

A. Ostrom

A Proposal Submitted to USAID
to Support a Research Project

on

INSTITUTIONS AND COMMON-POOL RESOURCES IN THE THIRD WORLD:
WHAT WORKS?

by

Elinor Ostrom
Co-Director
Workshop in Political Theory and Policy Analysis

for

Indiana University Foundation
P.O. Box 1847
Bloomington, Indiana 47402

April 29, 1986

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INSTITUTIONS AND COMMON-POOL RESOURCES IN THE THIRD WORLD:
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One of the most important and persistent problems of development in Third World countries is how to manage a variety of common-pool resources such as grazing and crop lands, forests, fisheries, and water resources. While technology transfer of one kind or another may be important in enhancing the management of common-pool resources, it appears to several serious scholars that the more fundamental problem in managing these resources is the design of appropriate institutions (Bromley, Taylor, and Parker, 1980; Bendor and Mookherjee, 1985; Carruthers and Stoner, 1981; R. Hardin, 1982). As Jon R. Moris (1984: 97) has cogently argued, the "question of what institutional forms should be used in rural development has up to now been a matter of policy choice, but not one of research." Moris argues that, in light of the vast sums spent by donor agencies in attempts to enhance rural development, "the costs of learning how to make better choices would be modest" (1984: 97).

The management of common-pool resources has several times proved to be an obstacle in reaching AID's rural development goals. For example, in the Masai Range development project of northern Tanzania (1970-1980), USAID experienced significant problems in reconciling the conflicting needs and demands of pastoralists and of marginal crop cultivators. As is so often the case in LDCs, hierarchically-based

regulation lacked the authority, information and reach to devise a method by which these uses could be made compatible and land conditions improved (Moris, 1981). In contrast, Wade (1985) found Indian villagers successfully balanced pastoral and cultivation interests in a far more densely used agricultural area entirely through local mechanisms of self-governance. Other than their local institutional basis (and, indeed, in spite of their prohibition by national and state regulations), we have only an impressionistic understanding of how and why the Indian villages succeeded, and the Masai project did not.

Similarly, in the Masai project a "systems" approach to integrate improvement in seven discrete aspects of the range ecosystem and economy was seen as necessary to substantially improve range conditions and agricultural productivity. Of these seven, at least three (land use, disease control, coping with extreme drought) face common pool management problems, and were highlighted by Moris as problem areas in project administration -- multiple, specialized, hierarchically organized bureaucracies were unable to coordinate their actions to solve these problems. Indeed, a fundamental problem in this and many AID and other donor projects is simply facility maintenance once the project has been completed. Particularly where common-pool resources are concerned, once the temporary institutional structure of the donor project is dismantled, valuable project outputs too often erode quickly. Rural roads in Pakistan, irrigation "tanks" in Thailand, forestation projects in Niger, and similar projects elsewhere have been found regularly to fall into serious disuse soon after the EOPS has been reached (Wunsch, 1986).

While this is deeply discouraging, it is not because of any innate flaw in international assistance nor in LDC people. It grows from our failure to understand why and how institutions must and can be constructed to "connect" the interests of rural persons in maintaining these resources with the "social infrastructure" to do it.

We and other donor nations have tended to underestimate the value and complexity of institutions -- of systems of rules by which people organize themselves to provide for their needs. Historically, colonialism destroyed many, as Thomson (1984) found in his research on forest resources in Niger. In contemporary times we have ignored the need, assumed bureaucracies (often desperately short of time, personnel, resources and information) could do so, or assumed they would somehow develop spontaneously (Moris, 1981).

While our research up to now shows us these systems of rules can manage the commons, can develop to meet contemporary problems criss-crossing, encompassing and transcending traditional institutions, and can take on remarkably complex problems of multiple resources, multiple uses and multiple groups of users, the research has yet to reach the point where we can confidently "diagnose" critical elements of field situations and "prescribe" interventions to sustain and strengthen existing institutions, and help develop new ones.

A preliminary review of only a few USAID project evaluations and discussions with AID personnel suggest to us that these issues are pertinent to many AID projects. Irrigation projects in the Philippines, Pakistan, and Indonesia, potable water projects in Korea and Kenya, rural roads projects in Jamaica and Pakistan, forestation

projects in Niger and Nepal, and range projects in Tanzania and Botswana, have, among others, faced these problems. Some have succeeded in varying degrees, and some have not, in creating local management and maintenance mechanisms which have solved the "commons dilemma." It is crucial to our rural development agenda that the knowledge learned of Saemaul Undong structures in Korea, of barangay associations in the Philippines, of user organizations in Indonesia, and of the diversity of locally-based common-pool management systems which already exist and are currently working successfully in LDCs, be systematically and comparatively analyzed so we better understand what works, when, and why.

This is an appropriate time to undertake a modest but serious effort to examine which types of institutional arrangements enable users of common-pool resource systems to make better choices and to manage these systems effectively. It is appropriate, first, because of the importance of these resources in Third World countries. Second, it is appropriate because considerable ground work has already been undertaken. A modest investment in further research will yield substantial payoff, given the progress that has already been made. This is a proposal to draw on this past and current work as the basis for a concentrated study of existing case study literature on common-pool resource systems in the Third World.

Unmined resources exist in the extensive case study literature written by anthropologists, rural sociologists, human ecologists, political scientists, and others describing specific resource systems and human use patterns. Some of these cases describe successes -- instances where the users of a common-pool resource system are able to

obtain valued resource flows from the resource without destroying the resource itself (see, for example, Siv, 1982; Wade, 1985; McKean, 1984; Cruz, 1985; Berkes, 1985a; 1985b; 1985c; Uphoff, 1985; McCaw, 1980; Acheson, 1975). Some of these cases describe failures -- instances where the well-known "tragedy of the commons" has occurred and the users of the resource have been led to destroy the resource itself (see, for example, Berkes, 1985c; Bottrall, 1981; Picardi and Seifert, 1977; Johannes, 1978). And in still other cases privatization has successfully ameliorated problems (e.g., Feeny, 1982), but has not been universally successful.

Since Garrett Hardin's captivating article in *Science* (1968), many officials in donor agencies and in host country governments have presumed that degradation of the environment is to be expected whenever many individuals own a scarce resource in common. The presumption is made that those who are using a natural resource system in common will be compelled by an inexorable logic to destroy the very resource on which their livelihood depends. The grim predictions generated by many analysts of the "tragedy of the commons" have had unfortunate consequences when observers have turned from analysis to prescription. Ophuls (1973: 228) has, for example, argued that "because of the tragedy of the commons, environmental problems cannot be solved through cooperation . . . and the rationale for government with major coercive powers is overwhelming. . . ." Ophuls concludes that "even if we avoid the tragedy of the commons, it will only be by recourse to the tragic necessity of Leviathan" (1973: 229). The presumption that Leviathan is necessary to avoid tragedies of the commons leads some analysts to recommend central government control

over most natural resource systems (see, for example, Heilbroner, 1974; Ehrenfeld, 1972; Carruthers and Stoner, 1981). In contrast, other analysts call, in equally strong terms, for the imposition of private property rights whenever resources are owned communally (Demsetz, 1967; Welch, 1983; Smith, 1981).

What is perplexing, as well as dangerous, is that analysts have been willing to propose the imposition of sweeping institutional changes without a rigorous analysis of how different combinations of institutional arrangements work in practice. The current lack of sophisticated analyses of alternative institutional arrangements is a major weakness of contemporary work in the social sciences. Limiting institutional prescriptions to either "the market" or "the state" means that donor agencies are limited to only two institutional "solutions" to the wide diversity of problems involved in managing common-pool resource systems in the Third World.

From an initial review of the case literature, we find some cases of common-property ownership which have been highly successful and some which have failed; some cases of private ownership which have been successful and others which have failed; and some cases of central government control which have been successful and others which have failed. Thus, we know that there is no single institutional panacea that can be recommended by donor agencies for use by host countries whenever common-pool resource systems are involved. Finding institutions that work depends on many factors including the history and culture of the area and how these affect the repertoire of rules that individuals are already skilled in using, the particular resource system itself, and the types of technology in use by different types

of participants. The case study literature provides detailed analyses that can be used in an effort to determine which types of institutional arrangements seem to provide the best match to which types of resource systems to enable effective management systems to work.

Though the case literature is extensive, it is also highly fragmented and has not been systematically examined. Many of the cases are written as Ph.D. dissertations and may have been published as monographs. Other cases are available in the Journal literature, but in such disparate Journals as:

- o Administration and Society
- o Natural History
- o Transactions of the American Fisheries Society
- o Journal of Law and Economics
- o Journal of African Law
- o American Journal of Agricultural Economics
- o Geographical Journal
- o Agricultural Administration
- o American Ethnologist
- o Journal of Environmental Management

Given the specialized nature of most academic disciplines, members of any one discipline will be aware of only a limited portion of the relevant literature on this problem. Anthropologists are not likely to read economists nor political scientists, and vice versa. Fishery specialists are not likely to read reports on ways of managing forests, grazing lands, or irrigation projects. Those who describe specific cases are not likely to be familiar with the theoretical, and at times highly mathematical, literature on commons dilemma situations.

Further, even if specialists in one field read some of the literature in other fields, a need exists to provide a general framework for relating the findings in the case literature. Reading literature that focuses mostly on the nature of the resource system itself, scholars tend to presume that it is factors such as the size of the resource system, the type of boundaries involved, and the type of supply indicators that are generated that affect the capacities of individuals to manage resource systems effectively. Economists are likely to identify scarcity, asset structure, and ownership status as being the most important factors involved resource use. Sociologists and anthropologists are apt to identify the size of the group involved, whether they have lived in the same location for a long time, the type of cultural world view held by participants, and the degree of cultural homogeneity of participants as affecting the capabilities of different groups to evolve or adopt effective ways of working together toward a common end. Political scientists are more likely to expect that the relationship between a central government and those using a resource system is a major factor affecting the capacities to manage natural resource systems. (See E. Ostrom, 1985, for a discussion of several types of variables identified as affecting the capacity of individuals to organize for effective management of common-pool resource systems.)

Most of the variables identified by scholars studying the efforts of individuals to manage common-pool resource systems in the Third World probably do have some impact -- particularly in specific cases. But, how these variables affect the capacities of individuals to develop effective means for managing common-pool resource systems must

be worked out in a more general theoretical manner before the knowledge of what happened in specific cases can be made useful for policy analysis and recommendations. The first steps in the development of a more general theoretical approach have already been taken, and can be capitalized upon by an organized effort to systematically unit theory with the extensive array of available case studies.

Recent work by Oakerson (1984), Runse (1985), Bromley (1984; 1985), E. Ostrom (1985; 1986), Thomson, Feeny, and Oakerson (1984), and McKean (1984) has attempted to develop the beginnings of a theoretical approach to the study of how institutional arrangements affect (i.e., enhance or limit) the capacities of individuals to manage common-pool resource systems. This work is based both on broader theoretical traditions in the social sciences as well as an intensive study of a large number of individual case studies. The time is now ripe to develop methods for operationalizing the concepts used in the theoretical literature and to conduct some systematic empirical research, testing propositions derived from the evolving theoretical base. Before conducting new fieldwork, however, it is important to draw on the field research that has already been completed. This can be done by using a set of structured coding forms for entering data from in-depth case studies in a computerized data base available for extensive analysis by scholars interested in understanding how institutions may enhance or detract from the capabilities of individuals to manage common-pool resource systems in the Third World.

Using a systematic, structured set of research instruments to code data from existing case studies is a necessary but not a sufficient long-term research strategy to test the theoretical approaches that are being developed in this field. Extensive new research will be needed. However, before embarking on an ambitious program of new research, it is quite important that we learn as much as possible from the valuable research that has already been undertaken in the past. By spending modest resources to organize what is already in print in a systematic, computerized manner, we can begin to understand which theoretical propositions do seem to have firm empirical support and which propositions need further scrutiny through carefully designed projects. Further work is also needed in the development of valid and reliable measures of performance. A systematic review of the existing case-study literature will also provide input into an effort to develop better measures of performance (as well as better measures of all of the concepts involved in the theoretical approaches being pursued).

During the past year several staff members at the Workshop in Political Theory and Policy Analysis have crafted a set of coding forms and coding manuals to be used in this effort. They have been advised in this process by scholars intimately familiar with problems of common-pool resource management in Third World countries. An initial set of cases developed for a National Academy of Sciences panel have been used as the "test cases" in the development of these structured coding forms. We have now established the feasibility of coding in-depth, qualitative data contained in case studies in a

structured coding form. Copies of the coding forms and coding manuals are attached as Appendices to this proposal.

In addition to the development, testing, and retesting of the coding forms, coding manuals, and actual entry of an initial set of cases in a computerized data base, we have also compiled an extensive bibliography on common-pool resource systems and how they are managed, with a primary (but not exclusive) focus on Third World settings. An initial draft of that bibliography, compiled by Fenton Martin, is attached as an Appendix to this proposal. We propose to continue work on compiling this bibliography during the forthcoming year and to use the bibliography as a source document for identifying cases to be screened for possible entry into the computerized data base.

Our plan is to begin xeroxing published cases listed on the bibliography as the initial set of cases to be coded. Each case will need an initial reading to determine whether the case author has included sufficient detailed information on the structure of the common-pool resource system itself, on the attributes of the users, and on the institutional arrangements in use, that it is worthwhile trying to code the case. Those cases which do contain sufficient detail will be coded using the coding forms and manual contained in the Appendix. A small group of coders will be involved in this process. They will include Elinor Ostrom, William Blomquist, and James Wunsch, who developed and tested the coding forms this past year, plus two advanced Research Assistants to be hired on this project. We have identified two Research Assistants interested in being associated with this project who have extensive Third World experience and are highly qualified to undertake this work. A ten

percent sample of the cases will be coded by two coders to ascertain measures of inter-coder reliability and to generate further discussions about the coding system. Those participating in the coding will work in an office complex where discussion about coding reliability can be encouraged and will meet every week to discuss the problems involved in keeping reliability of the coding process high.

Our goal will be to code 250 cases during the year of this project. We will enter the coded data on an IBM type micro-computer using easily available software (REFLEX and RBASE 5000) so that the data will be available to interested scholars at other locations. We will prepare a report at the end of the project which will examine those propositions contained in the theoretical work referred to above for which we have sufficient cases to make data analysis worthwhile. We will pay particular attention to analysis that relates to questions of how to improve the performance of institutions already in use in Third World locations. The types of questions which will be addressed in the final report are contained in the paper entitled "The Rudiments of a Revised Theory of the Origins, Survival, and Performance of Institutions for Collective Action" prepared by Elinor Ostrom for the Panel on Common Property Resource Management, BOSTID, National Academy of Sciences/National Research Council.

During the course of this one-year project, we will meet twice with a group of advisers who are knowledgeable about institutional arrangements related to common-pool resources in developing countries. These advisers will include both academic scholars, who have knowledge about and experience in Third World countries, as well as individuals associated with donor agencies who are particularly concerned with the

problems of application. In addition to meetings with this group, we will regularly send them reports on our status and seek their advice concerning cases to be included and analyses to be undertaken. We will discuss our research strategies and our report with this group. By involving an active advisory group with this project, we hope to enhance the quality of our work as well as insure that we are addressing policy relevant questions of immediate concern to AID and members of the donor community. Among the persons we would like to include in this advisory group are: Dr. James Thomson, ARD; Dr. David Feeny, Department of Economics, McMaster University; Dr. Margaret McKean, Department of Political Science, Duke University; Dr. Jere Gilles, Department of Rural Sociology, University of Missouri; Dr. C. Ford Runse, Department of Agricultural and Applied Economics, University of Minnesota; Dr. Ronald Oakerson, Advisory Commission on Intergovernmental Relations; Dr. Pauline Peters, Harvard Institute for International Development; Dr. Jeffrey Gritzner, ROSTID, National Research Council/National Academy of Sciences. We plan to meet in Washington, D.C., to insure the participation of AID officials and others interested in learning how institutional arrangements enhance or detract from the capabilities of users to manage common-pool resource systems.

In light of the substantial resources already invested in the numerous case studies, the collection of those studies and the compilation of a bibliography, the development of structured coding forms for the transformation of the many qualitative case studies into a computerized data base for quantitative comparative analysis, and the emergence of a theoretical approach for general application to

cases of common-pool resource problems, a modest and concentrated effort over the course of the coming year can generate a considerable advance in the type of policy analysis which can aid in the making of better choices. To the extent that much of Third World resource development and resource management problems are affected in a fundamental way by institutional arrangements, we see the concurrent development of a general scheme for analyzing across types of institutions and across types of resources along with the enrichment of that scheme by the compilation and analysis of a large number of disparate case studies as a fruitful means of enhancing the understanding of this link between institutional arrangements and development outcomes.

The research proposal here has, we are confident, great value to the rural development agenda of USAID and other donors. How common-pool rural infrastructures may be maintained and most efficiently used and how rural common-pool natural resources may be protected, sustained and most efficiently used, are critical questions which have often been only poorly answered. Our study of the existing case literature relevant to these questions is explicitly linked with our interest in providing better answers to these questions.

There is no reason why AID's complex and careful process of project design cannot include guidelines to assess both institutional needs and the existing institutional resources of an area; no reason, at least, once we have developed a far better understanding of what has worked in such situations in human experience. It is to begin work toward that understanding and to begin to develop such an applied capacity that this small project is proposed.

INSTITUTIONS AND COMMON-POOL RESOURCES IN THE THIRD WORLD:
WHAT WORKS?

Budget
September 1, 1986 to August 31, 1987

On-Campus:

Research Assistants (2 at \$7,500/ea)	\$15,000
Fee Remissions (2-12 month fee remissions)	7,200
Hourly wages for data entry and for secretarial help	4,000
Equipment -- 1 IBM XT microcomputer and printer	2,000
Supplies (xeroxing of case studies, reproduction of forms, limited book purchasing, etc.)	2,000

Total On-Campus Direct Costs	\$30,200
Total Indirect Costs (\$21,000 x .46) (on campus) (direct costs minus fee remissions and equipment)	9,660

Total On-Campus Costs	\$39,860

Off-Campus:

Dr. James Wunsch, Department of Political Science, Creighton University (1 summer month)	3,777
Travel for 15 people (2 trips to Washinston at \$300/each)	9,000
Per Diem in Washinston for 15 people (4 days at \$108/day)	6,480

Total Off-Campus Direct Costs	\$19,257
Total Indirect Costs (\$3,777 x .264) (off campus) (direct costs minus travel and per diem)	997

Total Off-Campus Costs	\$20,254
 TOTAL COSTS	 \$60,114

Budget Narrative

The Principal Investigator for this project will be Dr. Elinor Ostrom, Co-Director of the Workshop in Political Theory and Policy Analysis. Dr. Ostrom will devote about twenty percent of her time to this project during the forthcoming year. Her salary will be paid entirely by Indiana University, and her work on this project will be considered part of her assigned research tasks.

We have requested funds for two Research Assistants to work on this project approximately 20 hours a week during the coming academic year, plus the summer of 1987. We have budgeted these assistantships at our regular rate of \$6,000 for the academic year and \$1,500 for the summer. Two fee remissions are included for these assistantships.

We have budgeted for 800 hours of clerical time at \$5.00 an hour to do initial data entry for the cases and to handle the secretarial work involved in obtaining and keeping track of a large number of cases and typing the final report.

We plan to purchase an IBM XT computer system for data entry. Elinor Ostrom has had the benefit of using an IBM XT loaned to Indiana University by IBM for use by research faculty in developing new projects. The funds in this budget will enable us to purchase the system which has been used under this temporary loan arrangement. Data entered on this system can be easily transmitted to other scholars and officials interested in the data set.

We have budgeted approximately \$175 per month for supplies to be used to xerox case studies, to purchase a limited number of monographic studies not available at the Indiana University Library,

to purchase software, to reproduce coding forms, and for general office supplies.

Dr. James Wunsch will continue to work on this project while teaching at Creighton University. His salary for the forthcoming year is \$34,000, and we have budgeted one month of summer support at a rate of \$3,777. His work on the project during the academic year will constitute part of his regular research assignment at Creighton University. Since Dr. Wunsch will not have an office at IU during the forthcoming year, we have included his stipend as part of the "off-campus" portion of this budget.

We envision two meetings of an advisory board of about 15 people. Since some of the advisory board will come from the West Coast and some from the East Coast, we have used \$300 per round trip to estimate the costs of travel for members of the advisory board to get to Washington, D.C. Each of the meetings will be two days in length, and the per diem cost of \$108 is the rate authorized by Indiana University for meetings held in Washington, D.C.

We have computed overhead for on-campus activities at the current authorized rate of 46 percent. The overhead for the salary stipend for Dr. James Wunsch is calculated at the off-campus rate of 26.4 percent. No overhead is charged for the off-campus travel and per diem.

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APPENDIX A

Supplementary Proposal and Budget

Supplementary Proposal and Budget

In addition to the work contained in the main proposal, we would also like to propose a small supplement to this activity which would enable us to finish the bibliography compiled by Fenton Martin on "Common-Pool Resources and Collective Action." (See Appendix C for an initial draft of this bibliography.) Fenton Martin will continue to work on this bibliography as part of her professional assignments at Indiana University. Thus, we are not requesting any stipend for Martin. Martin will devote about 15 percent of her time to this activity during the forthcoming year which constitutes a contribution of about \$3,600 in salary funds to this bibliography project.

What we do need to finish this bibliography project, and to be able to publish it and make it available at low cost to public officials and scholars in Third World countries, are funds to hire hourly library personnel to undertake verification of all citation information and funds to defray the costs of publication. We hope that the bibliography will be published by an agency with extensive contacts in the Third World such as BOSTID at the National Research Council and have initiated discussion about such arrangements. The availability of the bibliography will be announced in the Newsletter sent to all members of the Common-Property Network by C. Ford Runge, at the University of Minnesota.

Budget

Hourly salary for Clerical Personnel to do Library verification of citation information -- 500 hours at \$4.00/hr.	\$ 2,000
Printing costs for Bibliography	5,000

Total On-Campus Direct Costs	\$ 7,000
Total Indirect Costs (on campus) ($\$7,000 \times .46$)	3,220

TOTAL COSTS	\$10,220