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## The Design of Resource-delivery Systems: A Socio-ecological Perspective

Organizing the delivery of resources to the poor in a fair manner in a basically "unfair" social and economic structure poses a tremendous challenge to policy planners. The problem becomes further complicated when there is a mismatch between the ecological characteristics of the environment and the criteria used by public resource-delivery organizations, such as nationalized banks, to provide resources to the people. As a result, safer and surer organizational practices and designs tend to emerge to cater to articulated demands for resources rather than designs that involve the identification of the needs of the poor and their conversion into demands on the organization. The market-creating developmental role is overshadowed by the market-responding role. Sectoral, spatial, and seasonal imbalances widen. In the process, economic disparities in society may become legitimized as "inevitable" during the process of economic

transition. The "is" becomes the "ought."

The process of development in an essentially agrarian society of mostly poor peasants and landless laborers with chronic deficits in their household budgets [1] is essentially a process of lengthening the time frame of their investment decisions. The extension of this time frame is a *necessary condition* for ameliorating poverty. The provision of organizational support to help the poor perceive and facilitate viable, long-term choices may be a *sufficient condition* for the purpose. This requires public delivery organizations to play a market-creating role as much as a resources-dispensing role. It requires effort on their part to strengthen the capacity of the poor to make demands on these organizations. Despite the inequalities in the existing income and asset distribution and their social and political implications, autonomous public delivery organizations can play a significant role in converting the "needs" of poor people into "demands."

### Case Illustrations

A variety of resource-delivery organizations are officially involved in alleviating poverty and fighting inequality in India. These include organizations such as the National Dairy Development Board and various state cooperative dairy federations and dairy unions, banks and their rural branches, tribal welfare corporations, agricultural research and development organizations, etc. In practice, however, many of these end up increasing inequality. A number of examples come to mind.

Under Operation Flood-I and II, a large number of district dairy cooperative unions have been established by the National Dairy Development Board (NDDB) directly through its own spearhead teams or indirectly through its support to the state cooperative federations. Detailed criticisms of the policies and reactions of the NDDB are reported elsewhere [2]. Here I shall consider only two aspects of its organizational practice—one

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dealing with the selection of milk routes, and another with its organization of veterinary services.

When a dairy union is established and a milk route is identified, viability of the operation is sought for each route. Hence, demands for establishing routes in regions affected by fodder scarcities or low-yielding cattle, where initially the cost of milk collection is relatively high because of small bulk, seem to be frowned upon by the NDDB as unwanted political interference. The market-catering role is given primacy over the market-creation role. What must be the norms of investment appraisal in such organizations to meet the needs of those who *cannot demand* the services at the price at which those in more affluent regions can? Despite the avowed aim of Operation Flood policy to provide year-long assurance of milk procurement, the milk routes are discontinued during the lean season when the cost of collection goes up because of the reduced milk supply.

The pricing of veterinary facilities offers another example. Every member of a cooperative society under the Amul pattern<sup>2</sup> can take advantage of the facilities of a mobile veterinary service at the same rate, whether he is a poor landless worker or a rich landlord. A nonmember, regardless of his status, has to pay almost double the price. There is no attempt to cross-subsidize poor members or nonmembers. To which constituencies are such organizations accountable?

Similar distortions are noted in the case of the regional rural banks' branch expansion policy. Even in drought-prone areas, the branches are first opened in regions that are relatively less drought prone.<sup>3</sup>

In a district inhabited by tribal people, the tribal welfare corporation was entrusted with the goal of improving the livelihood of the people. Even though these tribal people were engaged in several occupations—e.g., catching fish, growing crops, collecting forest produce, tending livestock, etc.—the corporation considered fishery one of the activities by which the objective of

development was to be achieved. When fish collection was started, it was noted that the tribal people did not collect fish daily, nor did they try to maximize fish collection per day per effort. The result was that the corporation, which had been obliged to pay a certain amount in lieu of annual fishing rights to another department of the state government, found the whole activity nonviable. The corporation engaged professional fish catchers from another state to achieve viability. The main objective, tribal development, was replaced by promotion of a single activity—fishing; and later, even that descended to optimizing the fish catch by contracting it out to nontribal people.

Organizations are defined as goal-bound entities. How do we analyze the shift in these goals over time and space? Can these shifts be explained merely in terms of managerial motivation? In the case of the tribal development corporation, what role did the obligation to pay for "rights" play in the shift of goals? Historically, the government had never recovered even a small fraction of the amount a state corporation was asked to pay in this case. A coalition of several vested interests succeeded in distorting organizational goals: the fish trade, which did not pay the proper price; professional fishermen who used fishnets to catch small fish, thus affecting the long-term regenerative capacity of the reservoir; and, of course, government officials. The performance-monitoring system also seems to have contributed to this situation.

The mismatch between the viability strategies of poor tribal people (who strove to accomplish several objectives through a diverse portfolio of activities) and those of the developmental organizations resulted in several other dysfunctional organizational features: the choice of fishing technology, far too short a time frame to appraise the viability of the original scheme, and accountability to an unintended constituency.

Given the history of early success with high-yield varieties of wheat and rice through high inputs, many scientists became

hooked on the package approach to technology generation and transfer. The model essentially involved one-way communication-one-way power.<sup>4</sup>

The scientists thought they knew what the problem was, and also what the solution was. Most of the basic and applied research was restricted to on-station trials under the most favorable environmental conditions. Later, when the stagnation in Eastern India in rice production, and in dry regions in the case of millet, pulses, and oil seeds, was faced, the government allocated massive funds to deal with this problem.

Instead of developing methods of rigorous on-farm trial in farmers' fields, the very definition of the problem was changed. It is well known that local ecological conditions (such as that of the deep-water rice-growing region in Eastern India) cannot be simulated at a research station. No international research center has facilities of a comparable nature. One of the ways out is to screen genetic material under farmers' conditions so that multiline varieties capable of dealing with varying types of risk can be developed.<sup>5</sup> However, the research organizations and their leaders still consider on-farm research as agricultural extension and attach little importance to it. The result is that a disproportionate share of research resources is allocated to solve problems in the controlled environment of research stations.

Similarly, in the case of pulses and oil seed, instead of developing systems that might generate alternative technologies for use by poor farmers in rain-fed conditions, the major developmental strategy is to identify opportunities for cultivation of these crops in more favorable climates. The crop, not the cultivator, seems to be the focus of attention of most scientists.

How do we appraise such definitions of problems and consequent organizational strategies? It does not have to be said that poor pulse growers are very inarticulate, and can hardly be expected to lobby for policy and strategic changes as can the farmers of western Uttar Pradesh, Punjab, and Haryana.

The rest of this paper is divided into four sections. The first discusses the socio-ecological framework. The next section elaborates the need for precision in the definition of organizational client environments. This is followed by a discussion of the findings of a study of the operating behavior of banks in rural high-risk settings. The implications for future research on designing resource-delivery systems and for organization theory are outlined in the last section.

### The socio-ecological framework

The human ecological school [3-5] has tried to link what are called POET variables, i.e., population, organizations, environment, and technology. However, the major limitation of this framework is that everything is related to everything else. Furthermore, the causal and temporal sequence of relationships is not specified. The result is that hypotheses derived from it are not easily testable. Detailed evidence in support of the socio-ecological framework that does not suffer from the above limitations has been presented elsewhere.<sup>6</sup>

The main assumptions of the socio-ecological framework are that ecological conditions define the mix or portfolio of enterprises that can be sustained in a given spatial context or a watershed. The scale on which different social classes maintain these enterprises, however, is a function of their respective access to factor markets (land, labor, capital, technology, and information) and product markets (different crop and livestock species and varieties); kinship networks and an extended family system; public, private, and communal risk mitigation or adjustment strategies that have evolved historically; etc. The mean return-variance characteristics of the portfolio of enterprises influence the risk perception and response patterns of different classes.

The mix of enterprises, i.e., the portfolio of economic activities such as rearing livestock, cultivating crops, raising trees of

different species, crafts, etc., varies within a narrow range in the ecological context of a local watershed area. Which crops can, for instance, be grown in a region is defined largely by the edaphic (soil-related) and climatic variables. However, who will grow more of a certain crop or maintain more of a certain type of livestock is not a function of ecology, but of access to factor and product markets and of kinship networks. Historically, the poorer ethnic and socioeconomic classes have come to own more browsers, that is, sheep and goats, whereas the better-endowed groups have cattle and buffalo. The social-exchange relations that evolve around these enterprises are also quite specific to the biological needs of these enterprises, on the one hand, and the constraints imposed by the evolution of market forces, on the other hand.

The way to test these hypotheses is to study the access that groups with different asset portfolios have to product and factor markets and extensive kinships. The return-variance matrix can be used to classify a large range of the resulting portfolios. Thus, we can have high-return-high-variance, high-return-low-variance, low-return-high-variance, and low-return-low-variance types of portfolios. These portfolios will have distinctive implications for future investment options of different classes of households.

The access to various risk-adjustment (RA) options will influence the perception and response to risks. These options can exist at the level of the household, but also of common property or communal or public institutions such as drought-relief or public-works programs. The household options can further be divided into intra- and interhousehold ones. The intrahousehold options imply reduced or modified consumption, migration, asset disposal, etc. The interhousehold options include entry into credit, labor, and tenancy contracts. Some options in different combinations of returns and risk are shown in Figure 1.

The consequence of differences in risk perception and re-

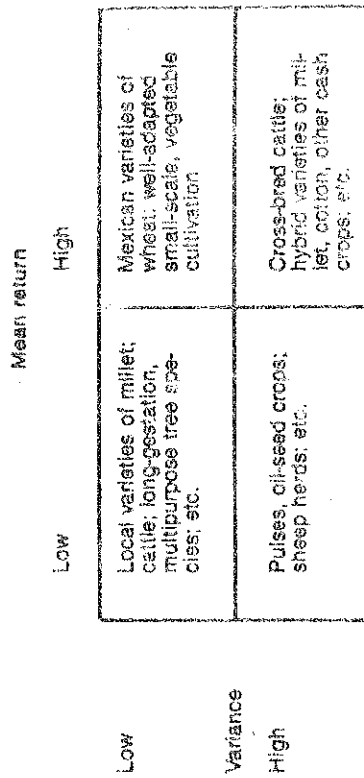


Figure 1

sponse could be a deficit, subsistence, or surplus household budget. This, in turn, would influence the ecological conditions through the aggregation of household choices.

The options in designing public organizations to match these household survival systems can then be systematically pursued. Since ecological characteristics vary greatly even between short distances in semiarid and arid regions, the task of designing public systems becomes all the more complex. Sedentary organizations to serve mobile people cannot be very useful to them. Similarly, organizations that take a short-time perspective in assessing the demands of clients in a risky environment may end up supporting only those portfolios of activities that may pay off within such a time frame. We should not be surprised if such portfolios are the ones chosen by better-endowed people having high-return-high-variance or low-variance portfolios. The poor, with limited capacity to absorb risks because of low-mean-high-variance portfolios, have needs that market-responding organizations simply do not register. The time frame and the discount rate of different classes of households use when appraising investment choices in different resource markets are thus a function of variables and processes described in the socio-ecological paradigm. The managers of public developmental organizations, by adopting the same time frame regardless of household classes, sectors,

difficult to articulate their demands for institutional resources on the institutions' terms. One way to widen the decision-making options of these people is by investing in the conversion of their needs into demands. Two important steps in this process are articulation of demands and their aggregation. Both require recognition of the historical context that leads poor people to surrender to stress without protesting.

The challenge before organization designers is to identify interventions that depart from reinforcing risk aversion in farmers or peasants through risk aversion by public institutions. The concepts of cross-subsidization, monitoring developmental organizations in terms of how well they meet equity goals in their resource allocation, and participation of clients will have to be invoked if developmental organizations are to meet the challenge of eradicating poverty.

There is an inherent danger in the attempt to explain variance in the behavior of organizations only through intraorganizational managerial variables and in the repeated exhortations for more training, more motivation, and greater commitment. No lasting improvement is possible unless public institutions and their managers are evaluated according to the extent to which they have decreased inequality and poverty rather than according to how much resources they have dispensed and how safely.

To prevent "is" from becoming "ought," it is necessary that we make the values of researchers inherent in the definition of organizations and their environment explicit. I have tried to do just that in this paper.

## Notes

1. A. K. Gupta (1981) "Viable Projects of Unviable Farmers: An Action Research Enquiry into the Structure and Processes of Rural Poverty in Arid Regions." Paper presented at a Symposium on Rural Development in South Asia, Amsterdam: IUAES-Inter Congress.
2. The Anul pattern refers to a system of dairy development and milk marketing through a three-tier cooperative system. The first tier is composed of village cooperatives of milk producers; the second is the district-level union

of village cooperatives; and the third is a federation of district unions at the state level.

3. A. K. Gupta and M. Shroff (1985) "Learning to Unlearn: An Action Research Enquiry on Rural Banking." CMA-PSG project report. Ahmedabad: Indian Institute of Management at Ahmedabad (IIMA).
4. A. K. Gupta (1980) "Communicating with Farmers" (mimeographed). Indian Institute of Public Administration.
5. F. Haque, Z. Abedin, and A. Gupta (1986) "The Farmers' Logic of Inter cropping Pulse and Oil-seeds in Rainfed Bangladesh: A Preliminary Assessment." Paper presented at the International Food Legume Improvement Conference, 1-5 September, Khonkaen, Thailand.
6. A. K. Gupta (1981) Op. cit.; A. K. Gupta (1984a) "Socio-ecology of Land Use Planning in Semi-arid Regions." Paper presented at Commonwealth Workshop on Land Use Planning in the Tropics, 28 January-2 February, Ahmedabad: BARI and IIMA; A. K. Gupta (1984b) "Socio-ecology of Land Use in Bangladesh." Paper invited by BARC, IADS, and Ministry of Agriculture and Forestry, Bangladesh; A. K. Gupta (1984c) "Small Farmers' Household Economy in Semi-arid Regions." CMA report. Ahmedabad: IIMA; A. K. Gupta (1986a) "Socio-ecology of Natural Stress, Technological Change and Human Response in Bhutan" (mimeographed). Written under UNESCO's sub-programme on Inter Relationship between Population Environment and Technological Progress. Ahmedabad: IIMA.
7. A. K. Gupta (1986b) "Management of Rural Credit and Support Systems: An Organizational Study of Financial Institutions in Drought Prone Districts." Unpublished Ph.D. thesis, Kurukshetra University, Department of Management.
8. Ibid.
9. W. E. Smith, F. J. Letham, and B. A. Thoolen (1980) "The Design of Organizations for Rural Development Projects: A Progress Report" (World Bank Staff Paper No. 375). Washington, DC: World Bank.
10. A. K. Gupta (1984d) "The Role of Public Enterprises in Backward Regions: Generating Peasants' Perspective" (Working paper No. 511). Ahmedabad: IIMA.
11. Gupta (1986b) Op. cit. (note 7).
12. A. K. N. Reddy (1980) "An Indian Village Agricultural Ecosystem: A Case Study of Ungral Village. Part II. Discussion" (mimeographed). Bangalore: Indian Institute of Science.

## References

1. Gupta, A. K. (1981) "A Note on Internal Resource Management in Arid Regions, Small Farmers-Credit Constraints: A Paradigm." *Agricultural Systems*, 7(4) 157-61.
2. Gupta, A. K. (1987) "Why the Poor Don't Cooperate: Lessons from Traditional Organizations with Implication for Modern Organizations." In

- C. G. Wanger (Ed.), *Politics and Practice of Social Research*. London: Allen and Unwin. Pp. 111-28.
3. Parik, R. E., and Burgess, E. W. (1921) *An Introduction to the Science of Sociology*. Chicago: University of Chicago Press.
  4. Hawley, A. H. (1950) *Human Ecology: A Theory of Community Structure*. New York: Ronald Press.
  5. Milnar, Z., and Teune, H. (1978) *The Social Ecology of Change: From Equilibrium to Development*. London: Sage Publications.
  6. Friedman, M., and Friedman, R. (1980) *Free to Choose*. London: Seeker and Warburg.
  7. Sinha, D. (1982) "Towards an Ecological Framework of Deprivation." In D. Sinha, R. Tripathi, and G. Misra (Eds.), *Deprivation: Its Social Roots and Psychological Consequences*. New Delhi: Concept.
  8. Gupta, A. K. (1981) "Social Effects of Rural Projects: Monitoring through People's Participation." *International Review of Administrative Sciences*, XLVI(3), 241-51.
  9. F. F. E., and Thst, E. L. (1965) "The Causal Texture of Organizational Development." *Human Relations*, 18, 21-32.
  10. Thompson, J. D. (1967) *Organizations in Action*. New York: McGraw-Hill.
  11. Hesseling, P. (1982) *Effective Organization Research for Development*. Oxford: Pergamon Press.
  12. Pfeffer, J., and Salancick, G. R. (1978) *The External Control of Organizations*. New York: Harper and Row.
  13. Myrdal, G. (1968) *Asian Drama: An Enquiry into the Poverty of Nations*. Vol. II. London: Penguin.
  14. Goodin, R. E. (1982) "How to Determine Who Should Get What." In K. V. Ramathan and L. P. Hegstad (Eds.), *Readings in Management Control in Non-profit Organizations*. Toronto: Wiley, Canada. Pp. 216-26.
  15. Shannon, S. C., and Miller, M. K. (1985) "A Methodological Review of Fifty Years of Research in Rural Sociology." *Rural Sociology*, 50, 539-60.
  16. Hannan, M. T., and Freeman, J. H. (1977) "The Population Ecology of Organizations." *American Journal of Sociology*, 82, 929-64.
  17. Agnew, R. (1981) "The Individual and Values in Human Ecology: An Examination of the Adaptive Process." *The Sociological Quarterly*, 22, 105-117.
  18. Reason, P., and Rowan, J. (Eds.) *Human Enquiry: A Sourcebook of New Paradigm Research*. New York: Wiley.