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Workshop on Democracy and Governance

Proceedings

B

TABLE OF CONTENTS

Preface i

Acknowledgements iii

Democracy, Governance and Development
Vincent Ostrom 1

A Framework for Institutional Analysis
Elinor Ostrom 13

Exchange, Entrepreneurship, and Market Governance: An Institutional View of "The Market"
Ronald J. Oakerson 33

Resource Mobilization and Roads: Micro Experiments in Indonesia
Larry Schroeder 41

Peer Training as a Way to Motivate Institutional Change in Farmer-Managed Irrigation Systems
Robert Yoder 53

Cost Effective Renewable Natural Resources Governance: The Kayes Fisheries Traditional Institutions and the Forest Service
James Thomson 69

Democracy, Governance and Institutional Analysis
Ronald J. Oakerson 79

Workshop Agenda 83

C

PREFACE

The U.S. Agency for International Development and other bilateral and multilateral aid organizations are increasingly concerned with the critical importance of democratic institutions and governance systems for sustained economic growth and development. The failure of centralized, autocratic states to create the conditions under which public and private entrepreneurship can flourish and where individual choice acts as the motor of development has led to a new debate on how best to promote more open and pluralist societies in the developing world. To fuel this debate there is a pressing need to improve our understanding of how communities faced with common problems organize to create institutional arrangements to achieve productive outcomes. Thorough analysis of real world situations where self-organization based on democratic principles has achieved high levels of equity and efficiency can make an important contribution to this understanding.

Under the auspices of A.I.D.'s Research and Development Bureau a Workshop on Democracy and Governance was conducted in Falls Church, Virginia on 18-20 September 1991. The workshop was organized by the members of the Decentralization: Finance and Management project (DFM) team from Associates in Rural Development, Inc., The Workshop in Political Theory and Policy Analysis of Indiana University, and the Metropolitan Studies Program of the Maxwell School at Syracuse University. During two days of presentations and panel discussions the workshop participants were able improve their understanding of the dynamics of institutional change and how the lessons of successful local institutions, when properly analyzed, can help in efforts to foster democratic transitions in developing societies.

This document is a collection of papers prepared specifically for the workshop by DFM research staff and invited speakers. A series of panels were organized around the presentation of these papers by their authors. For each panel a group of selected discussants provided comments and initiated open discussion among the workshop participants.

The subject matter in these essays range from a discussion of basic conceptual issues regarding democratic governance systems, to case study analyses of self-governance and micro institutional change. Vincent Ostrom's paper on "Democracy, Governance, and Development" shows us how rule-ordered relationships are the fundamental constitutive elements in human societies. Drawing on the works of several major political philosophers since Aristotle, Dr. Ostrom provides a critical analysis of a theory of sovereignty and argues that without a rule of law to which all members of a society are subject, rulers and states become predators of their own citizenry. Only by balancing power with power and having all members of society accountable under the law can the human potential for organization and problem solving be realized.

Elinor Ostrom presents us with a framework for institutional analysis. This framework helps to organize diagnostic, and analytic efforts using a set of variables common to all types of institutions. For those interested in the functioning of democratic governance systems this framework can be a valuable tool. From the study of a wide variety of self-governing organizations, one can derive generalizations and a set of principles for the design of democratic systems of governance.

Applications of the institutional analysis and development framework are demonstrated in several of the papers in this volume. Successful self-governing institutions discussed by Yoder (Nepali irrigators) and Thomson (Malian fishermen) reveal a commonality of rule-based institutional arrangements that permit individuals within a community to interact in productive ways and derive mutual benefits. The institutional reforms proposed by Schroeder for Indonesian road users and by Oakerson for Cameroonian coffee growers are designed using principles of democratic governance while taking into account the incentives of individuals attempting to solve their common problems.

For those who attended, this collection will serve as reference material and a reminder of the concepts and analytic methods presented over the two day workshop. For readers who did not participate in the workshop, we hope this volume will be thought provoking and stimulate interest in the importance of institutional analysis for the Agency's Democracy Initiative. The papers contained herein are intended to present a mode of analysis and examples of its use, not to propose a model of institutional change or democratic transition. In the final analysis, these changes will be the result of human artisanship by people in specific environments for whom voice and choice means developmental opportunity. Nonetheless, the effectiveness of our efforts to assist the developing countries can be greatly enhanced by a better understanding of the dynamics and basic principles of institutional change.

ACKNOWLEDGEMENTS

The successful organization of the DFM Workshop on Democracy and Governance can be attributed to the efforts of several dedicated individuals, without whom the event would not have been possible. From the preparation of the Workshop brochure to the identification and recruitment of panel chairs and discussants, their careful attention to detail allowed everything to proceed under the best of conditions. First, we would like to extend our thanks to Ms. Gina Davis, A.I.D. Intern from Indiana University whose networking among Workshop participants and invited guests over several months became the pivotal point around which the Workshop took form. Her successor at R&D/EID, Brenda Bushouse, provided valuable continuity to ensure the distribution of materials and attendance of the participants. Barbara Schegerin of Associates in Rural Development should be recognized for coordinating the preparation of the Workshop materials, and all logistics and financial arrangements with the management at the Fairview Park Marriott.

Although too numerous to point out individually, sincere thanks go to all those who provided their time to serve as presenters, discussants and chairs of the various panels over the two day event. Their contribution to lively and stimulating discussion was a key to the success of the Workshop. Finally, we would like to acknowledge the sponsorship and valuable role played by the R&D Bureau in the organization and conduct of the Workshop, particularly that of Assistant Administrator Bissell, Eric Chetwynd, Antonio Gayoso and Tom Mehen.

Democracy, Governance and Development

Vincent Ostrom
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Introduction

Events in the Soviet Union during the week of August 19, 1991, have revived memories of 1989. As a regular reader of the *New York Times*, I am struck by the anomaly between what is being reported from Moscow and St. Petersburg (Leningrad) and what is occurring in New York City. Popular resistance to an attempted coup d'etat was correctly hailed as a great achievement for democracy in light of the failed Marxist-Leninist experiment initiated in the October Revolution of 1917. In New York, the mayor was unsuccessfully trying to cope with violent confrontations between Blacks and Hasidic Jews in a Brooklyn neighborhood of New York City. Perhaps a bold new experiment hailed, at the turn of the century, as a major reform in the government of New York City has also failed.

We are, it seems to me, confronted with a need to reflect critically upon the nature and processes of governance and raise the question of whether democracy poses a challenge for humanity that presses contemporary capabilities for coping with it. Problems of a lesser but somewhat analogous magnitude have confronted people before. We might learn from their experience. Before we can do so, we are required to make a diagnostic assessment of what it is that is problematical in contemporary civilization and how those problematics relate to what is unfolding before our eyes. If we can agree upon some of the problematics we may be able to draw upon different facets of human experience to cope more successfully with the problems we face.

I shall advance the conjecture that political theory is at the core of our problem. In a world of nation-states, we have relied upon a theory of sovereignty that is proving to be increasingly inadequate. Let me proceed first in a critical assessment of why this is the case. I shall then conjecture about what is implied for viable systems of governance in democratic societies.

Rule-Ordered Relationships

The roots of the problem lay in the extraordinary potentials created by the development of languages to enable human beings to organize and transmit learning both within and across generations in ways that have radically expanded productive potentials with a commensurate requirement for diversity in the skills and associated relationships that are needed to take advantage of those productive potentials. This has occurred against a background where conflict, and the escalation of threats into violent confrontations, means that potentials for fighting and mutually destructive relationships are always present (Boulding, 1963).

All human societies, in attempting to cope with productive potentials and potentials for violent confrontations, have also had recourse to language to fashion systems of rule-ordered relationships in an effort to devise mutually productive communities of relationships. The use of language in constituting rule-ordered relationships is accompanied by a variety of exceedingly difficult problems. The first problem is how to make normative distinctions between what is prohibited as against what is permitted and/or required. Every system of rules establishes opportunities and limits. If normative distinctions are to be made, and these are to be publicly knowable, there must exist methods of normative inquiry for rendering judgment of both a moral and jurisprudential character. The problem of a knowledgeable ground for exercising moral and jurisprudential discretion is reinforced by the circumstances that rules, to be effective in human relationships, must be made binding. The term "deontic" is sometimes used in this context: deontic = to make binding. The term deontic is sometimes extended back to the problems of normative inquiry and making normative distinctions.

Inherent in the deontic (make binding) relationships is a distinction often made in analytical jurisprudence between authorized (right/duty) relationships and authoritative relationships (i.e., the power to enforce, determine the proper application, and alter the rules of authorized relationships). To enforce implies executive authority; to determine the proper application implies adjudicatory authority; to alter rules implies legislative authority. These exercises of authority are associated with powers of governance. The former -- authority to act -- is associated with the standing of persons as subjects.

A third level in the structure of rule-ordered (authority) relationships can be added. This is the constitutive level where those forming (constituting) associated relationships might specify the terms and conditions of governance. It would be hypothetically possible to establish the terms and conditions of governance such that those exercising authoritative prerogatives would themselves be bound by constitutive rules as constitutional law. If appropriately specified, monitored, and enforced, it is possible for both officials and persons to be subject to a rule of law.

These distinctions in levels of authority relationships (authorized, authoritative, and constitutive) imply serious problems of asymmetries or inequalities in rule-ruler-ruled relationships. These asymmetries are radically compounded by the negative, coercive, and

deprivational nature of authoritative relationships. The maintenance of limits pertaining to prohibitions depends upon the use of instruments of coercion to impose deprivations upon others (crime and punishment). This implies that some are lawfully assigned authority to impose deprivations upon others. The exercise of that authority is the source of the most fundamental inequalities and tensions in human societies.

All systems of rule orderings are also multifaceted in the sense that law is related to diverse relationships in human societies. This condition poses problems relative to the "coherence," "complementarity," or "unity" of any system or systems of rule-ordered relationships. Serious potential for conflict would exist where contradictory requirements (Catch-22 situations) exist in rule-ordered relationships.

I shall not go beyond the specification of the above problems in the constitution of systems of rule-ordered relationships. There are others, but the above conditions are sufficient to explore the difficulties associated with the theory of sovereignty.

The Theory of Sovereignty

A theory of sovereignty is a theory of rulership which is based upon a presupposition that there must (necessarily) exist a single center of ultimate authority in each and every society. A unity of power is presumed to be necessary to the unity of law. Presumably, distinctions might exist between a monarchy or autocracy (the rule of one), aristocracy or oligarchy (the rule of few acting in council), and a democracy (the rule by all citizens who meet in assembly). The last, from the perspective of a theory of sovereignty, is trivial because it would be confined only to small populations and places. A democratic republic would in that context be transformed either into an autocracy, as in the Roman empire, or into an oligarchy, as in a parliament.

A standard definition of a state is a monopoly of rulership prerogatives, including the legitimate use of force or coercive capabilities in a society. There is, then, some ultimate center of authority in such a society, meaning that there is someone who has a reserved capability (plenary authority) to address any problem that might arise. This implies that an "ultimate" authority is unlimited. That authority has the capacity to address any and all problems having to do with rule-ordered relationships and the exercise of rulership prerogatives. Further, that authority is the source of law, and as such, is above the law, and cannot itself be held accountable to a rule of law.

The logic of rule-ordered relationships in such a society is one of command and obedience. The implication of this condition is reasonably well stated by Thomas Hobbes (1960: 221-22) when he observes:

> [T]he people should be taught, first, that they ought not be in love with any form of government that they see in their neighbour nations, more than their own nor, whatsoever present prosperity they behold in nations that are otherwise governed

> than they, to desire change. For the prosperity of a people ruled by an aristocratical, or democratical assembly, cometh not from aristocracy, nor from democracy, but from the obedience and concord of subjects; nor do the people flourish in a monarchy because one man has the right to rule them, but because they obey him. Take away in any kind of state, the obedience, and consequently the concord of the people, and they shall not only not flourish, but in short time be dissolved.

We would not expect such societies to be marked by high levels of innovation and creativity. Further, a monopoly over the instruments of coercion in a society provides the few who exercise rulership prerogatives with extraordinary opportunities to repress, coerce, and exploit others. Substantial incentives exist for those exercising the prerogatives of government to take advantage of the opportunities available to them and to yield pervasive corruption and exploitation. It would be reasonable then to expect centralized states to become among the most predatory institutions in human societies (V. Ostrom, Feeny, and Picht, 1988: ch. 2).

The twentieth century was marked by the anomaly that many of those who were internationally recognized as lawful rulers used the coercive instrumentalities of the state to war upon their own subjects. The casualties suffering from sovereigns warring upon subjects exceeded the casualties suffered in two world wars. Terror was conducted on an unprecedented scale and the relaxation of terror, when it occurred, was marked by pervasive corruption. In extreme cases like Liberia, thugs gained recognition from other heads of state and were accepted as colleagues entitled to equal respect in the "family of nations" with no questions asked about the conduct of "internal affairs." I assume this to be a reasonably accurate assessment of the human condition for much of mankind in the twentieth century. The systems of rulership were seriously destructive of systems of rule-ordered relationships.

The Constitution of Democratic Society

We have a puzzle, then, where a system of *rulership* is destructive of a system of *rule-ordered relationships*. This, I assume, is what Aristotle was saying, or trying to say, when he was translated as challenging Plato's presumption that "the greater the unity of the state the better," but asserting in response that "a state may at length attain such a degree of unity that it is no longer a state" (*Politics*, Book II: ch. 2). A unity of power may not only be destructive of the unity of law but of all publicly knowable rule-ordered relationships. A rule of law is abandoned to a despotism caught between the exercise of dominance by fear of punishment and pervasive corruption. Revolutions and coup d'etats occur under these circumstances, but reform -- the reordering of systems of governance -- is difficult to achieve. Those who succeed in revolutionary struggles and coup d'etats depend upon instruments of coercion to eliminate opposition and achieve dominance.

When the tools used to fashion artifactual creations are seriously destructive of what it is that is being created, we have serious puzzles about how human artisanship ought to

proceed. We are required to speculate about alternative methods of artisanship. This quest for alternative ways to proceed in the exercise of rulership prerogatives has been an enduring one marked by many significant accomplishments. Harold Berman in *Law and Revolution* (1983) has given us an important account of early developments. The establishment of the autonomy of what might be referred to metaphorically as the spiritual or ecclesiastical kingdom was an important first step taken in 1075. The world of the mind gained some significant degree of autonomy from the realms where the sword reigned supreme. Contestation about the nature of authority relationships flourished and students of law discovered that a fundamental religious precept -- do onto others as you would have others do unto you -- could be used as a method of normative inquiry to fashion rules of law grounded in mutual consent or what Buchanan and Tullock in *The Calculus of Consent* (1962) treat as a rule of unanimity (ch. 7) and "consensus as a norm" (p. 96).

How to proceed in fashioning a system of governance compatible with a rule of law was formulated by the Baron de Montesquieu in the following way. He conceived the source of the difficulty as arising from the circumstance that "every man invested with power is apt to abuse it, and to carry his authority as far as it will go" (1949: 150). In other words, human beings will always press limits. To counteract this tendency, Montesquieu saw a resolution in a principle that power could be used to check power ("power should be a check to power"). James Madison in *Federalist* 51 asserted a similar formulation when he proposed that a principle of "opposite and rival interests" might be applied to "the whole system of human affairs," including "the distribution of the supreme powers of the State" (337-38). The two formulations might be combined so that power would be used to check power amid opposite and rival interests that apply to the whole system of human affairs including the supreme powers of the state.

Ostensibly, such assertions might be viewed as absurdities. Power used to check power might either yield stalemate or violent confrontations. People might use diverse instrumentalities of power to war upon one another and tear societies apart as rivalrous factions contend with one another. Such possibilities obviously exist.

If we are to understand how power can be used to check power amid opposite and rival interests, we must proceed to deeper levels of analysis in addressing problems of rule-ordered relationships. We are required to move back to the methods of normative inquiry that establish the grounds for moral and jurisprudential inquiry. These foundations are reasonably well formulated in chapters 14 and 15 of Hobbes's *Leviathan* (1960), in David Hume's (1948) analysis of the origin of morals and his treatment of justice as an "artificial" virtue, in Adam Smith's *Theory of Moral Sentiments* (n.d.), and in Emmanuel Kant's theory of morals (Aune, 1979). I consider these problems in chapters 2 and 3 of *The Meaning of American Federalism* (1991). Jean Piaget's *The Moral Judgment of the Child* (1965) indicates how children acquire capabilities for rendering moral judgment.

Given appropriate methods of normative inquiry and appropriate grounds for pursuing jurisprudential inquiry, it is then possible for people to address the problems of deontic

relationships and the structure of authority relationships at the constitutional level of analysis and to set the terms and conditions of governance for any enduring set of associated relationships requiring reference to collective choice. It is the constitutional level of analysis and choice that permits a distribution of authority such that all assignments of authority can be subject to limits, no one need exercise unlimited authority, and everyone exercises some basic constitutional prerogatives. Alexander Hamilton gave expression to such possibilities in recognizing a general theory of limited constitutions. These were reasonably well expounded in *The Federalist* (V. Ostrom, 1987). Tocqueville expounded their general implications for human societies in his treatise on *Democracy in America* (1945).

A critical issue in the constitution of democratic societies, then, is the link between its practice in the nexus of associated relationships in the everyday life of the neighborhood community and larger communities of relationships that emerge in the modern world. The realm in which intelligible communication among discrete individuals is possible in discussing, resolving, and doing something about problems shared in common is the key to the conceptualization of systems of governance in democratic societies. People need to see how rules and rule-ordered relationships fit together in complementary ways within the latitudes of their own experience. An assignment of special prerogatives in monitoring, enforcing, and determining the proper application of rules will be necessary, but the discharge of such prerogatives needs to be conducted in a way that the monitors and enforcers are being monitored and challenged by others in light of the shared communities of understanding that are constitutive of joint endeavours.

The closely associated communities of relationships that nurture intelligible communication in democratic societies are not to be dismissed as trivialities but need to be recognized as the essential core of such societies. This is where each citizen learns to function in a public realm which reaches out to larger communities of relationships. Unless people learn how to come to terms with the constitutional level of analysis and be constitutive and reconstitutive of patterns of associated relationships with which they live in the ordinary exigencies of life, they cannot acquire the habits and skills appropriate to the practice of a science and art of association in a democratic society. The people of Moscow and St. Petersburg took essential steps to resist an attempted coup d'etat. They will also need to learn how to constitute, govern, and manage a great variety of associated enterprises in every aspect of life in a world that includes a great diversity of republics capable of self-governance in democratic ways.

Democratic societies turn critically upon the exercise of self-organizing and self-governing capabilities. This is what drives the productive potentials in more fully elaborated market economies, in more fully developed public economies, and in systems of governance. Conflicts in such societies are indicative of some structure of problematical situations that are the proper subject of inquiry and problem-solving efforts. Conflict is mediated by processes of inquiry oriented toward achieving conflict resolution. A due process of law viewed as a due process of inquiry, then, uses a conflict situation to elucidate information, articulate

alternatives, and stimulate innovations so as to facilitate conflict resolution and the achievement of complementarities in communities of relationships.

Where a theory of sovereignty presumes that the sovereign has ultimate, or reserved, authority, the recourse in resolving a marginal problem is to turn to the sovereign. There comes to be a presupposition that any and all unresolved problems can be addressed by an appeal to the sovereign: the government. The supreme authority is presumed to be omniscient and omnicompetent.

Citizens in a democratic society would presumably make a contrary presupposition. The core of their concern is to pose the question: What is it that is problematical, the source of difficulty? The challenge, then, is to clarify the nature of the problematical situation. This requires inquiry. What is the scope and domain of the problem? Who are implicated? How can a problem be resolved? How can those implicated be constituted in sets of rule-ordered relationships so that opportunities, actions, and systems of governance are brought into proximity to one another? How are complementary configurations of relationships appropriately nested in relation to one another? The problem of what is to be constituted is derivative from the analysis. Inquiry is the basis for building shared communities of understanding that are necessary complements to structures of authority relationships and what it is that people strive to accomplish through associated relationships.

The critical feature in democratic societies, then, is good-faith problem solving. Juxtaposing opposite and rival interests in diverse arenas, such as, elections, courts, legislatures, markets, and public economies is a way of setting the context for good-faith problem solving. It is, however, difficult to achieve in human societies. Under adverse circumstances, democratic processes can be used by factions to war upon one another. Partisan gain may not be consistent with good-faith problem solving, but open contestation among conflicting interests can elucidate information, clarify alternatives, and stimulate innovations. These are important systemic tendencies that contribute to problem-solving capabilities.

The quest for community (Nisbet, 1990) can be seen as enduring efforts to achieve complementarities in good-faith problem solving. Highly centralized states may become a serious obstacles to such possibilities (Wunsch and Olowu, 1990; Kaminski, 1992; Sawyer, 1992). Highly federalized systems of governance may enhance problem-solving capabilities (V. Ostrom, 1987, 1991). Societies that are most capable of good-faith problem solving are likely to make the greatest contribution to the emergence of human civilization.

If my conjectures make sense, Hobbes's mortal god -- Leviathan -- is a dangerous god. A unity of power is destructive of a rule of law, as Aristotle understood. A rule of law can only be developed and maintained in the presence of methods of normative inquiry that establish grounds for the exercise of moral and jurisprudential reasoning. If our concern is with the emergence of democratic systems of governance, we should presume that people, in associating with one another, are everywhere required to establish rules and rule-ordered

relationships. What the nature of these systems of rule-ordered relationships are may need to be established. Hernando de Soto's *The Other Path* (1989) indicates that systems of rule-ordered relationships exist in the context of people's everyday life in what he treats as informality. These are important elements in the knowledge, skills, and associated relationships available to anyone and everyone. They are a substantial part of the human and social capital available for development.

If these are understood and binding in the way that people relate to one another, they can hardly be treated as being purely "informal." If they are binding in communities of relationships, they serve as a "common" law for some community of people, as de Soto recognizes. Such structures of "common" law, which serve as viable working rules in the "informal sector," may have greater potential for fashioning a rule of law than commands of sovereigns. The use of opposite and rival interests mediated by appropriate methods of inquiry may be a better way of fashioning democratic societies than relying upon the mandates of parliaments.

We may have reached the point in human civilization where we can see through the anomaly in Aristotle's assertion that a state might attain such a degree of unity that it is no longer a state. Autocracies are destructive of the rule of law. It is not the unity of the sovereign representative that achieves peace and concord in human societies but the struggle to come to terms with one another and fashion shared communities of understanding through inquiry and intelligible communication with one another.

Conclusions

How do we account for our current dilemmas? Some 150 years ago, Tocqueville anticipated that the American experiment might be expected to fail. If the experiment failed, that failure would arise form the neglect of a science and art of association in fashioning institutional arrangements for coping with the problems that people share with one another. He anticipated that citizens might come to look upon the central government as an omniscient and omnicompetent problem-solver that could address any and all problems in a society. In such circumstances, nothing would remain "but to spare them [people] all the care of thinking and all of the trouble of living" (II: 318). As I have observed elsewhere, "When the cares of thinking and the troubles of living are left to others, self government is abandoned, democracy withers away, autocracy emerges and people begin preying upon one another in the name of liberty and equality" (1991: 272). New Yorkers chased their mayor away in a hail of thrown missiles.

Marx and Lenin called for the liberation of the oppressed by overthrowing and destroying their oppressors. Those who resisted were destroyed. Their brave new world outlawed contestation in the realm of ideas. A system of command and control stifled innovation, creativity, and mutually productive relationships. Their experiment failed.

The behavioral persuasion in the social sciences abandoned reference to the place of ideas and critical thinking in the aspects of life that are constitutive of human endeavours. All problems were viewed as management problems. Human choice only took account of subjective preferences expressed in what was presumed to be a metric called "utility." There was no place for normative inquiry. Rule-ordered relationships were viewed as systems of command and control. Mandatory prescriptions -- crime and punishment -- were viewed as the core of any system of positive (binding) law. Men of good will were presumed to know the greatest good of the greatest number. The use of a science and art of association in a problem-solving mode of inquiry was abandoned. Under such circumstances, erstwhile democracies can be expected to fail.

Problems of democracy, governance, and development require critical reconsideration. We have abandoned the complex of ideas which were constitutive of American society. We do not, and cannot, know what is in the greatest good of the greatest number. We need to put our analytical cards on the table and engage in critical discussions with colleagues about the place of ideas that might be constitutive of societies capable of both constituting and reconstituting diverse forms of human association. We might then learn to address problematical situations in a problem-solving mode. I doubt the democracies can ever advance beyond those capabilities. We cannot see the direct light of Truth.

References

Aristotle. 1942. *Politics*. Trans. Benjamin Jowett. New York: Modern Library.

Aune, Bruce. 1979. *Kant's Theory of Morals*. Princeton, N.J.: Princeton University Press.

Berman, Harold. 1983. *Law and Revolution: The Formation of the Western Legal Tradition*. Cambridge, Mass.: Harvard University Press.

Boulding, Kenneth E. 1963. "Toward a Pure Theory of Threat Systems." *American Economic Review* 53 (May): 424-34.

Buchanan, James M., and Gordon Tullock. 1962. *The Calculus of Consent: Logical Foundations of Constitutional Government*. Ann Arbor: University of Michigan Press.

de Soto, Hernando. 1989. *The Other Path: The Invisible Revolution in the Third World*. New York: Harper & Row.

Hamilton, Alexander, John Jay, and James Madison. n.d. *The Federalist*. Ed. Edward M. Earle. New York: Modern Library. First published in 1788.

Hobbes, Thomas. 1960. *Leviathan or the Matter, Forme and Power of a Commonwealth Ecclesiasticall and Civil*. Ed. Michael Oakeshott. Oxford: Basil Blackwell. First published in 1651.

Hume, David. 1948. *Hume's Moral and Political Philosophy*. Ed. Henry D. Aiken. New York: Hafner.

Kaminski, Antoni. 1992. *An Institutional Theory of Communist Regimes: Design, Function and Breakdown*. San Francisco, Calif.: Institute for Contemporary Studies Press, forthcoming.

Montesquieu, Charles Louis de Secondat. 1949. *The Spirit of the Laws*. New York: Hafner.

Nisbet, Robert. 1990. *The Quest for Community: A Study in the Ethics of Order and Freedom*. San Francisco, Calif.: Institute for Contemporary Studies Press. First published in 1953.

Ostrom, Vincent. 1987. *The Political Theory of a Compound Republic: Designing the American Experiment*. 2d ed. Lincoln: University of Nebraska Press.

_____. 1991. *The Meaning of American Federalism: Constituting a Self-Governing Society*. San Francisco, Calif.: Institute for Contemporary Studies Press.

_____. 1991. *The Meaning of American Federalism: Constituting a Self-Governing Society.* San Francisco, Calif.: Institute for Contemporary Studies Press.

Ostrom, Vincent, David Feeny, and Hartmut Picht, eds. 1988. *Rethinking Institutional Analysis and Development: Issues, Alternatives, and Choices.* San Francisco, Calif.: Institute for Contemporary Studies Press.

Piaget, Jean. 1969. *The Moral Judgment of the Child.* New York: Free Press. First published in 1932.

Sawyer, Amos. 1992. *The Emergence of Autocracy in Liberia: Tragedy and Challenge.* San Francisco, Calif.: Institute for Contemporary Studies Press, forthcoming.

Smith, Adam. n.d. *The Theory of Moral Sentiments.* Indianapolis, Ind.: Liberty Press. First published in 1759.

Tocqueville, Alexis de. 1945. *Democracy in America.* Ed. Phillips Bradley. New York: Alfred A. Knopf. First published in 1835 and 1840.

Wunsch, James S. and Dele Olowu, eds. 1990. *The Failure of the Centralized State: Institutions and Self-Governance in Africa.* Boulder, Colorado: Westview Press.

A Framework for Institutional Analysis

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Introduction

Institutional analysis is carried on in three ways:

1. Development and use of a general framework to help identify the broad components and relationships among these components that are considered important for work when doing institutional analysis. Frameworks help to organize diagnostic and prescriptive inquiry.

2. Development and use of theories that make general assumptions about these components in order to address a series of related questions about the effect of some set of variables on others. Theories focus on a part of a framework and make specific assumptions that are necessary for an analyst to diagnose a problem, explain its sources, and formulate some solutions. Several theories are compatible with any framework. Economic theory, game theory, the New Institutional Economics, many political theories, and theories of public goods and common-pool resource provision, production, and consumption are compatible with the framework discussed in this paper.

3. Development and use of models that make precise assumptions about particular combinations of parameters and expected outcomes. Many models are compatible with any theory. A recent effort to understand the strategic structure of the games that irrigators play in different organized irrigation systems, for example, developed four families of models just to begin to explore the likely

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consequences of different institutional and physical combinations (Weissing and E. Ostrom, 1991).

For policy makers and scholars interested in issues related to how different governance systems enable individuals to solve problems democratically, the Institutional Analysis and Development (IAD) framework helps to organize diagnostic, analytical, and prescriptive capabilities. It also aids in the cumulation of knowledge from empirical studies and in the assessment of past efforts at reforms.

Markets and hierarchies are frequently presented as fundamentally different "pure types" of organization. Not only are these types of institutional arrangements perceived to be different but each is presumed to require its own explanatory theory. Scholars who attempt to explain behavior within markets use micro-economic theory, while scholars who attempt to explain behavior within hierarchies use political and sociological theory. Such a view precludes a more general explanatory framework and closely related theories that help analysts to make cross institutional comparisons and evaluations. This is particularly relevant now that so much attention is being paid to the enhancement of various kinds of institutions. At the same time citizens, public officials, and donors are concerned with enhancing a diversity of self-governing institutions and market institutions. One needs a common framework and family of theories in order to address questions of reforms and transitions.

A central question is what is the common set of variables that can be used to analyze all types of institutional arrangements? If such a common set of variables exists, then many differences in surface reality can be expected to result from the way these variables are assigned different values and are combined with or interact with one another. A set of such variables would provide a framework for comparing institutional arrangements as different as hierarchies and markets or as similar as monopolistic and oligopolistic markets. Such a framework would identify the major types of structural variables present to some extent in all institutional arrangements, but whose values differ from one type of institutional arrangement to another.

The first step is the identification of a conceptual unit -- called an *action arena* -- that can be utilized to analyze, predict, and explain behavior within institutional arrangements. Action arenas include a model or models of an *action situation* and a model or models of the *actors* in that situation. An action situation can be characterized using seven clusters of variables: *participants*, *positions*, *outcomes*, *action-outcome linkages*, the control that participants exercise, information, *and the costs and benefits assigned to outcomes*. The model of the actor includes assumptions about four clusters of variables: the *resources* that an actor brings to a situation, the *valuation* actors assign to states of the world and to actions, the way actors acquire, process, retain, and use *knowledge contingencies and information*, and the processes actors use for *selection* of particular courses of action.

An action arena refers to the social space where individuals interact, exchange goods and services, solve problems, dominate one another, or fight (among the many things that

individuals do in action arenas. In field settings, it is hard to tell where one action starts and another leaves off. Life continues in what appears to be a seamless web as individuals move from home to market to work (action situations typically characterized by reciprocity, by exchange, or by team problem-solving or command). Further, within arenas, choices of actions *within* a set of rules as contrasted to choices *among* future rules are frequently made without recognizing that the level of action has shifted. So, when a "boss" says to an "employee", "How about changing the way we do X," and the two discuss various options and jointly agree upon a better way, they have shifted from taking actions within previously established rules to making decisions about the rules structuring future actions. Or, using IAD language, they have shifted to a collective choice level.

Thus, two additional steps are taken after an effort is made to understand the initial structure of an action arena. One step digs deeper and inquires into the factors which themselves affect the structure of an action arena. From this vantage point the action arena is viewed as an intermediate conceptual unit. The values of the variables in an action arena are now viewed as dependent upon other factors. These factors include three clusters of variables: (1) the rules used by participants to order their relationships, (2) the attributes of states of the world which are acted upon in these arenas, and (3) the structure of the more general community within which any particular arena is placed (see Kiser and E. Ostrom, 1982). The next section of this paper explicitly examines how shared understandings of rules, states of the world, and nature of the community affect the values of the variables characterizing action arenas (see Figure 1).

Then one can move outward from action arenas to consider methods for explaining complex structures that link sequential and simultaneous action arenas to one another (see Figure 2).

Diagnosis and Explanation within the Franme of an Action Arena

The term *action arena* refers to a complex conceptual unit containing one set of variable called an *action situation* and a second set of variables called an *actor*. One needs both components -- the situation and the actors in the situation -- to derive diagnose, explain, and predict actions and results.

The Action Situation

The term *action situation* is used here to refer to an analytic concept that enables an analyst to isolate the immediate structure affecting an action process of interest to the analyst for the purpose of explaining regularities in human actions and results. A common set of variables used to describe the structure of action situation include: (1) the set of participants, (2) the specific positions to be filled by participants, (3) the states of the world which can be affected (outcomes), (4) the set of allowable actions and their linkage to outcomes, (5) the level of control each participant has over choice, (6) the information available to participants

Figure 1

A FRAMEWORK FOR INSTITUTIONAL ANALYSIS

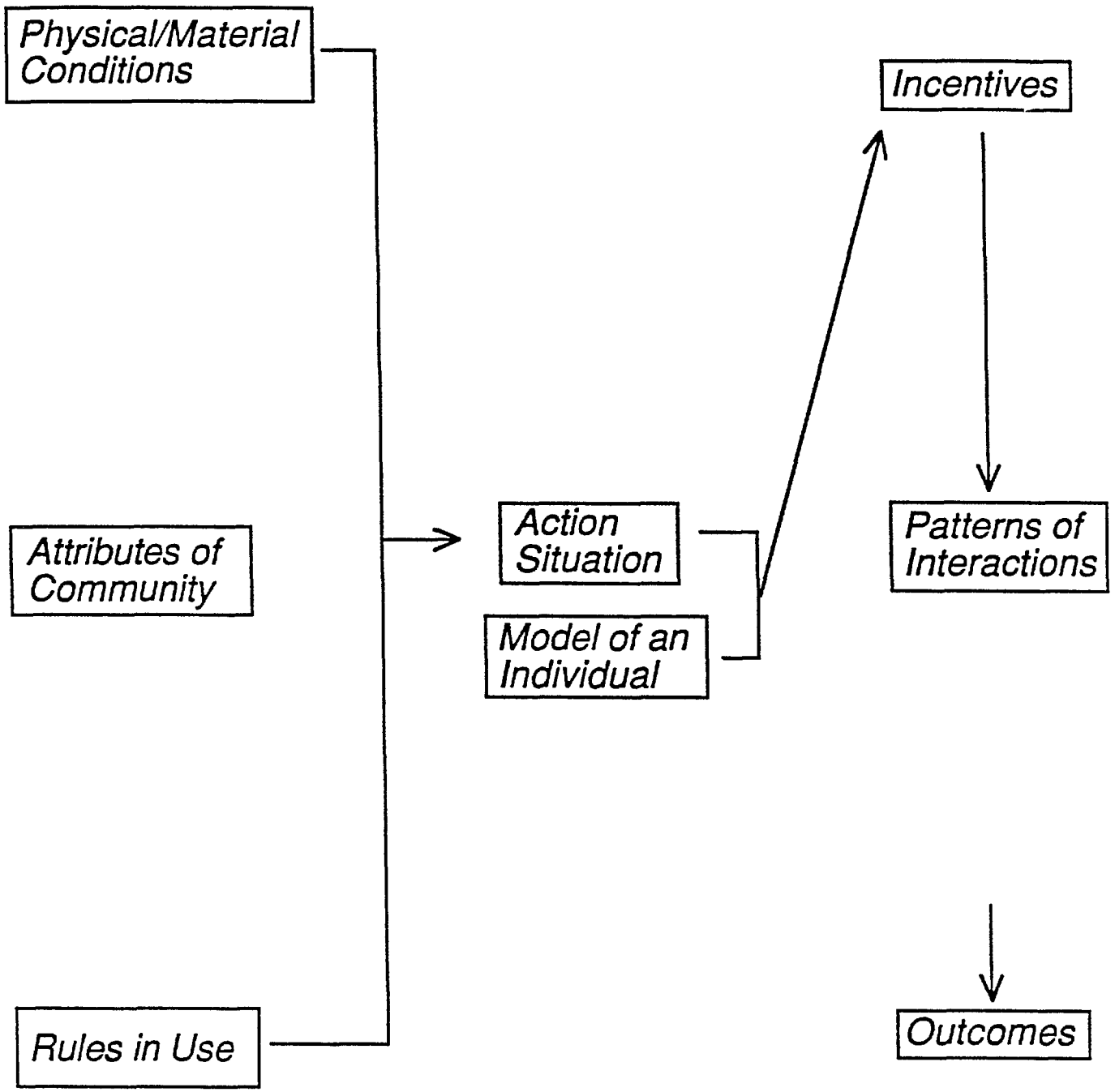
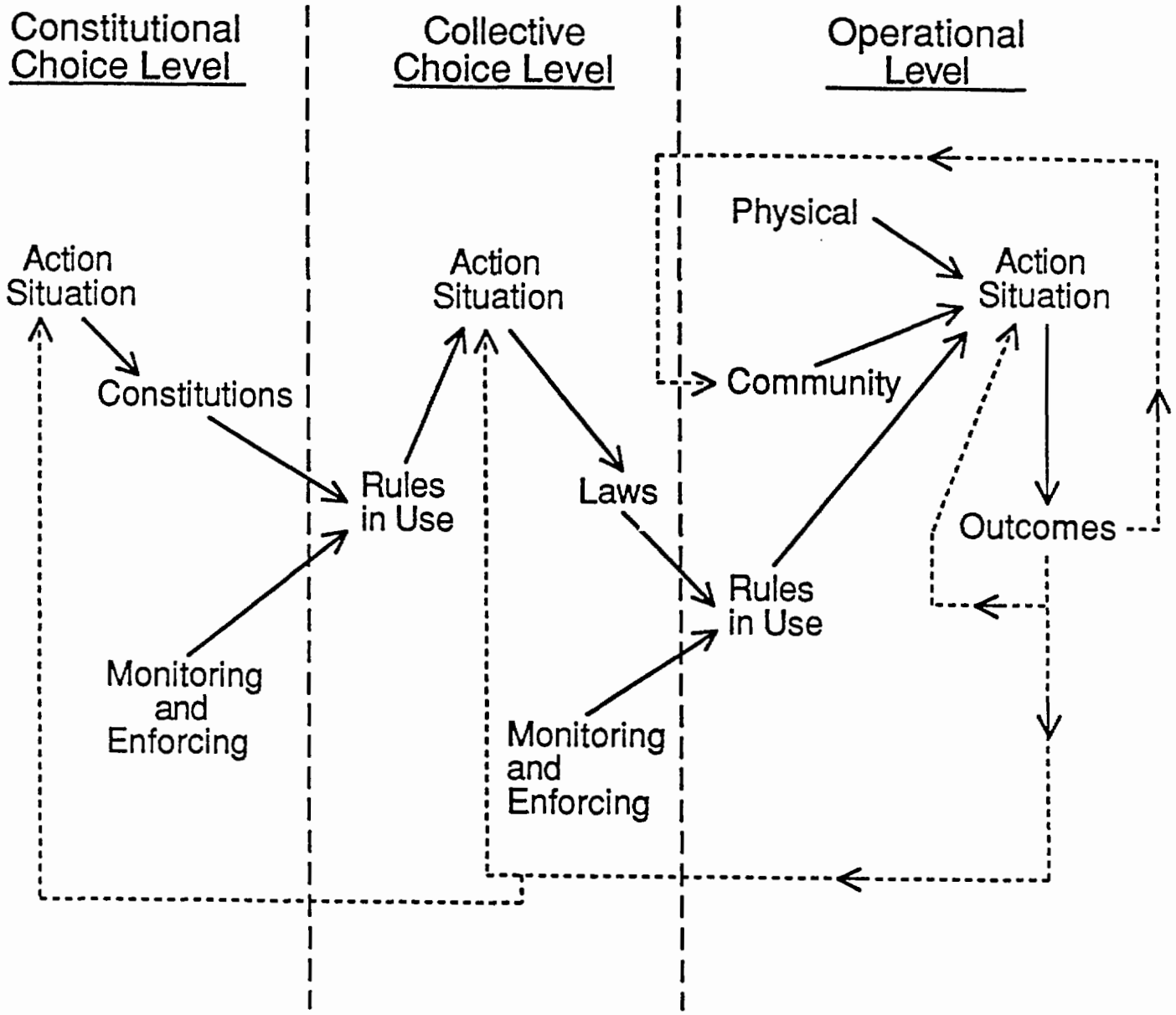


Figure 2


Constitutional Choice Level
Collective Choice Level
Operational Level
Action Situation
Constitutions
Rules in Use
Monitoring and Enforcing
Action Situation
Laws
Rules in Use
Monitoring and Enforcing
Physical
Community
Action Situation
Outcomes

about the structure of the action situation, and (7) the costs and benefits -- which serve as incentives and deterrents -- assigned to actions and outcomes. In addition, whether a situation will occur once, a known finite number of times, or indefinitely many times affects the strategies of individuals. When explaining actions and cumulated results within the framework of an action arena, these variables are the "givens" that one works with to describe the structure of the situation.

The Actor

The *actor* in a situation can be thought of as a single individual or as a group functioning as a corporate actor. In order to derive inferences about the likely behavior of each actor in a situation (and, thus, about the pattern of joint results that may be produced), the analyst must make assumptions about what and how participants value, what resources and information they have, their information processing capabilities, and the internal mechanisms they use to decide upon strategies. The term "action" refers to those human behaviors for which the acting individual attaches a subjective and instrumental meaning.

The most fully developed, explicit theory of individual choice used in the theories that are compatible with the IAD framework is used in game theory and neoclassical economic theory involve extreme assumptions such as complete rationality and unlimited computational capability. For some field settings, these theories are highly successful explanatory and diagnostic theory. Thus, for problems, using these assumptions about individual choice turns out to be a very useful way of doing institutional analysis. But for many problems -- particularly those applied to non-market settings -- it is far more useful to presume that individuals are boundedly rational. In other words, each individual wants to achieve the best he or she can, given the structure of the situation, but only so much information can be obtained and processed by fallible individuals. Thus, individuals make mistakes. Individuals may also be opportunistic and thus be willing to adopt strategies that involve guile (Williamson, 1985). In most efforts involving the analysis of the effects of alternative rules, the evolving theory of bounded rationality is a more appropriate foundation for applications of the IAD framework than theories of individual choice involving more extreme assumptions.

The Prediction of Results

Depending upon the analytical structure of a situation and the particular model of the actor used, the analyst makes strong or weak inferences about results. In tightly constrained action situations under conditions of little or no uncertainty, where participants are motivated to select particular strategies or chains of actions which jointly lead to stable equilibria, an analyst can make strong inferences and specific predictions about likely patterns of behavior and outcomes. Many situations, however, are not so narrowly constrained. Within these situations, participants may adopt a broader range of strategies and change their strategies over time as they learn about the results of past actions. The institutional analyst examining these more open, less constrained situations makes weaker inferences and predicts the pattern

of outcomes that are relatively more or less likely to result from a particular type of situation. Even weak inferences have an importance in specifying general tendencies. Predicting what will not occur may be all that an analyst can do, but such predictions are still useful.

Explanation Viewing Action Arenas as Intermediate Conceptual Units

Underlying the way analysts model action arenas are implicit assumptions about the *rules* individuals use to order their relationships, about attributes of *states of the world and their transformations*, and about the *nature of the community* within which the arena occurs. Analysts tend to make more explicit assumptions about states of the world than they make about rules or the nature of the community.

The Concept of Rules

Rules, as we use the term, are potentially linguistic entities that refer to prescriptions about what actions (or states of the world) are *required, prohibited*, or *permitted*. All rules are the result of implicit or explicit efforts to achieve order and predictability among humans by creating classes of persons (positions) who are then required, permitted, or forbidden to take classes of actions in relation to required, permitted, or forbidden states of the world.

Rules are linguistic entities that are *contextual, prescriptive*, and *followable* (Shimanoff, 1980). They are *contextual* in the sense that they apply to a general set of action arenas but do not apply everywhere. The rules of chess apply only to situations in which participants wish to play chess, but they apply in *every* instance in which individuals want to play chess. The game of chess provides the context for the application of its rules. Rules are *prescriptive* in the sense that "those who are knowledgeable of a rule also know that they can be held accountable if they break it" (Shimanoff, 1980: 41). Rules provide information about the actions an actor "must" perform (*obligation*), "must not" perform (*prohibition*), or "may" perform (*permission*) if they are to avoid the possibility of sanctions being imposed. Rules are *followable* in the sense that it is possible for actors to perform obligatory, prohibited, or permitted actions as well as it is possible for them NOT to perform these actions. In other words, it is physically possible for actors to follow or not to follow a rule. This distinguishes *actions* that are explained by reference to *rules*, from *behavior* that is explained by *scientific laws*.

To be concerned with governance, one needs to ask where the rules that individuals use in action situations come from. In totalitarian governance systems, a central government attempts to impose rules on most action situations occurring within its domain. It attempts to be the source of all rules and invest heavily in police and organized terror mechanisms in this effort. In totalitarian governance systems, action systems that are organized in the open rely primarily on the rules that come down from central authorities. Given the extreme sanctions that can be imposed, individuals interacting with strangers try to stay within the "letter of the law" as prescribed. Behind the scenes, however, many activities are organized using rules other than those prescribed by a central regime. Government officials try to extort bribes

from citizens (or businesses) who may try to evade government regulations by keeping some things hidden and paying off officials. As Vincent Ostrom argued in our first session, an over-centralization of authority may actually produce an extreme break-down of authority. Special accommodations are made in secret that are exactly contra to the "letter of the law". Thus, in a totalitarian regime where individuals have had an opportunity to begin to make accommodations with one another, there are many sources of the rules used in daily life. Some of these rules are exactly contra to the prescriptions laid down by the formal government.

In an open and democratic governance system, there are also many sources of the rules that individuals use in everyday life but it is not considered illegal or improper for individuals to self-organize themselves and craft their own rules, so long as the activities they engage in are legal. In addition to the legislation and regulations of a formal central government, there are apt to be laws passed by regional, local and special governments. Within private firms and voluntary associations, individuals are authorized to adopt many different rules for who is a member of the firm or association, how profits (benefits) are to be shared, how decisions will be made. Each family constitutes its own rule-making body.

It is possible that a governance system that is called "democratic" in its name or in the press, may still attempt to have only a single source of rules that are made by one set of officials who are selected for this purpose. This is a very barren notion of the term "democratic" and is not the way we are using the term in this workshop. A truly self-governing society is one in which individuals are authorized to participate in the crafting of nested sets of rules at many different scales from the family, to the neighborhood, to the workplace, to the region, to the country as a whole, or to an international realm.

When individuals genuinely participate in the crafting of multiple layers of rules, some of that crafting will occur using pen and paper, but much of it will occur as problem solving individuals interact trying to figure out how to do a better job in the future than they have done in the past. Colleagues in a work team are crafting their own rules when they say to one another something like: "How about if you do A in the future, and I will do B, and before we ever make a decision about C again, we both discuss it and make a joint decision. In a democratic society, problem solving individuals do this all the time. They also participate in less fluid decision-making arrangements including elections to select legislators. Elected representatives may then engage in open, good-faith attempts to solve a wide diversity of problems brought to them by their constituents. It is also possible in a governance system where individuals are elected, for patterns to emerge that are not strictly problem solving in their nature but rather to involve the imposition of clout on one another and to find way of differentially treating elements in the population.

Thus, when we do institutional analysis, we attempt first to understand the working rules that individuals are using in making decisions. Working rules are the rules in use by participants in on-going action arenas. They are the set of rules to which participants would make reference if asked to explain and justify their actions to fellow participants. While

following a rule may become a "social habit," it is possible to make participants consciously aware of the rules they are using to order their relationships. Individuals can consciously decide to adopt a different rule and change their behavior to conform to such a decision. Over time, behavior in conformance with a new rule may itself become habitual (see Shimanoff, 1980; Toulmin, 1974; Harre, 1974). The capacity of humans to use complex cognitive systems to order their own behavior at a relatively sub-conscious level makes it difficult for empirical researchers to ascertain what the working rules are for an on-going action arena may be.

Once we understand the working rules, then, we attempt to understand where those rules come from. In a system governed by a "rule of law" the general legal framework in use will have its source in actions taken in constitutional, legislative, and administrative settings filled in by decisions taken by individuals in many different particular settings. In a system that is not governed by a "rule of law", there may be central laws and considerable effort made to enforce them, but individuals attempt to evade rather than obey the law.

Rule following or conforming actions are not as predictable as biological or physical behavior explained by scientific laws. All rules are formulated in human language. As such, rules share all the problems of lack of clarity, misunderstanding, and change that typifies any languaged-based phenomenon. Words are "symbols that name, and thus, stand for classes of things and relationships" (V. Ostrom, 1980: 312). Words are always more simple than the phenomenon to which they refer.

The stability of rule-ordered actions is dependent upon the shared meaning assigned to words used to formulate a set of rules. If no shared meaning exists when a rule is formulated, confusion will exist about what actions are required, permitted, or forbidden. Regularities in actions cannot result if those who must repeatedly interpret the meaning of a rule within action situations arrive at multiple interpretations. Because "rules are not self-formulating, self-determining, or self-enforcing" (ibid.), human agents who formulate them, apply them in particular situations, and attempt to enforce performance consistent with them. Even if shared meaning exists at the time of the acceptance of a rule, transformations in technology, in shared norms, and in circumstances more generally, change the events to which rules apply. "Applying language to changing configurations of development increases the ambiguities and threatens the shared criteria of choice with an erosion of their appropriate meaning" (ibid.).

What rules are important for institutional analysis? A myriad of specific rules are used in structuring complex action arenas. Scholars have been trapped into endless cataloging of rules not related to a method of classification most useful for theoretical explanations. But classification is a necessary step in developing a science. Anyone attempting to define a useful typology of rules must be concerned that the classification is more than a method for imposing superficial order onto an extremely large set of seemingly disparate rules. By asking how rules affect the structures of action situations, we can hopefully begin to develop a useful way to cluster rules that can serve as a first step in a theory about how rules relate to

the structure of action situations, thereby affect the way individuals act and achieve or produce results.

Rule Configurations

A first step toward identifying the working rules can be made, then, by examining how these working rules affect specific variables in an action situation. A set of working rules about these variables should constitute the minimal but necessary set of working rules that one would need to offer an explanation of actions and results based on the working rules used by participants to order their relationships within an action arena. Since states of the world and their transformations and the nature of a community also affect the structure of an action situation, working rules alone never provide both a necessary and sufficient explanation of the structure of an action situation.

Adopting this view of the task, seven types of working rules can be said to affect the structure of an action situation. These are: *boundary rules*, *scope rules*, *position rules*, *authority rules*, *information rules*, *aggregation rules*, and *payoff rules*. The cumulative effect of these seven types of rules affect the structure of an action situation (setting the values of the variables that structure an action situation). Thus, boundary rules affect the number of *participants*, their attributes and resources, whether they can enter freely, and the conditions they face for leaving. Scope rules delimit the *outcomes* that can be affected and working backwards, the actions linked to specific outcomes. Position rules establish *positions* in the situation. Authority rules assign sets of actions that participants in positions at particular nodes must, may, or may not take. Authority rules, combined with the scientific laws about the relevant states of the world being acted upon determine the shape of the decision tree -- the *action-outcome linkages* and *number of iterations*. Information rules affect the *knowledge contingent information sets of participants*. Aggregation rules affect the level of *control* that a participant in a position exercises in the selection of an action at a node. Payoff rules affect the *benefits and costs* that will be assigned to particular combinations of actions and outcomes and establish the incentives and deterrents for action. The set of working rules is a *configuration* in the sense that the effect of a change in one rule may depend upon the other rules in use.

States of the World and Their Transformation

While a rule configuration affects all of the elements of an action situation, some of the variables of an action situation are also affected by attributes of the states of the world and their transformation. What actions are physically possible, what outcomes can be produced, how actions are linked to outcomes, and what is contained in the actors' information sets are affected by the world being acted upon in a situation. The same set of rules may yield entirely different types of action situations depending upon the types of events in the world being acted upon by participants.

The attributes of states of the world and their transformation are explicitly examined when the analyst self-consciously asks a series of questions about how the world being acted upon in a situation affects the outcome, action sets, action-outcome linkages, and information sets in that situation. The relative importance of the rule configuration and states of the world in structuring an action situation varies dramatically across different types of action situations. The rule configuration almost totally constitutes some games, like chess, where physical attributes are relatively unimportant. There is little about the size of a chess board or the shape of the pieces that contributes to the structure of a chess game. On the other hand, imagine, for a moment, switching the balls used in American and European football. The strategies available to players in these two games, and many other sports, are strongly affected by the physical attributes of the balls used, the size of the field, and the type of equipment.

The relative importance of working rules to attributes of the world also varies dramatically within action situations considered to be part of the public sector. A legislature is closer in many respects to chess than to football. Rules define and constrain voting behavior inside a legislature more than attributes of the world. Voting can be accomplished by raising hands, by paper ballots, by calling for the ayes and nays, by marching before an official counter, or by installing computer terminals for each legislator on which votes are registered. In regard, however, to organizing communication within a legislature, attributes of the world strongly affect the available options. The principle that only one person can be heard and understood at a time in any one forum strongly affects the capacity of legislators to communicate effectively with one another (see V. Ostrom, 1987). The strategies available to farmers using an irrigation system are similarly strongly affected by whether the system has storage, whether the canals are gated and lined, the pattern of rainfall in the area, soil conditions, and many other aspects of the physical and biological world they face.

The Community

A third set of variables that affect the structure of an action arena relates to the community. The attributes of a community which are important in affecting the structure of an action arena include the norms of behavior generally accepted in the community, the level of common understanding potential participants share about the structure of particular types of action arenas, the extent of homogeneity in the preferences of those living in a community, and the distributions of resources among those affected. The term "culture" is frequently applied to this bundle of variables.

Linking Action Arenas

In addition to analysis which digs deeper into the factors affecting individual action arenas, an important development in institutional analysis is the examination of linked arenas. While the concept of a "single" arena may include large numbers of participants and complex

chains of action, most of social reality is composed of multiple arenas linked sequentially or simultaneously.

When individuals wish to intervene to change the structure of incentives and deterrents faced by participants in socially constructed realities to guide (or control) participants toward a different pattern of results, they do so by attempting to change the rules individuals use to order their interactions within particular types of action arenas. How rules affect behavior and results has not, however, been a question at the forefront of intellectual inquiry in political science, public administration, policy sciences, organization theory, and other disciplines that study the public sector.

Some interesting and important institutional arrangements for coordinating complex chains of actions among large numbers of actors involve multiple organizations competing with one another according to a set of rules. Markets are the most frequently studied institutional arrangements that achieve coordination by relying primarily on rule-governed competitive relationships among organizations. Rule-governed competition among two or more political parties is considered by many analysts to be an important requisite for a democratic polity. Less studied, but potentially as important means for achieving responsiveness and efficiency in producing public goods and services, are arrangements that allow rule-ordered competition among two or more potential *producers* of public goods and services.

Most of the efforts to analyze the effects of institutional arrangements in the public sector have focused primarily on single arenas such as elections, legislatures, administrative agencies, courts, etc. A complex series of processes must be channeled through many simultaneous and sequential action arenas, however, for citizens to receive bundles of public goods and services.

Multiple Levels of Analysis

Besides there being multiple and nested action arenas, the nesting of arena can also be conceptions across several levels of analysis. All rules are nested in another set of rules that define how the first set of rules can be changed. The nesting of rules within rules at several levels is similar to the nesting of computer languages at several levels. What can be done at a higher level will depend on the capabilities and limits of the rules (or the software) at that level and at a deeper level. Whenever one addresses questions about *institutional change*, as contrasted to action within institutional constraints, it is necessary to recognize the following:

1. Changes in the rules used to order action at one level occur within a currently "fixed" set of rules at a deeper level.

2. Changes in deeper-level rules usually are more difficult and more costly to accomplish, thus increasing the stability of mutual expectations among individuals interacting according to a set of rules.

It is useful to distinguish three levels of rules that cumulatively affect the actions taken and outcomes obtained in any setting (Kiser and E. Ostrom, 1982). *Operational rules* directly affect day-to-day decisions made by the participants in any setting. *Collective-choice rules* affect operational activities and results through their effects in determining who is eligible and the specific rules to be used in changing operational rules. *Constitutional-choice rules* affect operational activities and their effects in determining who is eligible and the rules to be used in crafting the set of collective choice rules that in turn affect the set of operational rules. One can think of the linkages among these rules and related level of analysis as shown in Figure 3.

At each level of analysis there may be one or more arenas in which the types of decision made at that level will occur. The concept of an "arena" as described above does not imply a formal setting, but can include such formal settings as Legislatures and Courts. Policy-making regarding the rules that will be used to regulate operational-level choices is usually carried out in one or more collective choice arenas as shown in Figure 4.

Figure 3

LINKAGES AMONG RULES AND LEVELS OF ANALYSIS

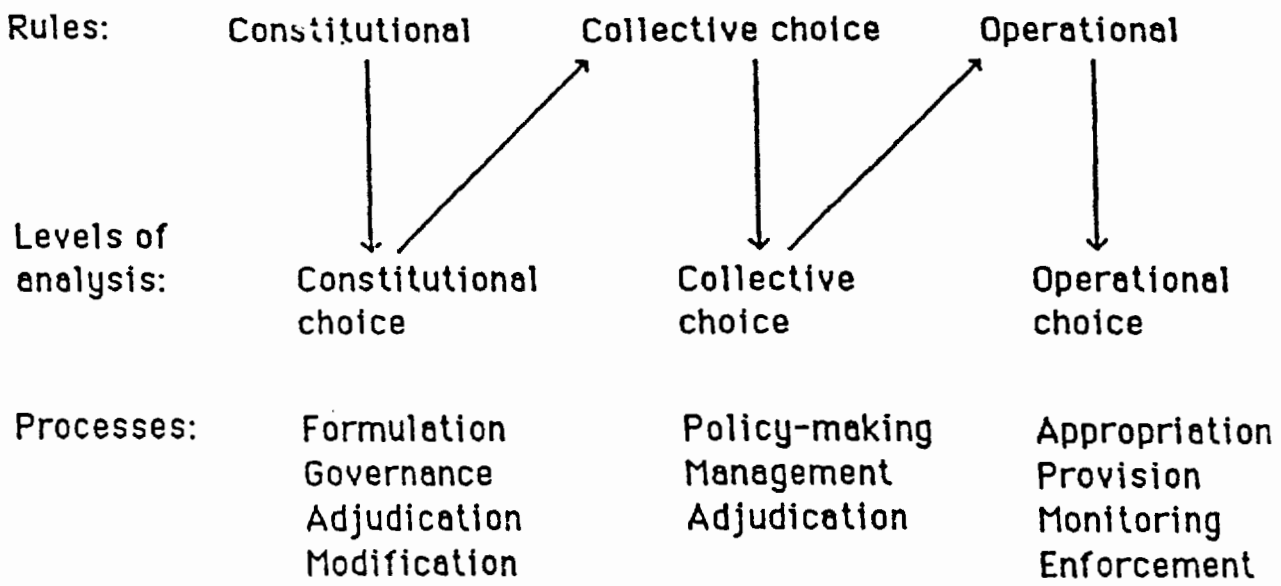
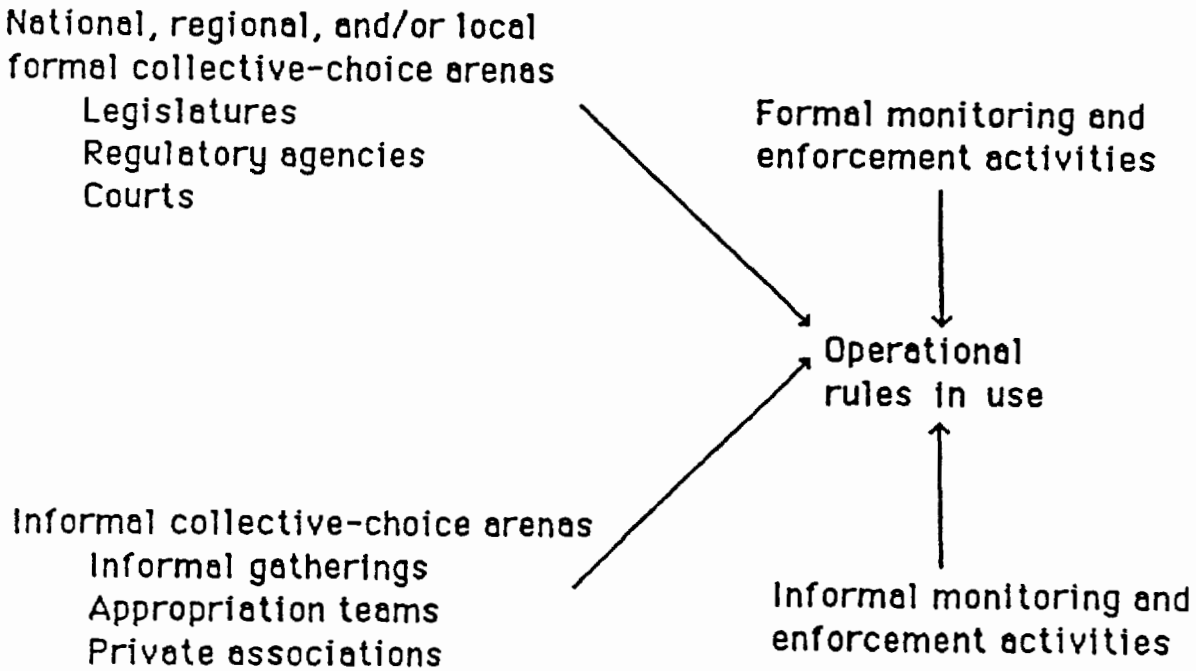


Figure 4

RELATIONSHIPS OF FORMAL AND INFORMAL COLLECTIVE-CHOICE ARENAS



References

The working parts of the IAD framework do not always overtly show in an institutional analysis. That is the case with all frameworks. Since a framework orients the analyst to ask particular questions, it is the questions that are generated by using the framework that appear in most analyses rather than the intellectual scaffolding used by the analyst to diagnose, explain and prescribe. The IAD framework has influenced the analysis of a diversity of questions during the past several years. These have included questions related to the organization of institutions for the provision and production of fertilizer, arabica coffee, roads, irrigation, fisheries, forest resources, primary education, and primary health. Work has been carried on related to patterns of order in Bangladesh, Cameroon, Ghana, India, Indonesia, Ivory Coast, Liberia, Mali, Madagascar, Nepal, Nigeria, Poland, and metropolitan areas within the United States. For readers who may be interested in seeing some of the recent applications of this approach, let me refer you to the following partial list of recent or forthcoming work.

Advisory Commission in Intergovernmental Relations (Ronald J. Oakerson). 1987. *The Organization of Local Public Economies*. Washington, D.C.: ACIR.

Connerley, Ed, and Louis Siegel. 1990. *Special Study on Contractor Performance*. Burlington, Vermont: Associates in Rural Development.

Davis, Gina, and Elinor Ostrom. 1991. "A Public Economy Approach to Education: Choice and Co-Production." *International Political Science Review* 12(4):313-35.

Djibo, Hadiza, Cheibane Coulibaly, Paul Marko, and James T. Thomson. 1991. *Decentralization, Governance, and Management of Renewable Natural Resources: Local Options in the Republic of Mali*. Burlington, Vermont: Associates in Rural Development.

Gardner, Roy, and Elinor Ostrom. 1991. "Rules and Games." *Public Choice* 70(2) (May): 121-49.

Gardner, Roy, Elinor Ostrom, and James Walker. 1990. "The Nature of Common-Pool Resource Problems." *Rationality and Society* 2(3) (July): 335-58.

Gellar, Sheldon, Ronald Oakerson, and Susan Wynne. 1990. *An Institutional Analysis of the Production, Processing, and Marketing of Arabica Coffee in the West and North West Provinces of Cameroon*. Burlington, Vermont: Associates in Rural Development.

Herzberg, Roberta, and Vincent Ostrom (forthcoming) "Votes and Vetoes." In *The Public Sector -- Challenge for Coordination and Learning*, ed. Franz-Xaver Kaufmann. Berlin: Springer-Verlag.

Hilton, Rita. 1990. *Cost Recovery and Local Resource Mobilization: An Examination of Incentives in Irrigation Systems in Nepal.* Burlington, Vermont: Associates in Rural Development.

Hyden, Goran. 1990. "Reciprocity and Governance in Africa." In *The Failure of the Centralized State: Institutions and Self-Governance in Africa*, eds. James Wunsch and Dele Olowu, 245-69. Boulder, Colo.: Westview Press.

Kaminski, Antoni. 1992. *An Institutional Theory of Communist Regimes: Design, Function and Breakdown.* San Francisco, Calif.: Institute for Contemporary Studies Press, forthcoming.

Kiser, Larry L., and Elinor Ostrom. 1982. "The Three Worlds of Action: A Metatheoretical Synthesis of Institutional Approaches." In *Strategies of Political Inquiry*, ed. Elinor Ostrom, 179-222. Beverly Hills, Calif.: Sage.

Oakerson, Ronald. 1986. "A Model for the Analysis of Common Property Problems." In *Proceedings of the Conference on Common Property Resource Management*, 13-30. Washington, D.C.: National Academy Press.

_____. 1988. "Reciprocity: A Bottom-Up View of Political Development." In *Rethinking Institutional Analysis and Development: Issues, Alternatives, and Choices*, eds. Vincent Ostrom, David Feeny, and Hartmut Picht, 141-58. San Francisco: Institute for Contemporary Studies Press.

Oakerson, Ronald J., Susan Wynne, Tham V. Throng, and Stuart Tjip Walker. 1989. *Privatization Structures: An Institutional Analysis of the Fertilizer Sub-Sector Reform Program in Cameroon.* Burlington, Vermont: Associates in Rural Development.

Ostrom, Elinor. 1989. "Microconstitutional Change in a Multiconstitutional Political System." *Rationality and Society* 1(1) (July): 11-50.

_____. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action.* New York: Cambridge University Press.

_____. forthcoming. *Crafting Institutions for Self-Governing Irrigation Systems.* San Francisco, Calif.: Institute for Contemporary Studies Press.

_____. forthcoming. "A Method of Institutional Analysis and an Application to Multiorganizational Arrangements." In *The Public Sector -- Challenge for Coordination and Learning*, ed. Franz-Xaver Kaufmann. Berlin: Springer-Verlag.

Ostrom, Elinor, Larry Schroeder, and Susan Wynne. 1990. *Institutional Incentives and Rural Infrastructure Sustainability.* Burlington, Vermont: Associates in Rural Development.

Ostrom, Vincent. 1991. *The Meaning of American Federalism: Constituting a Self-Governing Society*. San Francisco, Calif.: Institute for Contemporary Studies Press.

Ostrom, Vincent, David Feeny, and Hartmut Picht, eds. 1988. *Rethinking Institutional Analysis and Development: Issues, Alternatives, and Choices*. San Francisco, Calif.: Institute for Contemporary Studies Press.

Sawyer, Amos. 1992. *The Emergence of Autocracy in Liberia: Tragedy and Challenge*. San Francisco, Calif.: Institute for Contemporary Studies Press, forthcoming.

Schlager, Edella. 1990. "Model Specification and Policy Analysis: The Governance of Coastal Fisheries." Ph.D. diss., Dept. of Political Science, Indiana University, Bloomington.

Schroeder, Larry. 1989. *Managing and Financing Rural Road Maintenance in Developing Countries: The State of the Art*. Burlington, Vermont: Associates in Rural Development.

Schroeder, Larry, Michael Bishop, Ed Connerley, Idha Haryanto, Colin McAndrews, Hidayat Nataatmadja, and Tatang Subrata. 1991. *Special Study on Local Resource Mobilization for Road Maintenance*. Burlington, Vermont: Associates in Rural Development.

Shivakoti, Ganesh P., Khadka Giri, and Elinor Ostrom. 1991. "Effects of Different Types and Levels of Intervention in Farmer Managed Irrigation Systems in Nepal." Bloomington: Indiana University, Workshop in Political Theory and Policy Analysis, Working Paper Series.

Tang, Shui Yan. 1991. "Institutional Arrangements and the Management of Common-Pool Resources." *Public Administration Review* 51 (January/February): 42-51.

Weissing, Franz, and Elinor Ostrom. 1991. "Irrigation Institutions and the Games Irrigators Play: Rule Enforcement Without Guards." In *Game Equilibrium Models: Methods, Morals, and Markets*, ed. Reinhard Selten. Berlin: Springer Verlag.

Wunsch, James S. and Dele Olowu, eds. 1990. *The Failure of the Centralized State: Institutions and Self-Governance in Africa*. Boulder, Colo.: Westview Press.

Wynne, Susan G. 1986. "Information Problems Involved in Partitioning the Commons for Cultivation in Botswana." In *Proceedings of the Conference on Common Property Resource Management*, 359-89. Washington, D.C.: National Academy Press.

_____. 1988. "The Land Boards of Botswana: A Problem in Institutional Design." Ph.D. diss., Dept. of Political Science, Indiana University, Bloomington.

Yang, Tai-Shuenn. 1987. "Property Rights and Constitutional Order in Imperial China." Ph.D. diss., Dept. of Political Science, Indiana University, Bloomington.

References Cited but not Listed Above

Harre, R. 1974. "Some Remarks on 'Rule' as a Scientific Concept." In *Understanding Other Persons*, ed. T. Mischel. Oxford: Basil Blackwell.

Ostrom, Vincent. 1980. "Artisanship and Artifact." Public *Administration Review* 40 (July/August): 309-17.

_____. 1987. *The Political Theory of a Compound Republic: Designing the American Experiment.* 2d ed. Lincoln: University of Nebraska Press.

Shimanoff, S. B. 1980. *Communication Rules: Theory and Research.* Beverly Hills, Calif.: Sage.

Toulmin, S. 1974. "Rules and Their Relevance for Understanding Human Behavior." In *Understanding Other Persons*, ed. T. Mischel. Oxford: Basil Blackwell.

Williamson, Oliver. 1985. *The Economic Institutions of Capitalism.* New York: Free Press.

Exchange, Entrepreneurship, and Market Governance: An Institutionalist View of "The Market"

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Introduction

One popular variant of institutionalism is inclined to sort institutions into two basic subsets--the government and the market--and to deal with institutional analysis as the assignment of activities to one of the two. Institutionalists associated with the Workshop are uncomfortable with references to "the government," and prefer to speak about relationships between various constitutional/legal/political structures and the processes of governance. One message I want to deliver is that we should be equally uncomfortable with references to "the market." Rather, an institutionalist view of markets should focus on the relation between (a) structure and (b) process at multiple levels of analysis.

Market Structures

The basic operational process associated with markets is the exchange of goods and services--not so much simple exchange but exchange between specialized producers and consumers, whether intermediate or final. The process of exchange occurs within a market structure composed of firms (production units) and households (consumption units). (Governments are basically more inclusive consumption units--public households.) An initial level of analysis can be focused on the relation between market structure and market exchange. This analysis need not be confined to "free" markets or to competitive markets. In many developing countries, markets are so severely constrained by law that their operation cannot be considered free, and the absence of freedom clearly curtails competition. Yet it is possible to examine the relation between (a_1) market structure and (b_1) patterns of market exchange [subscripts refer to the level of analysis].

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But institutional analysis cannot stop with this level of inquiry. Market structures do not simply spring up spontaneously. They are an outcome of knowable organizational processes. In particular, they are a product of entrepreneurship and the interactions among entrepreneurs. If we regard a market structure as a configuration of firms and households together with their long-term organizational relationships, then entrepreneur-ship is the process by which firms (and public households) are organized and sustained and by which the long-term organizational relationships among firms are established and nurtured. Some reference is also made, again, to exchange (i.e., firms can be bought and sold). But the sale of goods and services needs to be sharply distinguished, institutionally, from the sale of a firm, and viewed as a different level of interaction.

Market Regime

Both entrepreneurship and exchange occur within a structure of legal relationships that might be termed a "market regime."[1] The structure of legal relationships includes property rights, liability and limits to liability, rules of collective association, and contract law. Obviously, these relationships can be configured in a variety of ways. What we call a free or liberal market depends on a market regime that allows individuals considerable liberty to own and transfer property securely, to act in productive ways without undue fear of legal liability (i.e., to enjoy a significant sphere of economic liberty), to join with others in various forms of voluntary association (both for-profit and not-for-profit), and to enter into enforceable agreements related to future exchanges. These liberties are never absolute and the liberality of a market is always a matter of degree. A second level of analysis emerges, one that examines the relation between (a_2) the characteristics of a market regime and (b_2) patterns of entrepreneurship.

Still, the institutional analysis of market relationships is not finished. A market regime is generated and sustained by an intersecting set of legal, administrative, and political processes. The creation, adaptation, and maintenance of a market regime can be construed as governance--market governance. This process occurs within the frame of a more general set of legal and political institutions--the constitutional order. Thus a third level of analysis is concerned with the relation between (a_3) characteristics of the constitutional order and (b_3) market governance.[2] It is at this level of analysis that economics becomes political economy and we confront fundamental issues of development such as the relation between economic and political liberalization.

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[1]The first level, it should be noted, is nested within the second. A market regime structures the process of exchange as well as the process of entrepreneurship.

[2]Again, both the first and second levels are nested within the first. The nature of the constitutional order affects both entrepreneurship and exchange.

Levels of Analysis

We may now summarize the three levels of analysis as follows:

[1] (a_1) market structure --> (b_1) patterns of exchange
(market regime, constitutional order)

[2] (a_2) market regime --> (b_2) entrepreneurship
(constitutional order)

[3] (a_3) constitutional order --> (b_3) market governance.

If the focus of analysis is on the relationship between (b) process and (c) outcome, the three levels would be specified as follows:

[1]' (b_1) exchange process --> (c_1) welfare outcomes

[2]' (b_2) entrepreneurship --> (market structure)

[3]' (b_3) market governance --> (market regime).

Moreover, as the market game is played repeatedly and market structures become more complex and sophisticated, this too affects patterns of market governance. Thus, the constitutional order affects patterns of market governance, which through the market regime affect patterns of entrepreneurship, which through the resulting market structure affects future market governance. This means that the third level of relationships should be rewritten as follows:

[3]" (a_3) constitutional order
--> (b_3) market governance....,
(market structure T-1)

where (market structure T-1) refers to the market structure yielded by the immediately preceding play of the game.

We might ask--where is "the market" in all of this? What do we mean when we refer to "the market?" Do we refer to market processes or to market structures? If to process, do we refer to the exchange of goods and services or to entrepreneurship? Processes, however, occur within some structure. The sort of market process you get

depends on the sort of structure that is possible. If "the market" refers to a market structure, the nature of that structure depends on the sort of entrepreneurship that is allowed or facilitated by a market regime. In order to discuss "the market" as an institution, it is necessary to distinguish structure and process and apply that distinction at multiple levels of analysis. In institutional terms, references to "the market" are ambiguous at best. In order to do meaningful institutional analysis, it is necessary to make the kinds of distinctions made here and examine the relationships among variables at multiple levels of analysis.

The specification of relationships, however, is still incomplete, for a crucial set of variables has been left out. Market-related processes (b) are affected not only by institutions and institutionally created structures (a), but also by (d) characteristics of the product or service being produced and exchanged. Thus, patterns of exchange (b_1) depend not only on market structure, but also on the characteristics of goods and services subject to exchange. This argument is familiar to economists and is the source of the theory of "market failure," based on characteristics such as exclusion and jointness. Institutional economists such as Williamson (1985) have extended this argument to the second level of analysis, investigating how market structures vary with differing product/service characteristics, assuming a free market regime. The variable relationships can be depicted as follows:

(d_2) product/service --> (b_2) entrepreneurship --> (market structure).

Given a market regime, how does variation in the physical world variously constrain transactions in ways that cause entrepreneurs to generate various market structures?

It is de Soto (1989) who has added to institutional economics the dimension that is most important from a development perspective. He raises the question of how variation in the characteristics of a market regime (a_2) might affect patterns of entrepreneurship (b_2) and the resulting market structure. This is the dimension that is of critical importance in the developing world, although the effect of variable product/service characteristics cannot be neglected. Assuming a free market regime does not generate relevant analysis in most of the underdeveloped world. What de Soto characterizes as "formality" and "informality" are differing patterns of entrepreneurship that both derive from the character of the market regime (de Soto characterizes it as a mercantilist regime) long established in Peru and lead to quite different market structures.

Joining de Soto to Williamson, we might also ask what product/service characteristics contribute to the entrepreneurial choice of formal or informal market arrangements. This gives us the following specification:

(d_2) product/service }
} --> (b_2) entrepreneurship --> (market
(a_2) market regime } structure).

Practical Applications

The theoretical questions I have raised are all practical development questions as well, wherever the development problem is viewed as one of effecting a transition from an authoritarian or "planned" economy to a "free market" economy. My own practical work in this regard has been done in Cameroon. Working with my DFM colleagues Susan Wynne and Shelden Gellar and with USAID/Cameroon personnel, Tham Truong, Bob Shoemaker, and Tjip Walker, we have produced two pieces of work: (1) a case study and institutional analysis of the Fertilizer Subsector Reform Program (FSSRP)(Oakerson, Wynne, Truong, and Walker 1990) and a background study, diagnostic, and institutional design for the cooperative restructuring component of the Program for Reform of the Agricultural Marketing Sector, Phase 1 (PRAMS-1)(Gellar, Oakerson, and Wynne 1990).

FSSRP

In the case of the FSSRP, the key was to create a transitional, quasi-market regime that combined sufficient freedom to act with sufficient information and institutional transparency to permit and support the rapid formation of competitive import firms able to supply fertilizer to cooperatives. Thus, the FSSRP went well beyond simply negotiating the withdrawal of the Cameroonian government from fertilizer subsidization, importation, and distribution. The program did not simply assume that "the market" would act appropriately to supply fertilizer to farmers. Fertilizer subsidies would be phased out, not suddenly eliminated. A continued, though reduced, subsidy program would be used to facilitate the entry of new firms, and a special credit program administered by commercial banks used to screen out firms not likely to deliver the goods. These institutional mechanisms were designed to ease the transition by encouraging competitive firms to enter while reducing the social costs that would be associated with trial-and-error elimination of firms with little chance of success. In effect, some firms were eliminated at level 2 (not allowed to enter) rather than level 1. Eventually, however, full market competition, without subsidy or preferential credit, will be allowed.

PRAMS-I

In the case of PRAMS-1, the focus is on the improvement of the arabica coffee crop grown by some 35,000 smallholders in the North West Province. Key changes in the relevant market regime would be necessary, especially granting cooperatives full export rights rather than relying on a parastatal. This would be insufficient, however, to assure that world market price incentives are adequately reflected back to individual farmers, which depends, instead, on the design of the cooperative structure in the North West. We proposed a quasi-market structure (dubbed New Internal Marketing Arrangements) to operate internally within the North West Cooperative Association (NWCA), a three-tiered association of 11 cooperative unions and 40 primary societies. Union and apex levels of the organization would price their services (consisting of processing and exporting) to primary societies, with primary societies claiming the residual. Primary societies would also be free, with adequate notice, to withdraw from NWCA and market their coffee through other channels. Moreover, new primary societies would be free to form, and existing societies and unions free to divide or merge, as economies and diseconomies of scale may indicate. In order for primary societies to enjoy such exit rights, they must hold clear property title to their facilities and equipment. Within an appropriate set of rules (in effect a quasi-market regime), the cooperative structure in the North West would be free to emerge from the decisions of individual farmers and their cooperative societies. All of this depends on changes in the more general market regime, including the reform of national cooperative legislation.

Conclusions

In both cases, the physical nature of the good subject to production and exchange is important. Fertilizer is a heavy and bulky commodity, imported by ship from Europe. Economies of scale in transport limit the feasible number of importers, but given the level of demand in Cameroon, competitive rivalry among a small number of importers is still possible. Fertilizer also has certain storage problems, and needs to be supplied in a timely manner dependent on growing seasons. Arabic coffee also has certain physical properties that affect market processes. In contrast to robusta, arabic is harvested early (before the cherries dry), pulped and washed (fermented), then dried. Pulping and washing should occur within 24 hours of harvesting. In Cameroon, this process is carried out on the farm, although elsewhere (e.g., Kenya), the process has been transferred to small local pulping factories or washing stations managed by cooperatives. The quality of arabic depends greatly on the care taken in harvesting, pulping, and washing. The aggregate value of the crop on the world market is thus affected by a large number of separate decisions by individual farmers. Given a cooperative structure, improvement in the quality of arabic as grown, harvested, and processed requires careful attention to the internal marketing structure that links the payment of farmers with world market signals. Only

a system that clearly rewards farmers who produce superior parchment coffee will result in an overall improvement of the arabic crop. Whether this would include the development of pulping factories is an open question.

A market reform program needs to be concerned with securing complementary institutional changes at several levels. In the case of PRAMS-1, changes in the assignment of export rights to include local cooperatives are insufficient to assure the linkage of individual farmers to world market signals. The internal cooperative structure must also be carefully designed. In addition, changes in the local cooperative structure must be consistent with changes in national cooperative legislation.

The sustainability of commodity-based market reforms is problematical given the continued existence of a bureaucratic regime built largely on rent-seeking activity, which stands in lieu of a market regime designed to facilitate market transactions. A bureaucratic regime inserts governmental authority between economic producers and their markets in order to extract rent. Instead of facilitating economic activity, a bureaucratic regime operates by disrupting economic activity, thus increasing transaction costs and reducing economic activity or driving it underground.

The long-term strategy of promoting piecemeal economic reform is gradually to build a constituency for more general political and legal reform and an institutional infrastructure to support it. Economic liberalization is closely related to political liberalization if only because economic liberalization strikes at the central purpose of an authoritarian governance structure--central control of the productive economic resources of a nation in order to capture economic rents. Piecemeal economic reform attacks this problem from two sides, increasing incentives to engage in economically productive activity while reducing the gain from rent-seeking. To the extent that piecemeal reforms are successful, they build a constituency for further, more extensive change. They also begin to build an institutional infrastructure that can help to translate broader political change into economic activity if and when such change occurs.

REFERENCES

De Soto, Hernando (1989). *The Other Path: The Invisible Revolution in the Third World.* (New York: Harper and Row).

Gellar, Sheldon, Ronald J. Oakerson, and Susan Wynne (1990). *An Institutional Analysis of the Production, Processing, and Marketing of Arabic Coffee in the West and North West Provinces of Cameroon.* DFM Report.

Oakerson, Ronald J., Susan Wynne, Tham Truong, and Tjip Walker (1990). Privatization Structures: *An Institutional Analysis of the Fertilizer Reform Program in Cameroon.*

Williamson, Oliver E. (1985). *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting (New York: Free Press).*

Resource Mobilization and Roads: Micro Experiments In Indonesia

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Introduction

Insuring that rural roads in developing countries are adequately maintained is obviously a very challenging task. While a multitude of issues are associated with this challenge, they generally can be classified as being technical, financial or institutional in nature.[1] Although none of these sets of issues is particularly easy to solve, perhaps the least daunting are the technical or engineering obstacles. If there were no financial constraints and if routine and periodic maintenance were carried out in the manner recommended by engineers, investments in well-designed and constructed roads would very likely have longer useful lives than are generally observed in most Third World countries.[2]

Obviously, the simple lack of resources can constitute a major constraint to ensuring that road maintenance can be carried out in LDCs. Yet blaming resource scarcity for the problem is potentially misleading. Ex post estimates of private returns (benefits) to many

[1]These three classes of issues are identified and discussed in Harral and Faiz (1988), Robinson (1988) and Schroeder (1990).

[2]The same can, of course, be said about public infrastructure maintenance in the United States where financial constraints should be less pressing than in the Third World. Bridges that deteriorate due to lack of painting and asphalt roads that deteriorate due to lack of seal coatings are generally not due to the lack of engineering knowledge.

rural road investments indicate that the benefits often do exceed the costs.[3] If, indeed, the benefits exceed the costs, then the generated resources could (at least theoretically) be used to finance the investment and its sustenance. In such instances it is not resource scarcity, per se, that is the crux of the problem. Instead, it is the lack of a method for mobilizing the generated benefits and allocating them to road maintenance.

The argument of this paper is that at the heart of the problem are inappropriate incentives related to the system of governance of roads, with especial focus on financing mechanisms. To develop this argument we first discuss various constraints to road finance. The public goods nature of many rural roads means that there are few opportunities to link payments for the use (and hence deterioration) of specific roads with the benefits that they provide. Road users, unless coerced in some manner, have strong incentives to be free riders. Thus other methods of mobilizing resources must be tried. The latter portion of the paper is devoted to discussions of several such possible methods within the specific context of rural road maintenance in Indonesia.

Disincentives to Financing Road Maintenance

Direct charging for road services is generally not a viable method for mobilizing resources in rural areas of developing countries (but see below for a discussion of exceptions to this rule). Instead, less direct methods linking road usage to resources are often more feasible. Most common in this regard are benefit-linked financial instruments such as excise taxes on vehicles, gasoline, tires and other inputs. Even then, however, it is often the case that the revenues raised are put into a common pool to be used for the variety of non-transport activities supported by the public sector. With competing uses of the scarce resources, maintenance of roads may get short shrift. One reason for this is the long term nature of road deterioration and, therefore, the long term payoff to maintenance. If decision makers have high discount rates, large benefits far into the future are still worth less than smaller, but more immediate, returns on public spending. While difficult to document, it is likely that public decision makers will perceive fewer long term stakes in an investment than do private decision makers. If correct, public officials will be more likely to defer maintenance spending in favor of activities that provide more immediate returns. Although this budgetary issue focuses on the financing of maintenance, at heart it is a governance question since it relates to the rules concerning who and how maintenance decisions are made.

There are a variety of other important incentive issues that help explain the lack of road maintenance in Third World environments. Since they are not the primary focus of this paper, we will only mention a few here without attempting to develop the arguments more

[3]For example, a review of over a dozen studies of rural road projects in Bangladesh indicated that many roads do lead to significant increases in incomes. See Appendix B in DFM (1989).

fully.[4] Where professional challenges and personal payoffs are enhanced more through road construction efforts than through maintenance ventures, the incentives of many decision makers will be to focus on the former. Where construction activities are simpler to measure and the results evaluated than are maintenance tasks, construction will be favored since it eases the effort of those administering these duties. Where road construction and maintenance activities are basically controlled centrally, there are fewer opportunities to respond rapidly to the specific needs for emergency maintenance in a particularly location. Since the production of road maintenance is often monopolistic with no real competition among alternative producers, the incentives to do a high quality job are lessened. And where road construction is effectively fully financed through externally (to the locality served by the road) provided capital grants, local incentives to maintain the road may be considerably less. This is particularly true where local decision makers perceive that additional capital resources will be provided when the road deteriorates. Even threats to withhold subsequent funds may be deemed to lack credibility by the locality.[5]

This last issue is especially pertinent for this seminar setting since much road construction in LDCs has been and currently is supported by donors. It must be recognized that donors can contribute to the problems. Again, the operational rules and incentives inherent to such organizations lie at the heart of this problem. First, the policies of many assistance agencies do not allow direct support of maintenance activities under the expectation that to provide such support will discourage efforts to mobilize local resources. In fact, the logic behind this argument is probably an accurate one and leads to policies which would be reasonable IF there were not also strong incentives to insure that economic assistance continues to flow (and where recipient governments also understand these incentives). In such situations, threats to withhold subsequent flows of assistance are not credible and fail to create strong incentives for insuring adequate maintenance.

Project officers also face difficulties of guaranteeing accountability of the spending of assistance funds. This means that at least inputs must be measurable and with relatively little subjectivity. Unfortunately, the nature of road maintenance is such that it is not easy to measure and the consequence of good or bad maintenance efforts will not be observable for an extended period of time. In such cases, the incentive again favors projects that focus on more easily measured construction/reconstruction efforts. These incentives are further exacerbated where personnel levels of the donor organizations are cut back thereby adding to an already heavy workload for the project officer.

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[4]They are discussed more completely in Ostrom, Schroeder and Wynne (1990) and Schroeder (1990).

[5]Again, experience with federal funding of interstate highways in the U.S. supports this contention. The United States Government Accounting Office (1981) has found that, in spite of mandates to maintain the system adequately with the threat of withholding subsequent funds, was not sufficient to coerce states to maintain their systems adequately.

Other "rules" governing economic assistance can decrease the amounts available to local jurisdictions which are often responsible for road maintenance activities. For example, matching fund requirements for donor grants or loans to the Government of Bangladesh have apparently encouraged the Government to decrease the amounts allocated to its intergovernmental grant program thereby diminishing the abilities of local governments to maintain infrastructure. Rather than budgeting a taka to support local government activities, the Government recognizes that using the taka to "match" a donor activity will yield a considerably larger impact (and, simultaneously, increase the flow of hard currency into the country).

This section has only touched on the numerous incentive-related issues that affect the ability of public institutions to mobilize and allocate the resources necessary to maintain roads in developing countries. There is little doubt that the issues are challenging. In an attempt to determine whether alternative approaches to these resource mobilization issues might be practical in a Third World setting, the DFM Project undertook a study for the USAID Mission in Jakarta in August 1990. The remainder of the paper reports on that effort.

USAID/Jakarta Efforts to Increase Revenues for Road Maintenance

The Government of Indonesia and USAID are currently engaged in a Rural Road Maintenance System Project in the Provinces of South Sulawesi and Nusa Tenggara Timur (NTT). The bulk of the Project entails the construction or reconstruction and subsequent maintenance of certain key roads under the control of the rural districts or *kabupatens* within these two Provinces. The project agreement called for the initiation of pilot projects in FY 1991/92 designed to mobilize local resources capable of increasing the likelihood of sustained maintenance of *kabupaten* roads. The Decentralization: Finance and Management (DFM) Project was requested by USAID/Jakarta to design such pilot undertakings and to provide broader recommendations concerning appropriate policies that could also strengthen kabupaten abilities for maintaining their road systems. In the remainder of this paper we briefly describe the fiscal and administrative environment in rural Indonesia and then review the conceptual framework used in designing the pilot undertakings.

Kabupaten Roads and Local Government Finance

Indonesia is subdivided into twenty-seven provinces (Dati I) regional governments. The provinces are further divided into 246 second level (Dati II) regencies. Of these, 55 are highly urbanized areas called *kotamadyas* or cities; the remaining 191 are predominately rural in nature (with some towns and villages) and are termed *kabupatens* or districts.

It is important to recognize that local governments in Indonesia do not have much autonomy in either their administrative or fiscal affairs. Most local personnel decisions must be approved by the center as are the bulk of the budgetary decisions. And the preponderance of all financial resources spent by local governments are derived from intergovernmental

transfers. These transfers dominate both routine (current) and development (capital) expenditures. The 1983/84 data exhibited in Devas (1989, pp. 24 and 32) shows the following percentages of routine and development revenues derived from central government grants (excluding loans and the property tax which, although a central government levy, is shared with Dati I and II level jurisdictions):

Central Govt. Grants As	Provinces	Kabupatens & Kotamadyas
Percent of Routine Revenues	74.9	70.9
Percent of Development Revenues	78.2	85.6
Percent of Total Revenues	75.5	80.6

In spite of the low level of reliance of Indonesian subnational governments on own-source revenues, the list of local taxes, fees and charges that they are permitted to impose is an extremely long one. For example, at present there are a total of 35 local taxes and 28 fees and charges that can be imposed by the kabupatens and kotamadyas, although the majority of the levies are not imposed in most of the jurisdictions (see DFM, 1991a). While the titles of several of these Dati II local revenues suggest they are meant to be imposed on road users and would be prime candidates for earmarking for road maintenance, such is not the case. For example, the most productive local tax in many rural kabupatens is the "street lighting" tax; however, it is actually a surcharge levied on electricity charges and is not related to road usage nor are the revenues earmarked for lighting streets.

The Dati II local governments have responsibility for a variety of local public services, including roads. As in most countries, these roads constitute, by far, the greatest proportion of the road network (75.7 percent in 1987), although traffic levels are commonly very light, especially on rural kabupaten roads. Nevertheless, even if only roads deemed to be in good or fair condition were to be maintained, the estimated annual costs of such activities would generally exceed greatly the revenues available (see DFMa, 1991). This suggests that policy changes are necessary if local governments are to be able to afford to sustain the maintainable portion of the rural road network.

One approach to such policies is to implement broad-based policy initiatives such as imposing a fuel tax, improving the structure and administration of the locally-shared property tax, or increasing revenue performance of other local revenue instruments. The final report (DFM, 1991a) contains several such recommendations. Of principal interest in this paper,

however, is the theory-based procedures used to assess the feasibility of several small-scale, local pilot initiatives that might immediately increase the resources available to finance road maintenance.

Pilot Road Maintenance Resource Mobilization Efforts

A generally well-defined field approach was used when assessing the feasibility of pilot schemes. That approach was built upon an implicit model (or set of assumptions) that emphasizes incentives. First, is the assumption that a resource mobilization instrument should be levied on those who derive benefits from the activity supported from those resources. Not only does such an approach increase the likelihood of compliance, it also corresponds to the benefit principal of taxation. With respect to governance, such benefit-based levies, particularly if they are paid consciously and directly by users, increase the likelihood that these same users will apply pressures on decision makers to use the resources in a beneficial manner. A second, related assumption of particular importance to a pilot undertaking is that the effort is more likely to lead to successful road maintenance if the resources raised from a particular road are earmarked for maintaining that same road. There are simply too many other alternative uses of the resources to anticipate that the benefit-based methods of resource mobilization will result in increased road maintenance efforts.[6] Earmarking can add to the transparency of the budget allocation process and, thus, increase pressures on decision makers to maintain the roads. Third, by focusing on beneficiaries as payers, the use of benefit-based levies and earmarking should provide users with greater incentives to pressure local government officials to respond to their particular road use needs.[7] Finally, an implicit assumption underlying the effort is that rural roads differ greatly in terms of their physical characteristics and, more importantly, in terms of the nature of the services they provide. Thus, it is unreasonable to expect a single "blueprint" approach to local financing of roads to work equally well in all situations.

This set of assumptions then led to a particular set of attributes that were to be investigated by the four-person research team that was assembled to carry out the field work. The team spent seven weeks in the field--five weeks in South Sulawesi and two in NTT and conducted case study efforts in five different USAID project kabupatens.

The first crucial attribute of a road or roads to be maintained under the pilot program was that it be "maintainable." As in many Third World settings, there are numerous "roads"

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[6]We recognize that such earmarking is not necessarily optimal from the standpoint of economic efficiency since the marginal benefits of using these funds in alternative ways may exceed the benefits from maintenance. However, if the alternative is no additional resources mobilized and, hence, no additional road maintenance undertaken, the earmarking approach is still preferable. For discussions of earmarking see Teja (1988).

[7]At present, the locally elected councils of kabupatens are relatively very weak. The chief administrative officers of local governments in Indonesia are *appointed* to their posts with the concurrence of the central government; hence the role of the electorate in governance decisions is extremely minor.

which are so severely deteriorated that routine or even periodic maintenance efforts would prove to be wasteful or uneconomic, i.e., the costs of the maintenance would exceed any benefits. While current, detailed inventories of the kabupaten roads were not available, sufficient information concerning the current conditions of roads was accessible for the research team to identify a short list of possible pilot roads. Indeed, in nearly all of the kabupatens this first cut at the problem greatly decreased the number of potential candidates.

A second paramount feature sought in the search for pilot resource mobilization areas was the generation of actual benefits from a road. Although pre-project assessments may strongly suggest that a road project will yield substantial net economic benefits, post-project experience indicates that such forecasts are not always accurate. Although in-depth statistical analyses of traffic counts and benefits generated would have been preferable, the budget and time constraints of the field work forced the team to rely heavily on interviews of local officials and road users in ascertaining whether benefits were being generated.

With benefits generated and maintainability assessed, the third set of issues concerned which of several alternative resource mobilization instruments might be most feasible for any particular road segment. Although there may have been (or are) other possibilities, the team focused on only a short list of possibilities. Ultimately these included (1) road user fees; (2) road user group maintenance efforts; (3) crop marketing cess; and (4) privatization of road maintenance responsibilities.[8] In determining the feasibility of each alternative, the nature of the road segment and its users were studied as well as were the administrative and legal constraints that would have to be overcome in implementing a pilot program. Considerable effort was spent investigating the industrial structure of road users and the pricing mechanisms governing these users since the burden of different resource mobilization techniques depend greatly upon determinants of input and output prices and the competitiveness of markets.

Road-User Charges. For a road user fee to be feasible, economic theory suggests that several conditions must hold. These include:

- No good, i.e., low cost, alternative routes must be available to road users.
- The demand for road usage, particularly for using a maintained road, must be adequate to generate sufficient traffic to yield revenues in excess of the costs of administering the fee.
- Any political and legal constraints associated with imposition of road user charges and earmarking the revenues for road maintenance must be surmountable.

[8]In fact, this last alternative was not included on the original list. It was devised while the team was carrying out its studies in the field.

In the course of the fieldwork, a road in Kabupaten Pinrang was determined a prime candidate for such fees. The road is in very good condition and is currently generating benefits, both to rice farmers and to transporters of fish from a coastal fish farming area to a provincial road that is used to transport the fish to the major market in Ujung Pandang. There are no good alternative routes available. Current traffic levels and the fact that fish marketing requires good transportation led us to conclude that user charge revenues could feasibly support both the costs of administering the fees and substantial portions of road maintenance. Political support and the necessary steps to legalize such fees were also documented in the course of the case study.

Crop Marketing Cess. Closely related to general road user charges is a crop marketing cess. Such a cess or tax levied on the marketed crop can be imposed where all or nearly all uses of a local road network are associated with a single crop that is marketed at a single site. Collection of the cess in this manner avoids most of the collection costs necessary for road user charges therefore is more efficient to administer. Sugar cane production and processing constitute a good example of such an industry. Not only is there often only one sugar processing site in an area, additionally, the nature of the production process is such that rapid transport of the cut cane to the mill is important in insuring the highest sugar content of the cane. Thus, a crop marketing cess is particularly relevant where:

- There is a single or small number of sites where the crop is marketed.
- There are strong incentives for users to comply, e.g. where the crop price received by the producer depends upon the quality of the crop marketed.
- There are sufficient amounts of marketed crops to yield revenues in excess of any administrative costs and to support necessary road maintenance.
- Any political and legal constraints associated with imposition of a crop cess and earmarking the revenues for road maintenance must be surmountable.

In the field research it was determined that the industrial organization of sugar production in South Sulawesi was not conducive to the imposition of a crop marketing cess. Sugar production was carried out in the Province through industrial estates, i.e., the processing enterprises already owned the cane which was being processed. Thus, unlike the case where the cane is produced by numerous private farmers, there was no advantage to applying a cess against the marketed cane.[9]

[9]In fact, one sugar estate on South Sulawesi built and maintained several of its own roads after it ascertained that the local kabupaten was unwilling or unable to maintain the "public" roads.

Road User Groups. Although the problem of free riding generally constrains non-governmentally imposed methods for mobilizing road maintenance resources, there are instances in which groups of road users can be formed to insure that maintenance activities are undertaken. Furthermore, since at least some routine maintenance is feasibly produced through labor intensive techniques (e.g., cleaning culverts and ditches or filling small potholes), in cash poor areas these group efforts may take the form of labor "contributions". In any event, for road users' groups to be feasible,

- There should be an existing or "natural" lead organization that includes the bulk of the primary beneficiaries of a road and its maintenance.

- The group should be reasonably homogenous to enhance cooperation by its members; even then it is likely that rules, agreed to by all members, concerning the levels of contributions and sanctions imposed against noncompliers, will be necessary to guard against free riding or shirking.

- Where labor intensive efforts are to be employed for road maintenance by the group, there must be cooperation between the group and the agency providing capital intensive routine and periodic maintenance to insure a full range of inputs necessary for effective road maintenance will be supplied.

- Any political, legal or cultural constraints associated with group-based road maintenance efforts must be surmountable. The cultural constraints are particularly important for "voluntary" labor contributions by group members.

In Kabupaten Sidrap the field team determined that certain routine maintenance activities could be performed through group efforts on a road serving a relatively homogeneous group of road users. It was determined that the road was in good condition. Further, transport costs had declined significantly after the road was upgraded. Finally, the road is effectively a "dead-end" road; this feature helps to insure that local residents served by the road would be the primary beneficiaries of any maintenance effort. An existing organization, the *Lembaga Ketahanan Masyarakat Desa* (LKMD), was ascertained to be willing and able to lead these group efforts. Confidence was also enhanced by the fact that labor intensive group efforts have been used in the past within this particular kabupaten.

Privatization of Providing Road Maintenance. Group-based maintenance efforts can be considerably constrained by group size since shirking and free riding is easier where there are many participants are involved. Thus smaller groups of homogeneous users are more likely to be successful than larger groups. In the limit, a "group" may consist of only a single road user. Where the benefits of road maintenance are sufficient to that user, the road is likely to

be maintained. But with only a single user, the road is effectively "privatized". Thus, a privatized approach to road maintenance will be feasible if

- There is a single principal user of a road.
- That user has strong incentives to provide road maintenance and anticipates that the public sector will be unwilling or unable to provide maintenance activities.
- Any legal or political constraints associated with privatizing a road can be overcome.

In Kabupaten Bone a 5 km. road was discovered to be serving a fish/shrimp hatchery. Although the road is still "maintainable", it is deteriorating and the hatchery manager was already contemplating building a fully private road to provide an alternative way of transporting his valuable products from the hatchery to the main provincial road. After researching the legal constraints and ascertaining the willingness of kabupaten officials to enter into an agreement, it was determined that it should be feasible for the fish hatchery and the kabupaten to reach a contractual agreement concerning the responsibility of the hatchery to provide the resources necessary to maintain that particular road.[10]

The result of this effort thus resulted in the recommendation of implementing three pilot programs in South Sulawesi Province beginning in April, 1991. We understand that this effort has begun; however it is far too early to attempt to assess the results.[11] Given the many strong incentives against resource mobilization for road maintenance, the pilot undertakings are certainly at risk. Nevertheless, it is hoped that evaluation of the results, either positive or negative, can lead to improved road maintenance efforts and policies in Indonesia that may also have implications for other settings.

Conclusion

The task of mobilizing resources for road maintenance in developing countries is obviously not an easy one for a variety of reasons. Nevertheless, through analysis of the incentives faced by those governing the provision of roads and by road users, progress can be achieved. The road maintenance resource mobilization pilot projects being implemented in Indonesia should assist in that effort.

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[10]From an independent study of road construction contractors also conducted in the USAID project areas, there must be some concern for the stability of contractual agreements between private and public organizations (see DFM, 1991b). The experimental nature of the privatized road may shed additional light on these issues.

[11]In two of the studied kabupatens there were no roads that met the dual criteria of being maintainable and yielding sufficient economic benefits to justify a pilot undertaking.

References

Devas, Nick. 1989. *Financing Local Government in Indonesia.* Ohio University Monographs in International Studies, Southeast Asia Series, No. 84. Athens, OH: Ohio University Press.

DFM. 1989. *Bangladesh Rural and Feeder Roads Sector Assessment.* Burlington, VT: Associates in Rural Development.

DFM. 1991a. *Special Study on Local Resource Mobilization for Road Maintenance in Indonesia.* Burlington, VT: Associates in Rural Development.

DFM. 1991b. *Contractor Performance Special Study.* Burlington, VT: Associates in Rural Development.

Harral, Clell G. and Asif Faiz. 1988. *Road Deterioration in Developing Countries: Causes and Remedies.* Washington, DC: The World Bank.

Ostrom, Elinor, Larry Schroeder and Susan Wynne. 1990. *Institutional Incentives and Rural Infrastructure Sustainability.* Decentralization: Finance and Management Project. Burlington, VT: Associates in Rural Development.

Robinson, R. 1988. *A View of Road Maintenance Economics, Policy and Management in Developing Countries.* TRRL Research Report 145. Crowthorne, UK: Transport and Road Research Laboratory.

Schroeder, Larry. 1990. *Managing and Financing Rural Road Maintenance in Developing Countries.* Decentralization: Finance and Management Project. Burlington, VT: Associates in Rural Development.

Teja, Ranjit S. 1988. "The Case for Earmarked Taxes: Theory and an Example," Fiscal Affairs Department Working Paper, WP/88/18. Washington DC: International Monetary Fund.

United States Government Accounting Office. 1981. *Deteriorating Highways and Lagging Revenues: A Need to Reassess the Federal Highway Program.* Washington DC: General Accounting Office.

Peer Training as a Way to Motivate Institutional Change in Farmer-Managed Irrigation Systems[1]

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Introduction

In the reconnaissance visit to a farmer-managed irrigation system being assisted by an action-research project, the following set of conversations took place. When asked about system maintenance, farmers with the first fields served by the long canal replied: "Last year the farmers down there (pointing toward fields lower in the system) used water from the canal but when the canal was blocked by a landslide they refused to help clean the canal even when we called them." They complained bitterly that all the farmers with fields lower down in the system were lazy and refused to help repair the canal. They indicated great interest in using project (referring to the action-research project) funds to make physical improvements to the diversion and canal.

A few minutes later, farmers working in the lower fields were asked the same questions about maintenance. "Why should I repair the canal? The farmers with fields up there use all the water anyway," was one farmer's response.

[1]I want to acknowledge the contribution to this paper by Naresh Pradhan through the detailed notes kept of numerous farmer tours that he led. Also for assistance given by Matrika Bhattarai, the facilitator assistant, from one of the systems visited. Dr. Prachanda Pradhan originated the idea of farmer tours to well-managed systems in Nepal in the early 1980s when he accompanied several groups to the systems described here as hosts. He participated in the exchange visit described in the paper and contributed useful insight.

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The system being examined was a farmer-built and -operated irrigation system that commanded 39 hectares of land in a mountainous area of Nepal. Water was delivered by the canal for a few months in the winter season to about half of the potential command area of the canal. In the monsoon when water is needed to supplement rainfall for growing rice, the period considered by most Nepali farmers to be the most important irrigation season, the canal was not operational. The Government of Nepal's Water and Energy Commission Secretariat (WECS) with assistance from the Ford Foundation and the International Irrigation Management Institute (IIMI) was implementing the action-research project to investigate assistance and support strategies for the small, isolated irrigation systems built and managed by the farmers.

Poor Maintenance of Irrigation Structures; Symptom of Weak Governance

A multitude of case studies give evidence that many farmer-managed irrigation systems remain functional in the face of severe stress from floods, landslides, conflict over water allocation, or inequitable water distribution (IIMI/IAAS/Winrock International 1988). While research shows that many farmer-built and -operated irrigation systems are productive and few systems have been entirely abandoned, farmers all over Nepal are requesting assistance from the government.

Irrigation professionals are convinced that farmer requests for assistance is evidence that these systems are failing. Engineers who view irrigation as uniform-gradient, and smoothly-lined canals with control gates take the farmers' cry for assistance as confirmation that the systems need to be physically upgraded or "rehabilitated." If farmers are so successful in operating their systems, why are they requesting assistance to improve physical structures?

There are several reasons for this contradiction. Researchers look for well-established, functional irrigation systems to study. If a system operates poorly for only one season there is little to investigate and examples of under-performing, farmer-managed irrigation rarely find their way into case studies. The skewed sample of systems studied tends to portray farmer-managed irrigation systems as all having clearly defined water rights, sophisticated organization, elaborate maintenance programs, the ability to mobilize irrigators in response to emergencies that threaten their system, and capacity to deal with conflict among members. Indeed, given the conditions and resources available, survival of most farmer systems is only possible because of the effective institutions and governance systems farmers have crafted by trial and error.

On the other hand, systems selected for engineers to examine and determine if there is potential for improvement tend to be systems with serious operational difficulty. The visible symptom is poorly developed physical infrastructure--a broken diversion, multiple landslides blocking the canal, and possibly breaches in the canal embankment. The underlying cause for

operational difficulty may be the inability to establish viable institutions; a situation where conflict tends to be high and essential maintenance neglected (WECS/IIMI, 1990). Treating the symptom, i.e., upgrading the physical system, when the cause of poor performance is governance, may temporarily improve system performance but experience has shown that there is little, long-term gain unless institutions are also strengthened (Peabody. 1983, Pradhan, 1990, Pradhan 1989, Pradhan 1987).

All farmers would like to have reliable irrigation water available for their fields with minimum expenditure of resources, including their labor, for maintaining the system. As a result farmers aggressively seek ways to access materials that may bring permanence to the structures they have created from earth, stone, and forest products. Even well-managed, productive systems go through an annual cycle of repair and rapid decay. If the status of the physical structures is the only consideration, there are periods each year when it is not possible to distinguish a productive system from one that hardly functions; both may seem in complete disrepair. The difference is that one is rapidly improved by the unified effort of users when they need water, while in the other the few persons who try to make improvements are frustrated at being unable to complete essential repairs.

Criteria for determining which among many farmer-managed irrigation systems to assist is almost always related to the physical attributes of the system. However, in many cases the status of the system's institutions and governance, the invisible part of the system, is the cause for poor performance and is in greater need of change than the physical structures. If governance already is strong, assistance through the organization's established institutions will be productive and achieve a high level of user participation. If the institutions are weak, which is the case in many systems engineers are requested to rehabilitate, there tends to be conflict among users and poor participation. This has resulted in farmers being labeled as uncooperative as well as incompetent irrigators. How can these systems be identified and what assistance can be given to improve governance?

Analysis of Symptoms; Identification of Weak Institutions

Among the series of tasks that irrigation systems must perform, there is often at least one weak link requiring special rules with strict compliance to allow smooth operation. For some systems, gaining access to the water source is difficult. Competition with upstream and downstream users may require negotiation, agreement, and continuous monitoring of compliance. Or frequent repairs may be required to maintain the diversion and conveyance structures. If water is limited, enforcing distribution rules may be the most important reason for organized activity.

Lack of physical system maintenance during important irrigation seasons is usually a symptom of institutional weakness. The situation described in the opening paragraphs was an easily identified example of such a problem because information was available from many case studies of successfully maintained farmer irrigation systems in a similar environment in

Nepal. Identification of institutional arrangements in a number of well-managed systems gives a range of possible implementation rules for each irrigation task. Understanding the rules of well-managed systems provided the basis for comparison with information gathered by the action-research project from the poorly performing system described above.

Lack of maintenance, when compared to other systems, was an indicator that the community was not working together in a unified effort to maintain the canal. The canal crossed a hillslope where mass slumping dropped the canal up to a meter in some years. Though this was a serious problem, when the farmers were asked to estimate how much work was involved in redigging the canal through this section each year it involved less than two days work for each water user, a minor burden when compared to the annual labor contribution required in some well-managed systems. Some farmers were unwilling to do any work on the canal. The symptom was poor maintenance cooperation but the causes for noncooperation and the changes needed to overcome these were not evident without further investigation.

Discussion with farmers over a period of many months identified some of the problems. The system was constructed about fifteen years earlier. Most farmers had helped with construction but they had not reached an agreement on how the water was to be allocated among the potential users. Rules did not exist limiting access to irrigation water and several farmers who had not contributed to construction were using water without providing any compensation. The community had a bitter political division and local leaders used operation of the irrigation system, or lack thereof, as a means to manipulate their respective constituency.

Peer Training as a Means for Institutional Development

Previous experimentation with peer training for farmers had yielded encouraging results (Pradhan and Yoder, 1989). The action-research project decided to try farmer-to-farmer visits as a method of extending ideas about governance in systems being assisted by the project. In total five groups of farmers from 19 irrigation systems made training visits. There were about 15 farmers in each group.

Each group was accompanied by two facilitators. One was a young farmer from one of the host systems. He had worked as a research assistant over a period of several years while the irrigation systems in his community were being studied. The other facilitator had extensive experience as a research assistant in many farmer-managed systems including the communities being visited. Both facilitators were employed by IIMI to assist with the WECS action-research project and had been visiting and observing the trainee farmer systems for over a year. Both facilitators were knowledgeable about the institutional strengths and weaknesses of all the trainee and host farmer systems.

The following paragraphs describe one of the farmer-to-farmer visits. Included in the group of trainee farmers were four from the community with the irrigation system described in the opening paragraphs.

Farmer Exchange Visit

After a three-hour walk from the road, the group of 18 trainee farmers arrived at the diversion structure of the first canal. In total they had traveled one day on foot and one by bus to reach the systems they were visiting. Since they represented nine different irrigation systems, the travel period was a valuable time for them to get acquainted with each other.

Canal Inspection

A group of six host farmers were at the intake to meet the trainees. They had arranged a rice meal for the trainees at a local tea shop near the system diversion. After formal introductions, the host farmers lead the trainees on a tour of their canal. At each structure of interest the host farmers explained the history of problems they had faced and repairs made to overcome them. The trainees were most impressed with the tunnel built in a rock cliff to replace a surface channel that was continually damaged. Even before reaching the command area two trainee farmers were heard commenting to each other that if they did this amount of work on their own canal it would operate all year.

From their vantage point along the upper canal the trainees were shown three additional parallel canals each with lower diversions from the same source. The host farmers explained that each diversion had the right to divert all of the water from the stream at the location of their diversion. There were springs that replenished the flow between each diversion. However, they had a rule that no new canal could be built upstream of the lowest diversion and that a diversion could not be shifted downstream.

The timing of the tour had been arranged to coincide with the annual meeting of the canal's organization. The host farmers explained that the meeting always took place on the first day of the Nepali month of Jesth and that it was mandatory for all water users to attend or to pay a fine. The meeting was always at the same location, the point where the first major branch canal divided from the main canal.

Additional farmers were waiting under the tree at the meeting site to join the host farmers who had met the trainees at the intake. It was an hour before the meeting was scheduled to begin and the host farmers used the time to explain the management details of their system. The system is many generations old and its origins are shrouded in mythology. The host system leader then gave details about the job assignment of each of the five elected officials and the rules for operation and maintenance. From observing the trainees it was clear that much of the information was not being understood; it was so foreign to them that

they could not relate to it. This initial presentation of irrigation organization by the host farmers was long and detailed following the story-telling logic that both host and trainee farmers were most comfortable with. When the history and management tasks had all been explained by the host farmers, they requested that the trainees describe their systems. It was an embarrassing moment as the trainees looked at each other, realizing that they had little to share. One by one they stated their village, the name of the stream from which they diverted water, and a few statistics about crops, area, and population. None of the trainees had ever participated in an irrigation user meeting, discussed rules for providing maintenance labor, or thought about water allocation. They were clearly embarrassed to be talking to such sophisticated irrigators and to have nothing comparable to share. Amused glances were exchanged among the host farmers.

After a bit of prompting from the facilitator, lively discussion followed as the trainees began asking questions that related to problems in operating their own systems. "What happens if there is no male member in the home, only children and women?" was one example. This related to the rule that only adult males could work on maintaining the host farmers' canal, and if they are absent from work they are fined. The host farmers replied that it depended on the reason for being absent. If there was a wedding or death to be attended it could be excused but if it was because the adult male had gone to the market or had another job the fine would be assessed. If there was no adult male in the household, either the family needed to pay the fine or hire a substitute.

The role of the facilitators was to listen to the exchange and watch the interaction. They observed what it seemed the trainees did not understand and kept notes on the topics discussed. As the conversation slowed one of the facilitators injected a question that directed the discussion to another area that needed to be covered. Most important they reintroduced subjects that they felt had not been understood by the trainees. For example, the host farmers frequently mentioned saachos, the proportioning weirs that they used to divide water from main to secondary canals. One of the facilitators recognized that the trainees didn't know what they were talking about. So the facilitator asked the host if they could show them a saacho and explain how it worked.

Everyone walked down the canal to the first saacho. The saacho was a log with two rectangular notches cut into it. Part of the water flowed through each notch into separate canals. A host farmer explained how the size of each notch was proportional to the land area irrigated by the canal it served. After giving all the technical information on how it was built and leveled the trainees were satisfied. Here the facilitator again asked a question of the hosts. "How do you know that the saacho has not been shifted by cows walking in the canal?" He knew that at the beginning of each irrigation season all irrigators receiving water through the saacho met to inspect and adjust it. This had not been mentioned before but the host farmers picked up immediately and explained how important it was to make the inspection. "If you don't show up when the adjustment is being made you have no right to criticize or complain later if you feel it is not accurate. Once it is inspected and all present agree that it is correct, it cannot be tampered with again or there will be an immediate and

severe penalty for the offender administered by the entire organization. The saacho is an important tool for equitable water distribution and no one is allowed to tamper with it!"

Walking back to the tree for the meeting the facilitator asked about the sensitive subject of water theft. "What happens if someone takes water when it is not his turn or makes an illegal outlet from a canal?" The host farmers explained the system of evaluating the severity of the crime and the graduated penalties that would be administered to match. Stealing from a branch canal was tolerated with a minimum fine, almost to the point of being viewed as a water purchase. However, theft from the main canal is serious. For a first offense there is a monetary fine, the second offense will have a much higher penalty decided in a public meeting, and if there is a third offence the outlet to that user's field will be sealed and he will no longer be able to irrigate.

A trainee farmer asked what happens if they don't catch the offender in the act but suspect that water was stolen? Several host farmers spoke at once to reply and lively discussion followed. One host farmer related a story that happened in some previous generation but which all believed to be true. An offender, when confronted with clear evidence that he had stolen water out of turn, denied it. All the water users gathered at his house, caught and tied the man to a stake driven into the ground so that about an inch was visible. Before he was released, his family had to bring enough coins so that when stacked, the height was up to that of the protruding stake.

On another occasion a person was caught in the act of stealing water and refused to sign a confession. He was tied to a pole and dunked into the canal repeatedly until he agreed to sign the confession. At this point a trainee farmer commented that the problem in their system was that it was the influential, often political leaders, who were the offenders and one would not dare give them that type of treatment. With the pradhan panch (locally elected leader) at his side the host farmer made an animated response, "No, you cannot allow that to influence you. This is our system, not the government's. All will be treated equally, the simple farmer, pradhan panch, or prime minister. It doesn't matter, if they steal water they will be punished."

Perusal of meeting minutes in an earlier study of the system had revealed to us that such incidents had happened. However, the graphic stories the host farmers related had not been recorded; possibly they were several generations old and considerably embellished. However, the value of having such legends as a mechanism for controlling irrigator behavior was clear to the trainee farmers.

Observation of the Meeting

By this time host farmers were gathering for the annual meeting. The visitors were introduced and the purpose of their visit explained. The meeting then proceeded with the trainees observing while sitting among the host farmers.

A community leader called the meeting to order and asked for nominations for a person to chair the meeting. After a chairman was appointed he made the customary short speech that always includes a statement about the purpose of the meeting. "We are here to discuss the operation of the canal, not politics. Within a month we will need irrigation water to sow our rice seedbeds. Before we can irrigate we must clean and repair the canal. If we do not accomplish the repair, none of us will have a rice crop. We must work together. We know we do not all agree about political matters but this meeting is not about the school, the drinking water system, or any other social concern. It is about irrigation. Today we put our political views out of sight and work together to operate the irrigation system." Everyone clapped approval and the chairman called for people to suggest the meeting agenda.

The chairman proposed that the first item should be to elect the irrigation officials (there are five positions, each filled by election at this annual meeting). One farmer protested saying that first there should be a presentation of the account statement and they should evaluate last year's officials. So the secretary was asked to explain all of the past year's income and expenses. He read the list of expenses which included salaries, overtime pay, tea and snacks, expense for religious rituals for the canal, and purchase of tools. He also identified the source and amount of income including interest from money that the organization had loaned to an individual. It took some time to calculate the totals and when the balance was announced a mistake was pointed out. It was corrected and the new total was approved by the assembly.

Missing a mandatory meeting or scheduled day of canal maintenance work results in a nominal fine. The secretary read the names of all farmers and amount fined as a result of missing mandatory work. Approximately forty of the 155 farmers using the system owed money. It was pointed out that some farmers had not paid their fines for the past two years. The assembly decided to charge interest at 24% per year on any unpaid balance. Several individuals complained that they were being overcharged. The secretary produced the muster role and was able to confirm the amount he had calculated.

After the assembly was satisfied that the accounts were in order they agreed to elect new officials. The chairman proposed they keep all officials from the previous year and gave five minutes for the assembly to discuss the issue among themselves. The person responsible for checking the discharge in the canal and instructing the daily maintenance patrol requested to be excused from further service for personal reasons. Since he lived in a convenient location for carrying out his job and had been effective in doing it for a number of years, the farmers prevailed upon him to continue. As an incentive they increased his salary. After additional discussion all of the officials were retained.

Several farmers complained that the village near the diversion of the canal was polluting the water. The system leader was instructed to control the problem. It was also resolved that irrigation for rice seedbeds had priority over maize and early paddy that was presently growing. These resolutions ended the three-hour assembly meeting. All farmers present signed the attendance book (those that could not write made a thumb print) before leaving.

The trainee farmers watched and listened in amazement to the proceedings of the meeting. They had asked few questions during the meeting. The facilitator frequently explained to them the background of an issue being discussed to make it more comprehensible. At the end of the meeting many of the host farmers gathered at a tea shop and invited the trainees to join them. Most of the discussion centered on the farming system and agricultural practices rather than irrigation. All of the trainee farmers were keen on visiting a famous temple a few kilometers away where they spent the night.

Visit to the Second Community

The following day the trainee farmers moved to the second community, about a two-hour walk away. They were to visit two systems in this community. As they walked they discussed among themselves what they had seen and expressed ideas they had for their own systems. They were particularly impressed with the agriculture system that their host farmers had explained. They recognized that the landholdings in the host community were smaller but that total production was much higher per unit of land than their own. All of this was due to having an effective irrigation system that allowed the host farmers to grow three crops each year. Several trainee farmers were excited at the prospect of three crops in their own systems. They speculated about the improved production being enough incentive to encourage all farmers using their system to put aside differences and work together.

The trainee farmers stopped at the house of the leader of the first canal. He greeted them and explained his role in the operation of the system. He also related his father's leadership in constructing the canal nearly 60 years earlier. This year he had received a small contract from a project (a Swiss/German funded watershed improvement project) to improve a section of their canal. To the amazement of the trainee farmers he showed them all the documents of the contract. Included was the statement of conditions and responsibility but most important the amount of money involved. Many of the trainee farmers' systems had at some time received governmental assistance through a contract but the contractor would never show them the documents nor disclose the total amount of money received. Several related bitter stories of having been hired by a contractor and then not paid and other ways that funds for improving their systems had been misused.

The host farmer explained that even though he could make a profit from the contract, he was more interested in using it properly for the improvement of the canal. He would benefit more from a good canal in the long run and it takes harmony in the community to make the canal run well. He explained how the canal organization had agreed to use the money only for purchasing materials. All the labor would be contributed by the irrigation users in proportion to the share of water each farmer was entitled to receive. In this way they could easily double the value of the contract. The organization will manage the work and as the contractor he will submit the bills to the project. After this discussion the trainee farmers were excited. They had never imagined that such open cooperation could exist. Most added that this could never happen in their communities.

From the leader's house they moved to the normal meeting place for the "lower canal" organization. Other host farmers were already gathered when the trainee farmers arrived. The host farmers explained how the community needed to import rice 60 years ago before the canal was built. Now they have enough food and are selling a small amount to other communities. They described the difficult period of constructing the canal with the community's own resources. This led to their unique practice of selling rights to use water related to the initial cost of constructing the system. Even today it is possible to purchase a share of water but the cost now includes the expenses of improving and maintaining the canal over the past sixty years. In addition to explaining the rules of system operation and maintenance, they displayed the record books. Daily work attendance is kept in one book, financial records in another, and minutes of meetings in a third. This led to a long discussion about the importance of keeping written records to reduce conflicts. The trainee farmers were particularly impressed with the certificate of water entitlement that was issued to each irrigator. This certificate was fashioned after the land registration title with which all were familiar.

The trainee farmers recognized many differences in the rules that were being explained compared to those they had heard the previous day. For example, they asked why the fine for being absent from work was higher than in the system they had visited the previous day. Several host farmers spoke up, "Our system is extremely difficult and dangerous to maintain and it is not fair that some members absent themselves without good reason. So we make the penalty higher to discourage people from being absent." It was then asked what happens if the penalty is not paid. A host farmer explained how they would issue a warning to the person and now that is all it takes. In the past there were examples of water being denied members and a case where an offender refused to pay until the organization confiscated copper and brass pots from his house. Now all recognize that justice will be served without hesitation or discrimination.

The trainee farmers questioned the canal secretary and others about the use of funds such as the contract that had earlier been described by the system leader. They were particularly interested to determine if all host farmers had the same information and were again amazed to discover that a contract could be discussed so openly. While the secretary was speaking, several persons arrived carrying bags of cement. The cement was purchased for repair of the canal using the contract funds and system members had carried it three hours from the nearest road. Carrying cement is one of the least desirable jobs and to provide incentive the organization had decided that bringing one bag of cement from the road (this takes about seven hours total time) was equivalent to working on the canal for three days.

At the conclusion of the meeting the host farmers asked the trainee farmers to describe their systems and to explain what they had learned in their visit. One trainee farmer openly admitted that compared to the two organizations visited they had done nothing regarding irrigation management. He now sees how important management is in making a system function. Another mentioned how his system had received several assistance grants from the government. Now the farmers using the system did not want to work unless there was a

grant that would pay them. Their system worked so poorly that it was like not having irrigation at all. He sees how much benefit from agricultural production there is if everyone works together and makes the system function properly. He is determined to return and explain this to everyone and work to get the farmers organized. Another farmer exclaimed how he now understands the importance of meetings where all can help make rules and the need for keeping written records to enforce the rules. "This helps everyone make and accept fair decisions." One trainee related that their local government had passed a rule concerning labor mobilization for the canal but because of political factions it was not possible to enforce the rule. The rich and powerful dominated the operation of the system and disrupted water distribution for their own benefit. He was impressed with the success the organizations they were visiting had in passing and enforcing their own rules. Over time he is confident they can also do that.

The host farmer's canal secretary then encouraged the trainees to remember that rules and regulations must be made in a dynamic fashion. In their experience they had started with very few rules and gradually modified and improved and added to them as they gained experience. Each time they face a problem they have long discussion to find a solution. When they make rules they also know that they can change the rule if it does not work. Most important the rule must be fair to even the poorest member of the system because they need everyone's participation to maintain their canal. The chairman then announced that the annual canal repair was to start the next day. He invited the trainees to come and observe how they organized to do the work and to see for themselves how difficult the work was and why they insisted that all members participate fully.

The trainees then visited the organization of the second canal in the community. Similar procedures were followed in having about an equal number of host farmer sit in a circle with the trainees to explain and discuss the organization and operation of their canal.

In this system there was a committee made up of the annually-elected officials. The facilitator directed the discussion by asking questions about the role of the committee in the operation of the system. They were told that the system was divided into seven groups. One group was responsible for all maintenance on one day each week. Each group had one representative on the committee. In this way it was easy to communicate with all irrigators through the representatives.

This system had also installed a water-powered mill on the canal. The group went to visit the mill and saw it operating with many bags of grain waiting to be processed. Management of the mill was explained and expense and income also disclosed. In the four years of operation all but a small part of the loan used in establishing the mill had been repaid to the bank. From the next year they expected the mill to earn a good profit for use in maintaining the canal. The mill made a lasting impression on the trainee farmers and a number expressed interest in pursuing this type of enterprise for their own canal.

Before departing in the morning, there was a short meeting to say farewell. A host farmer summed up the advice they had given, "You farmers have described your irrigation systems as having an illness. Now you realize that you have the medicine for the illness in your pocket. Other members of your system still don't recognize that there is medicine available. You must step forward and explain that unless you all take the medicine your system will not improve. It may be bitter medicine to take but after your system operates effectively all will be happy that you have taken the medicine."

Observation of Canal Maintenance

The trainee farmers proceeded along the canal toward the intake 6.5 km away. The host farmers visited the previous day were already at work in small groups at various points along the canal. Each group explained their assignment and their goal for the day. The canal was difficult to walk along because of the vertical cliff. There were several large landslides visible from previous years where the canal had been repaired. The trainee farmers were extremely impressed with the amount of work that was evident in the repairs. They met a group of farmers sealing leaks in the canal bank with red clay that was being carried several hundred meters to the site. One trainee farmer was surprised that the school headmaster was also working with his hands, sealing leaks in the canal while the canal chairman, an uneducated farmer, was supervising his work. A host farmer explained that they chose their leaders by their ability to help them get the work done, not on the basis of politics or status.

The chairman walked along the remainder of the canal with the trainees to answer their questions. He pointed out to them where an accident had happened several years earlier. While repairing the canal, a new landslide killed one farmer and momentarily buried several others who were injured but survived. The difficulties and dangers involved in operating and maintaining this canal made a lasting impression on the trainee farmers.

Lessons learned

On the return journey to their homes, the facilitator convened one additional meeting for the trainees to discuss what they had seen and learned. All were appreciative of the tour and identified the need to hold a meeting with their fellow irrigators as soon as they returned home to share what they had learned. Seeing the impressive agricultural performance in the host farmers' communities was mentioned as the highlight of the trip.

One farmer said that while previously he knew that his irrigation system did not work well, he thought it was because the structures were made of stone and mud. Now he understands that even stone and mud structures will work if they can organize to repair and maintain them. He has learned about management of irrigation for the first time and intends to spend his time and energy to improve the management of his system. He believes their agriculture can be just as productive as what they saw on their visit if irrigation is reliable.

Several trainee farmers admitted that they did not realize the primary problem in their system was poor management. An opportunity to observe well-managed systems in action and viewing the work that others accomplished to keep their system operating was key to their recognition and understanding of this problem.

Another trainee discussed the variation in rules and regulations in the systems visited. He recognized that each had tailored the rules to fit their needs. If part of the labor force could handle the maintenance and some cash income was desirable it was useful to have a low fine rate for missing work. On the other hand, if it was important to mobilize as much labor as possible, setting the rate higher was effective.

Every system they visited had stressed the need for keeping written records. This was a new concept for all of the trainee farmers. Before the tour, when it was suggested that they should hold a meeting to make system improvement decisions and write down draft statements to be read and approved, they were skeptical. "So few people can read that writing would not be useful," was one response. Now the trainees unanimously agreed to the value of written records. "No one can later twist the facts and mislead us if it is written. Even if only a few people can read they can check on each other."

All of the trainees made the connection between effective governance and agricultural productivity. They saw that better management reduced conflicts and distributed the burden of operation and maintenance more equitably. However, it was observation of the gains in agricultural production that they thought would sell their fellow irrigators on investing in modifying their irrigation institutions and initiating improved operation and maintenance practices.

Results

Management of operation and maintenance activities in all 19 systems assisted by the WECS action-research project was on an ad hoc basis before improvements. There were few examples of cooperative effort for maintenance and no evidence of rules, roles, and sanctions that are common features in well-managed systems. There is evidence that the assistance project has brought some level of management change in all 19 systems.

No claim can be made that all of the effect observed was due to the peer training visits. There was active promotion of improved management by those responsible for assisting the farmers in making physical improvements. The farmers were encouraged to hold meetings, make collective decisions, and keep records and accounts of their contribution to improving their systems. To the extent possible the physical improvement activities were used as training exercises for improved management. The peer training visits were only one part of the attempt to assist the farmers to improve their management. All of these activities contributed to the following observed changes.

After completing the physical improvements and allowing operation through one monsoon, a survey was made to determine if any of the management innovations introduced during the assistance program were being used. In all of the systems there was a stronger feeling of ownership of their system by more of the farmers than before the assistance. In eleven systems the leadership had changed, but in all systems they were able to refer to an elected leader. In all systems there was evidence of more organized activity than previous to the assistance program, and a number of systems had become highly organized.

The system with the strongest organization reported that they are following all of the rules that they made collectively. In eight other systems, the farmers indicated that the rules they had made are operational. The other ten systems had nothing to report when asked about rules. In a number of systems, they have realized that some farmers have been able to irrigate without making a contribution to system improvement. Now that most have made a contribution, social pressure is increasing for equitable labor input for maintenance. In two systems, those who repaired the system refused to allow water to be used by families who did not fulfill their share of the labor requirements. The organization has made arrangements to allow delinquent farmers to do additional work on the canal to earn their place as members.

In nine systems, formal meetings with recorded minutes have continued after the project was completed. Seven other systems also held meetings but did not keep records. The other three systems have not held meetings. One system reported that over 90 percent of the water users had attended their assembly meeting and two reported as low as 50 percent attendance. The rest indicated more than two-thirds of the users attended at least one meeting after completion of the construction. It was reported that the main purpose for meetings was to discuss labor mobilization for canal maintenance. There were also cases where a meeting was held to discuss water allocation, water distribution, and to resolve a conflict.

In all systems there has been more cooperative effort to maintain the canal during the monsoon. In three systems, persons were hired and paid -- in two systems they are paid in kind and in one in cash -- by the organization to patrol the canal to take care of minor maintenance and report the need for emergency maintenance. All but a few systems with alternative sources for monsoon irrigation reported that there was effective labor mobilization for emergency maintenance.

There will need to be a continued adjustment to the rules as each organization determines its needs and the mode in which it wants to operate, but there is an established mechanism now in place in each system for doing this. The real management test will be passed if this evolution continues until reliable modes of operation and maintenance are institutionalized. The impact of better system operation on increasing agricultural production is providing an incentive for these changes.

References

IIMI/IAAS/Winrock International. 1988. Selected papers presented at the national workshop on "Irrigation management in Nepal: Research Results" 4-7 June, Chitwan, Nepal, IAAS/IIMI/Winrock.

Peabody, N.S. 1983. Gadkhar irrigation scheme. Socioeconomic unit of Rasuwa-Nuwakot project coordinator's office, Kathmandu, Nepal

Pradhan, Naresh C. and Robert Yoder. 1989. *Improving irrigation system management through farmer-to-farmer training: Examples from Nepal.* IIMI Working Paper No. 12, Colombo, Sri Lanka.

Pradhan, Prachanda. 1989. "Monitoring and evaluation in small-scale irrigation projects". Paper presented in a seminar organized by the Ministry of Panchayat and Local Development, Kathmandu.

Pradhan, Prachanda. 1989. "Contribution irrigation systems in mountain agriculture". Paper presented to the International Symposium: *Strategies for Sustainable Mountain Agriculture*, organized by ICIMOD, 10-14 September, 1990, Kathmandu, Nepal

Pradhan, Ujjwal. 1987. "Alienation or development: dilemmas over property rights and irrigation expansion". Paper presented at Asian Regional Symposium on Irrigation Design for Management, held in Kandy, Sri Lanka 16-18 February 1987. Published by the Overseas Development Unit of Hydraulics Research Limited, Wallingford, England.

Water and Energy Commission Secretariat, Nepal and International Irrigation Management Institute (WECS/IIMI). 1990. Assistance to farmer-managed irrigation systems: Results, lessons, and recommendations from an action-research project. Colombo, Sri Lanka: IIMI.

Cost Effective Renewable Natural Resources Governance: The Kayes Fisheries, Traditional Institutions and the Forest Service[1]

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Introduction

This paper illustrates how rural producers, operating through self-governing local institutions, can efficiently resolve a class of problems critical to the survival of rural populations in the West African Sahel. The generic problem is environmental degradation. In the Sahel environmental degradation is caused mainly by population pressure and associated non-sustainable renewable natural resource (RNR) use practices, and partially by drought.

Local users of RNR confront the generic problem of environmental degradation as a series of time-and-place specific failures of supply of RNR. When yields of fisheries, wildlife populations, woodstocks, surface and ground water sources, pastures and arable lands fall, rural producers have only three options: manage the threatened RNR for greater productivity; import substitutes; or move. The last two options in the Sahelian region are becoming less and less possible. Thus sustainable management of RNR has attained the status of a problem that cannot be avoided. But how to achieve solutions?

[1]This case study is based on field research conducted in Mali during October - November, 1990 under the auspices of the Club du Sahel/CILSS and the Government of Mali with funding from the Club du Sahel. In addition to the author, an American institutional analyst, the Renewable Natural Resources Team consisted of Cheibane Coulibaly, Malian sociologist, Hadiza Bjibo, Nigerienne sociologist, and Paul Marko agronomist.

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A quick review of the history of efforts to solve West Sahelian environmental problems provides a helpful starting point. Formal governmental efforts to address these problems began during the colonial era and expanded after independence, as growing rural populations cleared most remaining frontier areas and increased pressure on arable as well as bush lands. Most of these efforts have been top-down in organization. Few of the top-down ones produced desirable results. Instead, most successful efforts have involved a very high degree of local involvement in designing and implementing RNR management activities.

Colonial officers established forestry, fisheries, water, pastoral and land tenure regulations, often consolidated in codes. These same rule systems have been carried over by the independence regimes. But the codes were generally ill-equipped to adapt to changing local realities. They either remained dead letters, through lack of manpower to apply them, or were frequently misapplied by field level officers exercising large degrees of discretion in order to extract bribes or favor friends. The top-down approach to RNR management has hastened rather than slowed RNR degradation in the Sahel.

Thus the environmental degradation problem remains to be solved. Drawing on a single case, this paper suggests how specific RNR problems can be resolved by reliance on local institutions for self-governance designed to deal with specific resource problems. In the process, the costs of governance can be sharply reduced, and the burden on central government agencies reduced to more manageable proportions.

The case illustrates five simple but important propositions:

- rural producers recognize the need to manage certain renewable natural resources (RNR);
- effective RNR management depends on a flexible, low-cost system of governance that cuts transactions costs of dealing with collective problems to a minimum;
- rural producers in some rural settings recognize the value of special districts as means to provide flexible, low-cost governance and management of certain resources;
- local institutions for RNR governance and management exist in many sites and should be relied upon where possible as the primary units for RNR governance and management; and
- national governments, development projects and programs, and NGOs, by recognizing existing local institutional capital, can provide a supportive framework enabling local people to preserve or enhance the value of the resource, drive down the costs of sustainable RNR management, and encourage people to practice the art of self-governance.

Background

The case involves management of several fisheries on a section of the Senegal River in western Mali. Management is achieved almost entirely of self-governing associations of fishermen. Each of three associations has jurisdiction over a delimited stretch of the river between Kayes, the regional capital, and the village of Moli, near the Senegalese border. These jurisdictions may be thought of as special districts for fisheries management. The case material concentrates on the fishermen's association based in Fatola, a village located 18 kilometers upstream from Kayes.

Fisheries Problems

Fishing on the river is a very old, established practice in Fatola. The activity is so important, it is governed through a sophisticated special jurisdiction with its own set of locally devised rules to regulate fishing activity and preserve the resource. Self-governance is nothing new among fishermen along the Malien segment of the Senegal River; it dates back to very ancient times. Self-governance occurs through four special jurisdictions. Of these, three are local and one regional, which oversees the others. It is appropriate to consider these four special jurisdictions as three local and one regional special purpose governments.

Three Periods

The institutions fishermen developed for themselves over many generations were sufficiently solid, and the fishermen who controlled the institutions were sufficiently committed to permit settlement of a major fishery management problem that arose over the past three decades through processes political in the broad sense of the word. The problem involved fishermen who came from Mopti and Ségou to the 50-kilometer-long Kayes-Moli section of the river in 1964. The problem reached an acute phase in 1983 when the Niger River fishermen were confronted with a severe reduction of fish availability.

Fishing in Fatola has evolved through three periods:

- from pre-colonial times to 1964 there was a system of self-management by the local fishermen;
- from 1964 to 1987 there was a system of management of the local and non-residential fishermen by the members of the enlarged group; and
- from 1987 to the present the Manantali dam has been in operation, with the attendant technical disturbance of the fishery production system in Fatola, a situation which has yet to be remedied.

Inter-Period Changes

The community of fishermen expanded in the second period. Fish availability has dropped off severely in the third period. Despite these changes, the traditional set of rules and institutions governing the Fatola fisheries has stood the test of time. Strains are apparent as fishermen's incomes fall with reduced catches, but so far local institutions continue to function. In the second period, local institutions were reinforced by assistance from the Water and Forest Agency but not modified much in terms of content.

The fisheries exploited by the Fatola fishermen contain a large number of fish species. The behavior of various species was well understood by the fishermen before 1987. In earlier times, fishermen would practice their activity to earn their subsistence, either directly by consuming the fish or by bartering the fish against other consumption products. Until 1987, the individual income for a five-day week's work (a normal work schedule for the thirty Fatola residents who fish professionally) ranged from 7,500 to 12,500 FCFA depending on the fishing devices and the work agreements binding the fishermen to the net owners. Since 1987, incomes and, indeed, days spent fishing have fallen off sharply.

Attributes of Fisheries as Economic Goods

The fisheries on the Kayes-Moli section of the river have the characteristics of common pool resources. There are no natural barriers blocking access to these waters abounding with fish except for the investment required to obtain a use right to a pirogue. The use units--the desired fish which can be taken in these fisheries--once caught by a fisherman are consumed separably, whether used for immediate consumption or for trade. Therefore, fisheries must be classified as common pool goods.

Natural boundaries do exist, however, in the form of falls and tributaries that divide the river into a series of clearly demarcated stretches.

Rules Governing Exploitation of Fisheries

This section (a) discusses rules of the fishermen's association, and (b) outlines enforcement mechanisms and operational rules governing access to and exploitation of the river fisheries.

Fishermen's Association. According to information supplied by the vice-president of the traditional village fishing association (called *ton Somono* in the Bambara language), fishing in Fatola is an activity open to anybody interested, on the condition that candidates serve a two-year apprenticeship. Without this preliminary training, a fisherman would not know how to maintain the fishing devices nor where to find fishing places at different times of the year and could not make a living as a fisherman. The capacity of an individual to

obtain enough professional training to earn his subsistence in this type of job was a matter of concern not only to the individual himself but to the other members of the group. In fact, the mutual assistance structures organized by the Fatola fishermen's group are based on the presumed professional capacity of each member. During this period, fishing on the Kayes-Moli section was abundant enough so that there was no need for other controls over access to the profession.

The Fatola fishermen's association provided social security for its members at least until the Manantali dam became operational. Before independence, members were required to contribute 25 FCFA per week. After independence, the amount was increased to 1,000 FCFA per month. Any fines assessed by the association are also added to the communal treasury. These funds serve to take care of fishermen's families in the event that they are wounded or die while plying their trade. The funds also can be drawn on to replace pirogues that have been destroyed or lost.

The local fishermen's chief (*Somono kuntigui*) resides in Fatola. The chief is chosen by the fishermen gathered in a general assembly. The criteria for the selection of a chief are fishing know-how, moral character, and, in particular, the occult fishing powers manifested by a candidate for the post, that is, his capacity to control the water spirits and the spirits of the water creatures. The fishermen's chief can be removed from his office for serious transgressions.

Besides the fishermen's community of 30 people residing in Fatola, two other communities pursue the same activity on the Kayes-Moli section. They are located in Medine, 12 kilometers upstream from Kayes, and in Kayes proper. Each of these communities controls a section of the river bounded by rapids, the entrance point of tributaries, or both. The chief of the Kayes fishermen also has supervisory powers over the chiefs of the two other communities; he, is in fact, the supreme chief. Thus the Fatola, Medine, and Kayes fishermen's institutions are special districts for fisheries management. The overlapping, larger, special purpose fisheries jurisdiction at Kayes deals with problems common to all three local jurisdictions, which they cannot easily handle alone.

Overriding Jurisdictions. The Fatola fishermen's association, apparently in response to problems posed by nonresident fishermen intervening in the Kayes-Moli fisheries on the Senegal River, decided in a general assembly to petition Malian Government agencies for support of their local fisheries management institutions. Mamadou Sangaré, vice president of the traditional association, led a delegation of 10 Fatola fishermen who presented the petition to the then-arrondissement head, M. Robert Keita. The fishermen sought not to restrict access to the local fisheries, but to ensure that all who exploited it would respect their local operational rules. Keita investigated and concluded by requesting a meeting with the head of the Kayes Water and Forestry Agency.

The meeting led to preparation of an official, written document recognizing the local fisheries management and governance systems. The agreement stipulates that all non-resident

fishermen must obtain permission from the local *Somono kuntigui* before fishing the river. They must abide by the local working rules as established by the head fisherman. If an infraction cannot be resolved at the local level, the local fishermen can appeal the case to the arrondissement head at Lontou. If the issue is not settled there, it can be appealed either to the *Somono kuntigui* in Kayes or, as a final recourse, to the Water and Forestry Agency. The national agents reportedly apply the applicable regulations with considerable severity, whereas the local jurisdictions tend to be lenient with those who admit their fault. The leniency of local regulations - except concerning obstinate repeat offenders - and the time and effort costs of appealing disputes to Kayes create incentives that facilitate dispute resolution at the local level.

Operational Rules Governing Fishing Activities. The operational rules controlling fishing activities are complex. They appear to have been designed to achieve the three following essential objectives:

- ensure reproduction,
- concentrate fish in temporary reserves to enhance catches, and
- regulate fishing behavior to avoid unnecessary conflicts that could perturb the local fisheries.

The operational rules adopted to achieve these three goals within the Fatola special jurisdiction are fashioned by the fisherman's chief at Fatola. Each of these goals is promoted by a specific set of rules.

Protecting Spawning Grounds. In order to facilitate the access of adult fish to prime spawning grounds and to ensure adequate reproduction of the five or six main species, the *Somono kuntigui* prohibits fishermen from placing their nets at the entrances of preferred spawning places (usually swamps and tributaries) during the spawning period.

Temporary Reserves to Concentrate Fish. The *Somono kuntigui* also periodically declares selected sites on the river off limits to all fishermen for defined periods. This encourages fish to concentrate in these protected sites. Once the fishing ban is lifted, the concentration of fish enables a plentiful catch and ensures efficient use of the time spent fishing. These bans are publicly announced and publicly lifted with notice given beforehand locally and via the Kayes paramount chief of the fishermen. This policy allows all fishermen active on the river to participate if they wish. The focus of these operational rules is not on excluding potential fishermen, but on regulating their fishing practices to preserve the common property fishery resource.

Avoiding Unnecessary Conflict. The *Somono kuntigui* regulates how fishermen conduct their fishing operations to avoid excessive competition and conflicts that might harm the cottage industry represented by fishing on this section of the Senegal River.

Certain types of fishing tackle and fishing tactics are prohibited. It is illegal within the local fisheries to use trot lines ("the line of a thousand hooks"), and it is illegal to draw fish into nets by baiting them.

Specific rules govern the use of the three major types of nets employed in the local fisheries: set nets, draw nets, and throw nets. Set nets, which can be 300 meters in length, must be spaced at least five meters apart. Once a draw net is being set, nonmembers of the net team are absolutely forbidden to fish within the closing net. The only limitation on throw nets is that fishermen must avoid casting their nets on others. This selection of rules gives some flavor of local approaches to fisheries exploitation. They are clear, common-sensical, and easily both complied with and monitored by professional fishermen plying their trade on the river.

National Regulations. The Forestry Code overrides local regulations in some areas. For instance, any Malian can fish on any body of water in the country if he pays the required license fees. These fees vary with the type of equipment used. Fatola fishermen obtain licenses from the Water and Forestry Agency in Kayes. This regulation allows untrained persons to work the river, a policy which may lead to conflict with local professionals.

Monitoring and Enforcement Mechanisms. Monitoring and enforcing the working rules controlling fishing activities near Fatola is the job of all fishermen in the community. No one is appointed to serve as a guard, and fishermen do not assume this role by turns. Actually, each is interested in seeing that the others comply with the established working rules to ensure the efficient management of the fisheries. When a fisherman observes another violating a working rule, the normal procedure is for the former to seize the fishing equipment of the latter. The equipment is usually a net. The ad hoc fisherman-guard deposits the equipment with the fishermen's chief in Fatola. The chief sets a date for the trial and informs the other fishermen in the community. The normal delay does not exceed two or three days. The accused may go on fishing if he has other equipment, but no other member of the fishermen's community will lend him a net before the trial.

The trial takes place before the general assembly of the fishermen's community. Each fisherman can address the assembly. Once the facts have been presented and the decision made, the community sets the amount of the fine to be paid in light of the gravity of the infraction. Before 1960, fines were usually set at 100 FCFA per infraction; since independence, the amount has been increased to 1,000 FCFA. Only when the fine is paid does the guilty party get his net back. If he refuses to pay the fine, the fishermen's association can reportedly sequester his pirogue to prevent him from fishing until he complies with the ruling. Thus the penalty for an action (non-payment of a duly assessed fine) by a fisherman convicted of an infraction is graduated to reflect the severity of the offense: contempt of court or, in other words, rejection of the local special district's authoritative power to regulate the fishery.

Interactions

Fishermen, according to the vice-president of the Fatola association, recognize that they will be tempted to violate the rules to score a big catch, particularly rules against fishing in areas temporarily off limits. Fishing in a temporary reserve a month after it has been placed off limits will produce a good catch. Fishing in a reserve after six months will almost certainly yield a very abundant catch. Fish are a fairly expensive local commodity. The fines are small enough that they do not entirely discourage illegal fishing. Fishermen must keep their eyes open for violations of local rules if they want the reserves to achieve the desired result.

Local fishermen do, in fact, enforce this law as the following case illustrates. In a series of incidents from 1983 to 1986, a nonlocal fisherman (a native of Segou on the Niger River) arrived on the Fatola stretch and systematically ignored fishing regulations, particularly concerning temporary reserves. One day, after repeated warnings on top of repeated offenses, four Fatola fisherman caught the outsider once again fishing in a temporary reserve. He refused to give up his net, a struggle ensued and, when the outsider beat a retreat, the four Fatola fishermen chased him down and beat him up.

After the outsider recovered, he complained to the head of Lontou Arrondissement, who was across the river and several kilometers downstream. The arrondissement head gathered all the parties. After hearing both sides, he settled the matter by reminding the Fatola fishermen that they should not take the law in their own hands and suggesting to the outsider that he would do well to be less recalcitrant. Because this decision imposed no penalties on the Fatola fishermen, it reinforced their management and governance authority over the local fishery. Indeed, the outsider eventually had to apologize to the Fatola fishermen's association for his behavior before his net was returned. He has since left the area.

Outcomes

Since 1987 productivity in the Fatola fishery has been declining. This outcome follows from a clearly exogenous factor, the placing in operation of the Manantali Dam. The radical modification in the river's hydrologic regime has perturbed fish movements, and perhaps fish reproductive cycles.

Up to 1987 the Fatola local fishery special jurisdiction had achieved a solid record in managing the fish stock and regulating its exploitation. Significantly, the local system had finessed an equitable solution to the conflict between local special jurisdiction rules governing access to the Fatola fishery and the Water and Forestry Service Code rules. Fatola rules declare the local fishery open to all on condition of professional competence as a fisherman or willingness to spend a two-year apprenticeship learning the trade. The Code authorizes anyone to exploit the fishery. By obtaining a Water and Forestry Service written

determination that any fisherman working the waters of the Fatola stretch must abide by local rules, the local fishermen successfully avoided the threat that their managed common property resource might be converted into an open access resource.

The Water and Forestry Service, for the negligible cost of a single round trip of 30 km from Kayes to the arrondissement seat in Lontou, a one-time meeting, preparation of a memo and secretarial time to reproduce it, and an expressed willingness to back decisions of duly selected local leaders, ensured continuing management of the Fatola fishery. No fisheries experts were added to the personnel roster. No new operating costs are being expended to protect the fisheries. Nonetheless, some thirty individuals are daily monitoring compliance with operational rules of the local special jurisdiction, dealing with cases of infraction, and achieving - up to 1987 - a sustainable yield from the common pool resource. Whether local fishermen will be able, under the new river regime, to achieve the old levels of productivity is problematic. But so long as some can continue to work part time as professional fishermen, probabilities are good that they will continue to apply local regulations and adapt them as necessary in order to ensure on-going management.

Conclusion

This case suggests that national government environmental agencies can, if they will seek out the opportunities, find more situations in which they can build on solid local experiences with RNRM. Rather than rejecting such institutional capital and attempting to replace it with costly and often rigid and unworkable general regulations, national agencies can heighten efficiency enormously in their efforts to implement their mandates. At the same time they can support local self-governing special jurisdictions.

Material in this case indicate that Fatola fishermen have managed over time to create and consolidate an institutional framework for successful management of their resource. As Elinor Ostrom has argued[2], common pool resource management systems are more likely to endure if rules at all levels relevant to RNRM management and governance:

- clearly delimit the community of users and the resource boundaries;
- reflect local circumstances and the attributes of the good;
- provide for local participation in rule modification;
- ensure that monitoring of RMR use is done either by the resource users themselves or by their agents;

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[2] Elinor Ostrom, Governing the Commons; The Evolution of Institutions for Collective Action (Cambridge, New York: Cambridge University Press, 1991), pp. 88-102.

- incorporate a graduated system of sanctions keyed to the severity of the infraction;
- provide institutions that can offer low-cost, equitable, objective dispute resolution services;
- recognize the legitimacy of local efforts to govern and manage RNRM; and
- permit involvement in RNR governance and management by several inter-related levels of institutions.

Rules relevant to the Fatola fishery conform quite closely to these criteria. While that does not guarantee proper resources management, the hypothesized link between successful RNR governance and appropriate institutions involving high degrees of self-governance at several levels is supported by the Fatola materials.

Democracy, Governance, and Institutional Analysis

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For USAID to pursue its democracy and governance initiatives in the absence of sound institutional analysis is to court irrelevance or worse. In this workshop DFM has sought to present the minimal elements of sound institutional analysis. Although these elements can be expressed in a variety of ways, the basic problem might be posed as follows: Given a community of interest, what are the *rules* that, when combined with relevant *physical conditions*, establish the setting for *choices* that yield *outcomes*? Institutional arrangements as formed by rules have no meaning apart from the choices that people make. Rules affect choices: This is the core of institutional analysis. The configural character of rules potentially makes the relationship complex. But rules alone do not establish the full context of choice and interaction. We must recognize that the physical world and the way it is structured also affects the choices that people make. This is one of the principal reasons for self-governance: the need to differentiate institutional arrangements according to physical and technical conditions that vary with specific times, places, and contexts.

These elements are *no more and no less* than the minimal conditions necessary for sound institutional analysis. Because our discussion has done *no more* than elucidate a set of minimal elements, we should understand that specific applications necessarily involve an elaboration of the basic analysis. At the same time, because the discussion has focused on *no less* than the minimal elements, we can begin to specify what at a minimum USAID should do to use institutional analysis to advance the cause of democratic governance around the world.

An approach to development assistance able to assist in a transition to democracy and self-governance must be oriented toward assisting in the creation--or preservation and

adaptation--of new patterns of choice and interaction among people. This orientation requires an institutionalist mode of analysis. Modes of analysis predicated on substituting analysis for interaction, as Wildavsky (1979) puts it, cannot assist democracy and self-governance. Institutional analysis focuses on the design of institutional arrangements within which people make choices and interact rather than on detailed plans of action that would dictate choices and attempt to manage individuals in their interactions. For this reason, institutional analysis is supportive of self-governance in a way that other modes of analysis are not. The purpose of institutional analysis is to enable individuals and communities to shape their patterns of interaction in ways that they find productive, not to assist "the government" in telling people what to do, robbing individuals of discretion. Although patterns of interaction among discretionary actors can be perverse, the answer is not to create an external regulator, but to change the rules. Even in conflict situations, provided that an underlying mutuality of interest can be discerned, rules can be crafted to promote the common interests in a community.

It is the search for a mutuality of interests and accompanying institutional solutions to problems that leads institutionalists to the use of multiple levels of analysis. The operational level can be thought of as a problem-solving level. But in order to support the process of problem-solving, we have to go to deeper levels of analysis to devise institutional structures to function at the operational level. It is at deeper levels of analysis that a mutuality of interest is often discerned. Note that the effort is not to fully *determine* patterns of interaction at each level, but to use deeper levels of analysis to devise structures that facilitate problem-solving at more operational levels. For development-assistance agencies, this often requires a sense of restraint, allowing patterns of interaction to unfold rather than attempting to determine each step along a developmental path. It also means allowing for individual failures instead of trying to assure success in every instance.

This brings us to a key puzzle: How can donors encourage patterns of self-governance in an institutional context that is often hostile to self-governance? It is easy to provide so-called "capacity building" assistance that simply feeds the lions rather than taming them. Some level of political liberalization in a host country is probably necessary in order for a donor to have a beneficial effect there. One possible precondition for assistance is a relatively "open public realm," as Vincent Ostrom (1991) terms a general political environment characterized by open debate and free communication among citizens. Given this minimal level of political liberalization, it becomes possible to create new opportunities for public and private entrepreneurship.

In this connection it should be understood that economic liberalization *is* a "democracy project," for it strikes at the heart of an authoritarian regime: the opportunity to use political discretion to obtain economic rents. The simple introduction of national elections, leaving the rest of the state apparatus intact, is potentially superficial; it may only create a competitive rivalry among politicians for opportunities to extract rent. National elections alone do not alter the basic institutional dynamic of an underdeveloped society and are not nearly enough to sustain democracy. Economic liberalization, however, does alter a basic institutional dynamic, for it changes the authority-structure of a society that is inherent in property rights--

substituting private for public claims on wealth. Different economic orders imply different authority structures. It is the underlying shift in authority structure that accounts for the observed correlation between economic and political liberalization.

Recall the distinctions introduced earlier in the workshop between analytical levels (operational, collective-choice, constitutional) and jurisdictional levels (local, provincial, national). Much of the work of DFM has been at a constitutional level of analysis on a local jurisdictional level, but the same line of reasoning can be applied on a national jurisdictional level as well. In order to have a more fundamental impact on the general governance structure of a society, it becomes necessary to work at the constitutional level of analysis on a national jurisdictional level. A democracy initiative that becomes preoccupied with the operational level of analysis (e.g., how to conduct elections), without giving attention to processes whereby people can reexamine and rethink their basic institutional structures, will not be productive. The problem is how to introduce constitutional choice on an iterative basis, not just to write a new constitution. Some time ago, Americans gave up on Third World constitution-making. We need to take constitution-making seriously again if sustainable political liberalization and democratization is to occur. Again, we are led to a key puzzle: how to create sustainable constitutional choice at a national level?

The United States offers both positive and negative lessons in this regard. On the positive side, the U.S. has a strong and visible constitutional tradition and maintains an effective distinction between ordinary law and the fundamental law contained in a constitution. However, on the negative side, the American experience has left the impression that constitution-making is conducted only by "founders." The U.S. has never held a second constitutional convention. Although twenty-six amendments have been added, a convention has never been held under the terms of Article V. Thomas Jefferson (1816) would have provided an opportunity for broad constitutional review by each generation, suggesting something like a twenty-year interval. The importance of constitutional choice lies in the ability, when things are not going well, to step back, diagnose problems, and initiate change. This requires both a structure of constitutional choice and a culture of inquiry to support the process. The Third World may be especially in need of structures that provide explicitly for successive constitutional choices, more in Jefferson's image than after the style of the U.S. Constitution.

This line of reasoning leads directly to some tentative conclusions about the potential role of USAID in promoting democratic governance. For example, USAID could support indigenous institutional research projects, institutes that do such research, networks of scholars and practitioners, various types of publication and their distribution, and libraries. If USAID does not somehow contribute to the development of a culture of inquiry as a necessary complement to constitutional choice, its "democracy projects" will be peripheral, not central to the democratic movements that might unfold in Africa, South America, and elsewhere.

Is institutional analysis relevant to USAID's work? Yes, potentially with respect to almost every task--in the selection of projects and reforms, design, redesign, implementation,

and evaluation--as well as, more generally, in building a culture of inquiry to support constitution-making. This is especially true as so-called "policy reform," rather than traditional project assistance, takes center stage. Yet, USAID continues to fund technical research in much greater amounts than institutional research. Within the realm of institutions, the Democracy Initiative should not become obsessed with the operational level or even the collective choice level. The constitutional level of analysis is essential to the relevance and effectiveness of the new emphasis on governance and democracy, not only in the Agency but around the world.

REFERENCES

Jefferson, Thomas. Letter to Samuel Kercheval. Montecello, July 12, 1816. See Edward Dumbauld, *The Political Writings of Thomas Jefferson: Representative Selections.* Indianapolis: Bobbs-Merrill Company, Inc., 1955, pp. 123-125.

Ostrom, Vincent. *The Meaning of American Federalism: Constituting a Self-Governing Society.* San Francisco: ICS Press, 1991, 199-221.

Wildavsky, Aaron. *Speaking Truth to Power: The Art and Craft of Policy Analysis.* Boston: Little, Brown, and Company, 1979, pp. 1-19.

WORKSHOP AGENDA

Thursday, September 19

Introduction by Richard Bissell

Session One: *Basic Issues in the Analysis of Governance Systems*

Presenter: Vincent Ostrom
Chair: Richard Bissell
Discussants: Goran Hyden and Michael Morfit

Session Two: *A Framework for Institutional Analysis*

Presenter: Elinor Ostrom
Chair: Norman Nicholson
Discussants: James Thomson and William Cole

Session Three: *The Governance of Market Relationships - The Cameroon Example*

Presenter: Ronald Oakerson
Chair: Anne Williams
Discussants: Tjip Walker and James Smith

Session Four: *Resource Mobilization and Roads: Micro-Experiments as the Basis for Future Policies in Indonesia*

Presenter: Larry Schroeder
Chair: Olivier Carduner
Discussants: Edwin Connerley and William Anderson

Session Five: *Helping Farmers Enhance the Performance of Irrigation Systems in Nepal*

Presenter: Robert Yoder
Chair: William Douglass
Discussants: Rita Hilton, Ganesh Shivakoti, and Richard Reidinger

Friday, September 20

Session Six: *Adaptive Indigenous Institutions and Development in Mali*

Presenter: James Thomson
Chair: William Hammink
Discussants: Hamidou Magassa and Chantal Dejou

Session Seven: *General Lessons Derived from the Workshop*

Presenter: Elinor Ostrom

Lunch Speaker: Goran Hyden " The Problems of a Transition from Authoritarian Regimes to Democracy in Africa"

Session Eight: *General Discussion of Relevance of the Framework for Designing Programs and Projects that Enhance Democratic Governance*

Presenter: Ronald Oakerson
Discussants: Olivier Carduner, Thomas Olson, and Anne Williams

Closing remarks by Eric Chetwynd