a group pay the village a lump sum for access to the commons; and they individually get back part of what they pay through the indirect sale of manure.

The second method (used in K, amongst others) is more complex. A group of herders, as before, obtains exclusive access. But instead of a group entry fee or rent, an auction is held at a regular interval (every four days in K) to decide who will have each flock on his land at night up to the next auction. The auction is arranged by the village council. Half the amount of the winning bid (for each flock) is then paid to the herder, and half goes to the village funds.
In K, some 9,000 to 13,000 head commonly enter the village at this time to graze the stubble on that part of its approximately 4,000 acres of arable land which is not still growing a crop. The village fund commonly gets about Rs. 5,000 in return, in the space of about six weeks. However, the entry of such a large number of animals at a time when some crops (mainly the irrigated ones) are still standing poses a serious risk of loss for those crop owners. The response is to tighten the regulation of the livestock, in two ways. One is to stipulate a set of rules by which both herder and laudowner must abide. These rules are read out at the first auction of every year, and may be read out again if there are infringements. They are worth giving here, because they do not fit easily with the view that Indian villagers cannot, so to speak, get their act together; even though they may seem unremarkable in relation to the elaborate by-laws of open field villages of medieval England (Ault 1972).

For the herder: 1. He must take the flock to the designated field by 6:30 pm and keep it there till 8 am. 2. He must not allow the flock to graze standing crops. 3. Half of the amount to be paid to the herder for the first "turn" (four nights) must be put on deposit with the council; if the herder leaves before four turns (sixteen nights) have been completed he forfeits this amount to the village fund. (This is to discourage the herders from leaving inconveniently early, before the farmers have had their fields manured and cleared of stubble.) 4. The herder must stay within the village boundary; if the farmer asks him to go to a field outside the village boundary he must refuse.
For the farmer: 1. He must keep the flock within the village boundary. 2. If he wishes to pay the fund or the herder in kind rather than in cash, he must make the conversion at the rate of Rs. 1.25 per measure of hybrid sorghum or Rs. 1.50 per measure of "local" sorghum (early 1980). 3. He must send men to help the herder guard the flock at night, at the rate of two men per 2,000 head. If hired, the men must be paid Rs. 3 per night, or grain equivalent. (This is to prevent the farmer from sending non-able-bodied men, who could be paid less.)

Such tight specification of responsibilities by the council reflect the real danger of loss to standing crops on unfenced fields. Rules of this kind, however, are not self-enforcing. Any one farmer would have an incentive to cheat, by failing to provide the stipulated number of herd guards or by bringing the flock to his field outside the village boundary. So the second intensification of joint regulation is by means of village-appointed field guards, to police observance of the rules.

Field guards must be paid a salary, however. It would be possible for the council to lay down a flat rate, so much per cultivated acre, which each landowner had to pay the field guards. But this arrangement is vulnerable to free riding. A farmer may delay payment indefinitely, expecting that others will not similarly delay; in this way he can continue to benefit from the general discipline of livestock which the field guards' provide while not himself having to pay a part of their cost. So in most villages the free rider problem is by-passed by finding a method of raising income for the field guards' salaries which does not depend on individual contributions. The chief source of money is the one we have been considering: namely, the income from renting out the
village's grazing. Once a village gets itself together to rent out its grazing, the amount of money that can be earned is much more than is needed to provide a field guarding/grazing-rules-enforcing force only for the period when large numbers of outside stock are in the village. The money is sufficient to provide a semi-permanent field guarding force. Here, then, we see the impact of the free rider problem: in the context of field guarding it is a serious matter, and institutions are designed to by-pass it by diverting the supply of the public good from individual contributions. However, the by-pass institutions are more costly to administer, and especially in small villages (500 people or less) farmers often try to institute the individual payment method for meeting the field guards' salaries. Recurrent free rider problems then tend to force them towards a more complex arrangement like selling the franchise to the grazing.

Indeed, the "corporate" irrigated villages tend to have several sources of revenue for the standing fund, almost all of them based on the sale of council-sanctioned franchises. One is the franchise to sell liquor in the village. By law the franchise is sold in a government-run auction. Typically, however, the corporate villages send along along only a single person from their village, and so obtain the government franchise at the lowest price. They then arrange their own re-auction within the village. Since there is competition, the village price is much higher. The difference between the price paid in the village auction and the bid in the government auction goes to the village fund. Or again, one village in the sample has an irrigation "tank" (small reservoir) within its boundary. Each year the council stocks it with fishlings, and later in the year auctions the franchise to catch the fish, the money going to the fund.
Some villages auction the right to collect a commission on all grain sales from the village. The income sources vary considerably between villages; but the grazing franchise is the most common. With a standing fund in surplus above the field guards' salaries, the fund can then be used to provide additional public goods and services, such as those mentioned earlier.

The Management of Irrigation

Irrigation is the second source of conflict and possible production loss. In any irrigation system that experiences water shortages there is an inherent conflict between "upstream" and "downstream" farmers. Upstream farmers have first access and their supply is relatively abundant, while their water behavior determines how much water the downstreamers will get. Without the intervention of regulation and rules of restrained access constant conflicts are likely, if water is scarce.

My villages (if a colonial short-hand is allowed) are fed from large-scale government-run irrigation canals. Paddy rice is the only significant first (wet) season crop. It is transplanted in late July - early August and comes to harvest in December - January. By the end of September the heavy rains have normally stopped, and the crop is dependent largely on canal water. The common irrigators are appointed shortly thereafter. Their job is to allocate the scarce and fluctuating supply of canal water over the village's land; and also to help procure, by one means or another, more water for the village from the government-run supply (which may include surrepticiously blocking the outlets of higher up villages).
Note two things about this arrangement. First, the common irrigators do not influence decisions about how much land will make a claim to the irrigation water; those decisions are left in the hands of individual cultivators (as are decisions about how many animals to graze). Second, however, once the common irrigators are appointed, they take very important irrigation decisions out of the hands of individual farmers, in the name of a village-wide authority.

The criterion used by the common irrigators is "adequately wetted". Each field is entitled to be adequately wetted; but it cannot then receive water until all the other fields beneath that outlet (most villages have several outlets) have also been adequately wetted. This is quite different, then, from the open access, first-come-first-served rule which prevails before the common irrigators are appointed, which if continued after the rains stop and canal water becomes scarce would give upstreamers a constant advantage. "Adequately wetted" is also quite different to the basic criterion of water distribution in Northwest India, where canal water is constantly scarce; there a "fixed time per acre" principle is used, such that during a fixed period of the week any one field is entitled to draw whatever water is flowing in the watercourse but cannot draw more water until its fixed time of the week comes around again. The difference presumably relates to the difference in the crop-water response function for rice (in my area) and non-rice (in the Northwest). If rice gets less water that potential evapotranspiration, the fall-off in yield is much more severe than if non-rice gets less. "Adequately wetted" at least ensures that each time around some fields will receive this much, and whose fields they are depends simply on their position on the watercourse.
However, whereas "fixed time per acre" is self-policing (the next farmer in line knows exactly when his turn should start), the judgement of "adequately wetted" cannot be left to each individual irrigator. Use of this criterion requires a superordinate authority to make the judgement in the common interest. And so we find an intriguing transition: water which was previously allocated by an open access, first-come-first-served rule becomes, after the common irrigators are appointed, allocated by a village-wide authority. Plants shows a somewhat similar transition: crops are privately owned, but what is left behind after the crops are gone from the land becomes subject to the rules of the same village-wide authority. Water moves from open access to common property; crops move from private property to common property.

Individual irrigators who steal water — who try to influence how much water they get once the common irrigators have been appointed — are liable to be brought before the council and fined. During a drought, when the common irrigators are "spreading water like money", the fines may run to Rs. 20 to 50 per time; but the main penalty is the loss of reputation which the dressing-down in front of the council entails.

The common irrigators are paid at harvest time by means of a per-irrigated-acre levy on each irrigator, not from the village fund. The rate is set by the council. Is this not vulnerable to free riding? The short answer is no, because the collection is made at the time of harvest, in kind, the one time of the year when every irrigator patently has no excuse to delay payment in kind. (If the field guards were also to be paid at harvest, they would have to be paid either long in advance for the year
ahead, or long in arrears for the year behind; there would be problems of
storing the grain if the council were to pay them monthly in kind.) More
important, however, common irrigators not paid one year can more readily
damage the non-payer the next year. The withdrawal of common irrigator
services from one individual's land has more serious implicatons than does
the withdrawal of field guarding services from that individual's land. So
again the free rider issue is relevant: the fact that financial free riding
could be more easily punished in the irrigation case, and that if others
were to follow the example the consequences of widespread free riding would
be serious for a downstream free rider, means that the council does not
have to extend itself to raise more revenue for the fund so as to pay the
salaries of common irrigators as well as field guards.

The Ecological Basis of Common Property Rules

I have been discussing how things are done in the "corporate"
villages, those which have all or most of the four corporate institutions.
Although most of my detailed information comes from K village, there is in
fact remarkably little variation in the principles of organization of the
four key institutions from village to village, even though the institutions
evolved autonomously, not imposed from above. However, many villages have
no corporate organization. In these villages there is no village council,
no standing fund, no village-appointed field guards (private landowners may
appoint their own, sometimes coming together into small groups to do so),
and no common irrigators. Here the rule of open access to irrigation water
continues through the irrigation season, though informal turn-sharing may
develop along some watercourses. Here uncoordinated groups of herders may enter a village’s land at will, or with the unpaid-for permission of the headman, and will negotiate individually whose fields they fold their flocks upon, for how long each time. Why the difference between the "corporate" and "uncorporate" vilalge?.

The first point to note is that the corporate irrigated villages are located towards the tail-end of an irrigation distributory (roughly, the bottom one third of its length, where typical distributories may be 5 miles long or more). The second point to note is that the corporate dry villages tend to be located in black soil rather than red soil areas. The third point is that in the semi-arid tropics generally, black soil areas tend to be lower down a water shed than red soil areas. So irrigated villages towards the tail-end of a distributory (given that distributories run from higher to lower ground) also tend to have a higher proportion of black soil areas.

Black soils are more water-retentive than red soils, and permit a wider range and higher yields of rainfed crops. Black soil villages thus have a more abundant and more varied supply of stubble after the harvest of the rainfed crops. More herders want to bring their sheep and goats to graze in them. With unrestrained access, too many animals might come in, causing the soil to become excessively impacted. But also, if more herders want to come in, the opportunity for earning money with which to pay for field guarding, not just while the animals are at large but also through the rest of the year, is more attractive. Moreover, the risks of crop loss are higher: in the more varied black soil cropping pattern, large areas of stubble from the early-harvested crops will become available at the same
times as later-harvested crops are still standing. With higher risks of crop loss, the premium on being able to organize a regulation of the livestock is also high. This provides the impetus to field guards and a sanctioning village council in the black soil areas; while the herders' willingness to pay for good black-soil grazing provides a way to financing the field guards.

This causal nexus operates in all black soil villages whether irrigated or not (recall that most irrigated villages also have a large area under rainfed crops). It is then reinforced in tail-end irrigated villages by water scarcity, and the consequent risk of conflict and crop loss. Of course, if the power structure of the village were such that no collective action could be sustained without the agreement of small number of households, and if these households held all their land close to the irrigation channel, then they may have no interest in rules of access. In practice, however, holdings are typically scattered about the village area in small parcels, partly as a risk diversification measure. A landowner with a plot close to one irrigation outlet may have another plot close to the tail-end of a block fed from another outlet. This greatly helps the consensus on the need for rules and joint regulation. It may be that the degree of scattering is greater in black soil than in red soil villages; because, perhaps, owners wish to utilize the greater variety of soils in the black soil areas so as to spread risks. (The movement of water laterally through the soil and sub-soil profile is also more complex in black soil areas; so that it is not always the case that land closer to the irrigation outlet is more desirable than land further away.)
Areas of rainfed cultivation higher up a distributory have more red soil, which dries out sooner after the rains stop; so they support less stub'le; so herders are less interested in grazing there. And higher-up irrigated areas tend to be under paddy, in both seasons; but sheep and goat manure is wanted mainly for non-paddy. So both the demand and supply of animals and grazing is less in higher-up villages. In higher-up villages, also, canal water is less scarce and fluctuating.

Thus both sources of conflict and crop loss are stronger in villages lower down a water-shed than in villages higher-up. The evidence of my sample suggests that lower down villages are very likely to have a differentiated public domain in which the appointment, supervision and payment of specialized work groups is carried out, and rules of common property use decided upon and enforced. The existence of this sort of organization does not seem to be very sensitive to variations in the standard sociological variables, such as caste structure, factions, and the like. Common need seems to be an almost sufficient condition, in contrast to the argument of the "public choice" literature. Free rider problems remain, but they do not generally destroy. At the same time, however, my evidence also questions the common anthropological generalization that irrigation per se induces a more clearly defined pattern of community management. Some of the dry villages have much more corporate organization than all of the abundantly-irrigated villages. The social response is not to irrigation per se, but to risk of conflict and crop loss. Where water is abundant that risk is small.
What about the effects of the rules of restrained access on resource use? This question turns out to be exceedingly difficult to answer, in particular because of the difficulty of finding matching pairs of villages, alike in ecological conditions, one of which has, the other of which has not, the corporate institutions. All one can say with some confidence is that both production and equity are higher in the villages with these rules and institutions than they would have been in those same villages in the absence of the rules and institutions.

My explanation for presence and absence uses a simple combination of individual self-maximizing joined with variations in ecological risk. I say that where the individual benefits from joint action are high, joint action is likely to be forthcoming. This is not to say that the free rider problem, the temptation for self-interested individuals to go for immediate gain, is minor. The need to respond to the free rider problem has a basic effect on the organizational design. We saw how it affects the amount of revenue the council has to raise by means other than individual contributions. But also, we noted that the council has developed a formidable set of mechanisms for enforcing the rules, for precisely the purpose of convincing individuals that other people will probably abide by the rules, so that if they too abide by the rules they will not be the sucker (Runge 1984). These expectations come not only from the enforcement mechanisms. They come also from the social composition of the council, an elite body with no pretence at "representation", which draws upon the power and prestige of the individual members to bolster its legitimacy in the resource management sphere. And they come from the length of time that the council and its rules have been operating, which is, in all these villages, at least several decades.
So I use an assumption of methodological individualism to explain why certain resource management rules have emerged in some villages but not in others. That is to say, I do not think a sense of obligated group membership, or a belief in "cooperation" as a desirable way to live, are important factors. There are no grounds for thinking that general social norms of solidarity and cooperation vary between my villages. On the other hand, the rules and institutions I am concerned to explain are distinctly "second order", not first order; they presuppose a wider and more fundamental set of rules and norms making for a general pattern of social order. I do not believe that these first order rules and institutions can be explained in the same sort of terms, as the result of prior rounds of individual maximizing (Field 1984).

Lessons for Organizational Design

Suppose local common interest groups are to be deliberately induced by an outside authority, as in "water users associations" or other kinds of formal rural cooperatives. What design principles does this study of autonomously evolved groups suggest? The first is that, in the South Indian context at least, villagers are likely to follow joint rules and arrangements only to achieve intensely felt needs, which could not be met by individual responses (Johnston and Clark 1982). These are likely to be concerned primarily with the defence of production (avoidance of crop or animal loss), secondarily with the enhancement of income, and lastly by a long way, with education, nutrition, health, and civic consciousness. The opportunities for avoiding losses or making income gains by collective action will only be taken if the losses or gains are very large. In my
irrigated villages, corporate organization to manage common property is found, with hardly any exceptions, only towards the tail-ends of distributories.

The second principle is that the generation of authority (the right to decide for others) is likely to be problematic within such common interest organizations, and if the organization is to be sustained it should draw on existing structures of authority. In practice, this means that the council will be dominated by the local elite, which is a disturbing conclusion for democrats and egalitarians. Would it not be better to prescribe a representational rule and/or a majority vote rule for selection of decision makers? If the experience of these Indian villages is a guide, the answer is no. One, reason is that such rules carry little legitimacy in the eyes of the powerful. But more importantly, the robustness of the organization depends on its councillors all having a substantial private interest in seeing that it works; and for the kinds of functions we are considering here, that interest is greater the larger a person's landholding (assuming that landholdings are typically divided into scattered parcels). By including on the council only those who have a substantial private interest in seeing that the public good is provided, the council itself becomes (or comes close to becoming) the minimum coalition whose members find it in their private interest to observe restrictive rules, even if others cheat (Runge 1984a). That is, the council itself becomes (or comes close to becoming) a "privileged" group, in Mancur Olson's terms; one in which "each of its members, or at least some of them, has an incentive to see that the collective good is provided, even if he [or they] have to bear the full burden of providing it himself [themselves]" (1965:50).
In other words, the councillors plus the non-councillors regularly involved in its deliberations (who will have been councillors previously) together come close to being a minimum cooperating coalition, in the sense that if all of them cooperate, they are individually better off even if everyone else cheats (or at least, even if many others cheat). This effect is then greatly reinforced by the greater power of the elite councillors versus the mass of the population; for the tendency of the non-elite to cheat, hoping that because of large numbers no one else will notice, can be checked by sanctions contained in the wider order of property and stratification. Without these wider sanctions, the formal penalty mechanism would in all likelihood constitute an inadequate barrier to cheating. This is a point that the "public choice" literature tends to overlook, because it assumes a context of free and equal individuals.

One specific implication of the argument is that, where water users associations are to be deliberately fostered, then the village rather than the water unit is likely to be a more viable unit of organization; the attempt to induce irrigators who depend on one canal outlet to form a water users association (an outlet based group) is likely to be fragile if such a group has not already been mobilized for other purposes. It will simply not contain enough authority. Yet many programmes for irrigation improvement in India assume that the "natural" unit organization is the outlet.

If the elite run the organization, will the organization not become another instrument of exploitation? That it does not become so in these Indian villages reflects a basic rule of scope: the council is concerned only with non-privatizable benefits. It is not involved in input
supply other than water. It is not involved in setting disputes unrelated to husbandry or water. It does not try to compensate the owner of animal-damaged crops using the fine levied upon the animal owner; for that would generate conflict about privatizable value. In K village, the one time the council tried to intervene in the allocation of privatizable goods — namely, in allocating rationed sugar — the conflicts over who got it became so strong that the organization almost ceased to function. The council eventually resolved that henceforth it should have nothing to do with rationed sugar. All the activities it is involved in are (with this one temporary exception) characterized by strong externalities.

To confine the scope to activities with strong externalities is the third principle. The fourth is to add on other, less vital functions only as the organization becomes well institutionalized in the performance of the vital functions. In all my villages, the less essential things (well-repairing, monkey-catching, and so on) are only done by a village-wide organization when that organization also does the core activities of field guarding and common irrigating; but not all those that are organized to do the essentials also do much of the less-essentials.

The fifth principle is to keep the techniques of calculation and control simple. At the same time, there will be a need for some procedures of record-keeping and accountability, so as to "institutionalize suspicion", in Ronald Dore's phrase (1971). The procedures only make sense on the assumption that the treasurer, for example, might have stolen. But it is in the interests of the treasurer, as well as the contributors, to follow procedures which would tend to expose his stealing. In this way the suspicion that the treasurer might have stolen is given regular, institu-
tionalized expression. In these Indian villages, the annual general meet-
ing of all cultivators to discuss the forthcoming season, ratify the new
council, and receive nominations for field guards is a simple technique of
this kind. So also is the rather simple kind of record-keeping on standing
fund income and expenditure, which is read out at the general meeting.
Meetings of the council are held in the open, and anyone who passes can
hang about the fringes.

Conclusion

I have examined spatial variation in common property management
within an area of South India small enough for technology, tastes, and
general social norms to be constant, while resources, notably soil and
water, vary. The central conclusion is that village-wide institutions are
only likely to be formed and sustained when the risks of loss are relative-
ly high; but within the limits of the sample, the chances that such insti-
tutions will exist in the relatively high risk situations are good. Of
course, the limits of the sample are very narrow. The argument needs to be
applied to other locations in India. Wider testing will almost certainly
show that while the relationship between risk and social response seems to
be almost a sufficient one within the sample (risk and social organization
are always related to one another in the predicted way), it is in fact
affected by numerous contingent conditions, variations in which will cause
the risk-social organization relationship to vary also. I suspect that in
Japan one would find a less close connection between village position on an
irrigation distributory and corporate organization; because government's
workable authority is an important contingency (the water allocation agency
would be more effective at spending water scarcity evenly down the distri-
butory), and because culture is another important contingency (the Japanese
"passion for organization" would make the elasticity of organizational
response to scarcity and risk much higher, so that even villages with rela-
tively little risk of crop loss and conflict would form regulatory organi-
izations). I also suspect, however, that the contingencies are not so
strong within India as to make the occurrence of this type of corporate
organization rare; I suspect that much more autonomous local group organi-
ization for resource management exists in the Indian countryside than is
generally thought.

Finally, I wonder whether we can learn from the study of autono-
mous local group organization something about the conditions for the
original formation of states. We see in these Indian villages a clear
example of how in some circumstances individuals can agree to assure mutual
cooperation via mutual coercion (with some individuals more coerced than
others). If, with some political theorists, we look upon the state as
based on a conjunction of contract and coercion, and if we think of the
first states as constituting a relatively advanced stage of evolution of a
public realm in local communities, we might then draw on an understanding
of how the conjunction of contract and coercion is sustained in these
Indian villages today for insights about how it emerged in the agricultural
communities of pristine states.
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