

Governing a Commons from a Citizen's Perspective



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For some analysts, citizens and local governments have no role in the governing of a commons. Since the publication of “The Tragedy of the Commons” by Garrett Hardin², users of common-pool resources such as fisheries, forests, or water aqueducts are perceived to be helpless perpetrators of resource destruction. Hardin presumed that individuals would always maximize their own immediate short-term, material benefits. This meant that they were helpless to do anything else but overharvest resource systems that were not privately owned or the property of a governmental unit. The prediction that individuals would destroy the very resources on which they depended was consistent with many economic models of one-shot or finitely repeated dilemma settings where everyone pursuing their own short-term benefits ended up achieving far less than was feasible if they had found a way of cooperating with one another.

Hardin’s vivid portrayal of the helpless citizen opened up an important body of theoretical and empirical work that challenged the universality of his work. Many studies provided empirical data and theoretical arguments to challenge the presumption that individuals were forever trapped in a remorseless tragedy.³ They document many local governance arrangements around the world where resource users have overcome the tragedy. Research illustrated the importance of common-property institutions in history and in the contemporary world. Instead of finding only private or government ownership arrangements that helped users to sustain a common-pool resource, scholars from multiple disciplines found a diversity of mechanisms to govern common-pool resources.

On the other hand, research has not found any “sure cures” for the complex problems related to the governance of a commons. Failure occurs in regard to private property, government property, and common property. Overharvesting of a valuable resource is, of course, assured when the resource is effectively an open-access resource with *no* established property rights. Hardin, and the myriad of scholars and policymakers from multiple disciplines who accepted his theory as a general theory, were thus correct in identifying a challenging problem especially under open-access conditions. Their analysis was incomplete, however, because they prescribed only two solutions. Both had to be imposed on resource users by external authorities.

Understanding How Citizens Overcome Collective Action Dilemmas

The extensive field research that challenged Hardin’s theory was also inconsistent with an immense body of work based on game theory and microeconomic theory of individual decision making. In this article, I can only give a brief review of the developments that now place citizens as core actors in a complex, multi-actor approach to the polycentric governance of

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² HARDIN, Garrett: The Tragedy of the Commons. Science. 162. 1968. 1243–1248.

³ Cf: MC CAY, Bonnie J. & ACHESON, James M.: The Question of the Commons: The Culture and Ecology of Communal Resources. Tucson: University of Arizona Press. 1987. MERINO, Leticia & ROBSON, Jim: eds. Managing the Commons: Indigenous Rights, Economic Development and Identity. Mexico: CCMSS, The Christensen Fund, Ford Foundation, SEMARNAT, INE. 2005.

natural resources. I will briefly describe some of the experimental research that has shown that the model of the individual that is implicitly used by Hardin is too narrow. Then, I will turn to some of the key elements of institutional analysis that help to understand why citizens are able to craft institutions to cope successfully with a commons in some settings but not in others. Finally, I will address the recent efforts to over rely on decentralization to solve problems of common-pool resources. In this chapter, I focus primarily on natural resource commons given the research that has been completed in Latin America that addresses the important role of citizens in the governance of these resources.

Using Experimental Research to Analyze How Individuals Make Decisions

Findings from field studies of citizen-organized arrangements to govern common-pool resources successfully were a major puzzle to scholars as they were inconsistent with theoretical predictions drawing on a micro-economic model of the individual. How could individuals overcome the temptation to free-ride? Would they not be suckers who helped others do much better even when they did not get the full benefit of their own cooperation? These questions led several colleagues at Indiana University to design a common-pool resource experiment that has been repeatedly tested in experimental laboratories and replicated in other labs and in field experiments in Latin America.⁴

The prediction that users will over-harvest a common-pool resource is supported in experiments where participants do not know the other individuals who are involved, and when they cannot communicate with each other. Providing repeated opportunities for face-to-face communication is not predicted to change the outcome, however, it does change behavior and outcomes. Groups that can repeatedly communicate in a lab are able to achieve close-to-optimal outcomes instead of grossly overharvesting. Communication enables participants to discuss how they understand the structure of the setting and how they can jointly improve their outcomes.

Juan Camilo Cárdenas has undertaken a wide variety of common-pool resource experiments in field settings across Colombia.⁵ Participants tend to make different decisions based on their individual identity (including their wealth, preferences for others' well being, gender and age) as well as our experimental design. To explain these differences in the level of cooperation achieved, we have developed an initial framework shown in Figure 1. We posit three "layers" that affect the decisions of an individual to cooperate in a common-pool situation: their own identity, the group context in which decisions are being made, and whether the situation is repeated and it is possible to use reciprocity and gain a reputation for trustworthiness. These turn out to be among the important micro-level variables that explain the diversity of decisions to overcome the strong temptations of common-pool resource dilemmas. Individual values are not sufficient, however, to solve all common-pool resource problems. Without institutions that facilitate the building of reciprocity, trust, and trustworthiness, citizens face a real challenge.

⁴ OSTROM, Elinor & GARDNER, Roy & WALKER, James: Rules, Games, and Common-Pool Resources. Ann Arbor: University of Michigan Press. 1994.

CASARI, Marco & PLOTT, Charles R.: Decentralized Management of Common Property Resources: Experiments with a Centuries-Old Institution. *Journal of Economic Behavior and Organization* 51. 2003. 217–47.

⁵ CÁRDENAS, Juan Camilo: How Do Groups Solve Local Commons Dilemmas? Lessons from Experimental Economics in the Field. *Environment, Development and Sustainability* 2(3–4). 2001: 305–322.

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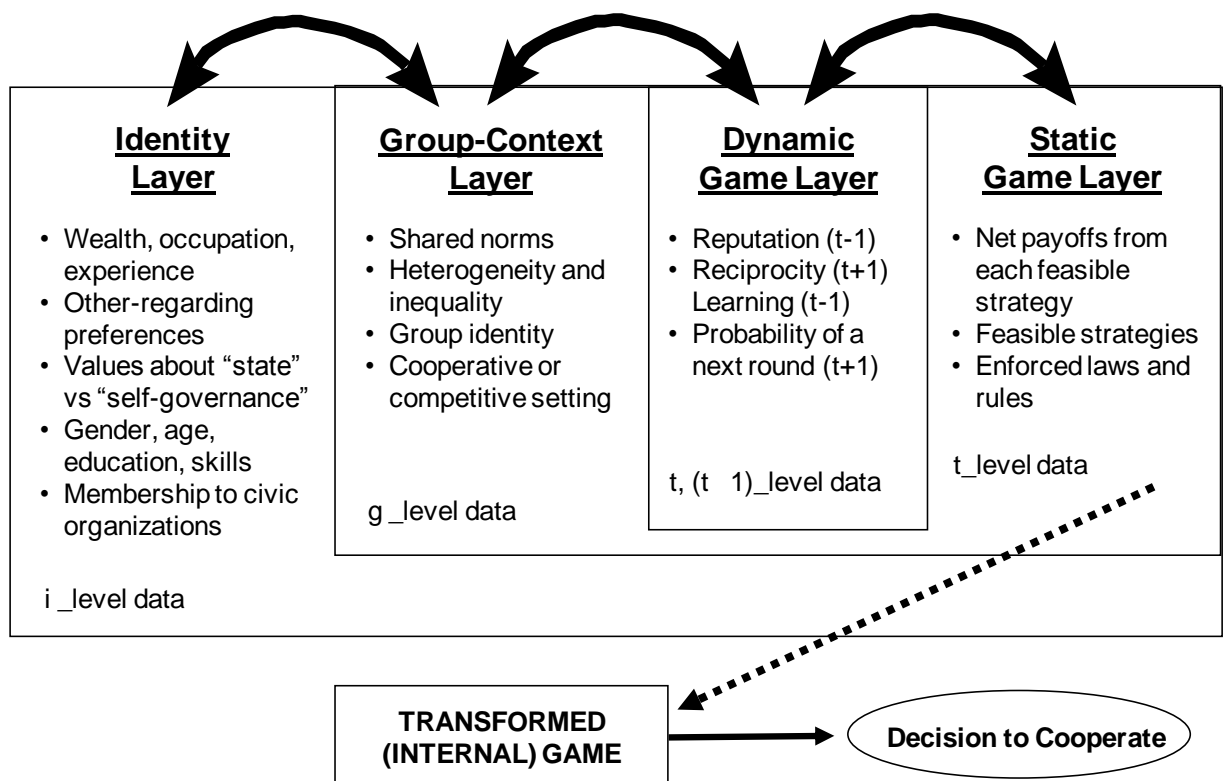


Figure 1. A framework of the multiple layers of information players use in the game

Source: Adapted from Cárdenas and Ostrom (2006).

CÁRDENAS, Juan Camilo & OSTROM, Elinor: How Norms Help Reduce the Tragedy of the Commons: A Multi-Layer Framework for Analyzing Field Experiments. In *Norms and the Law*, ed. John N. Drobak, 105–36. New York: Cambridge University Press. 2006.

The Importance of Institutions

The complexity of many natural resources requires sophisticated multitier or polycentric governance systems rather than a reliance on a single type or level of governance.⁶ Actors who try to govern a complex resource face a variety of incentives that often complicate collective efforts and subsequent outcomes. The more complex a resource is, in terms of the types of goods and services that it provides, the more challenging it is to craft a well-tailored set of institutional arrangements that offset the incentives to overharvest. Some actors may be tempted to shirk from their contributions to the governance arrangements by not attending meetings or not paying the membership fees. Others may actively try to weaken the rules so that they can use the resource with fewer constraints. A robust governance system recognizes

⁶ MCGINNIS, Michael D.: Polycentric Governance and Development: Readings from the Workshop in Political Theory and Policy Analysis. Ann Arbor: University of Michigan Press. 1999.
OSTROM, Elinor: Understanding Institutional Diversity. Princeton, NJ: Princeton University Press. 2005.

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the multi-scale aspects of natural resource governance as well as the presence of individual incentives, and seeks to correct them.⁷

When citizens and their officials establish organizations with the authority to decide how to manage a resource, what time and monetary contributions are required, as well as the authority to sanction those who do not contribute resources, they organize *provision or collective consumption units*. Many, but not all, provision units have the formal status of a government established at a local, regional, or national scale. Governmental units may be general-purpose or organized as a special district or regime for the purpose of providing one or a limited range of collective goods. Private associations that plan the use of a resource and can also sanction, or even expel, those who do not contribute their share of resources to provide for a collective good, may also serve as collective consumption units. Sports leagues and housing condominiums are two types of private associations that provide collective goods for their members.

Other forms of collective consumption units include farmers who organize themselves to manage an irrigation system or a common pasture; a national agency that monitors the investment or production processes of private firms to protect consumers against fraud or ecological damage; a local, national, or international government that provides services of diverse types; or even an illegal cartel of private corporations that decide on the amount of output they will jointly produce. Thus, provision units exist at all scales and in both public and private spheres. Participants can, and do, craft a diversity of rules that help them overcome the free-rider problem by deciding who is included and must contribute resources and who is excluded and how to exclude them. Further, if the provision system continues to develop, participants (or their representatives) are likely to devise rules that specify allowable forms of access and use, methods for monitoring behavior and sanctioning violators of rules, and ways of resolving conflict.

These systems often do not resemble the textbook versions of either a government or a strictly private-for-profit firm, especially when participants have constituted their own self-governing units. Especially when participants have constituted their own self-governing units. Thus, scholars drawing on traditional conceptions of 'the market' and 'the state' have not recognized them as potentially viable forms of provision organization and have either called for their consolidation into a centralized government (as metropolitan reformers continue to do) or ignored their existence (as many resource economists have done). It is a bit ironic that many vibrant self-governed institutions have been misclassified or ignored in an era of ever greater democratization. Recent efforts to "decentralize" governmental arrangements also do not recognize the importance of complex, polycentric arrangements and think instead of a single government at some level taking charge of a policy arena.

Commonly Understood and Enforced Rules

A key finding of empirical field research is the multiplicity of specific rules-in-use found in operational settings related to the provision and production of collective goods. One of the most important types of rules is *boundary* rules. They determine who and what is in and out of a provision organization. Provision units face considerable biophysical constraints when the good

⁷ FUTEMMA, Celia & De CASTRO, Fabio & SILVA-FORSBERG, Maria Clara & OSTROM, Elinor: The Emergence and Outcomes of Collective Action: An Institutional and Ecosystem Approach. *Society and Natural Resources* 15(6) (July) 2002. 503–522.

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is a natural common-pool resource such as a groundwater basin, a river, or an air shed. Such resources have their own geographic boundary. Matching the boundary of those who benefit and those who contribute with the care of a resource, is a major challenge. It may be impossible in a highly centralized regime. Further, common-pool resources may themselves be nested in an ever larger sequence of resource units such as a micro watershed, which is nested in a system of ever larger watersheds that eventuates into a major river system such as the Rhine or the Mekong River.⁸

Once basic boundary rules define who is a legitimate beneficiary and who must contribute to the provision of a collective good, provision units frequently create rules related to the information that must be made public or kept secret, to the actions that must or may be taken or are forbidden, and the outcomes (and resulting benefits and costs) to be achieved and distributed. An essential attribute of effective rules is that rules must be generally known and understood, considered legitimate, be generally followed, and enforced.⁹ Written legislation or contract provisions that are not common knowledge do not affect the structure of a particular action situation unless someone involved in the situation invokes the rule and finds someone to enforce it. Thus, one of the problems in doing empirical research on the effect of diverse institutional arrangements is trying to sort out the rules that exist only on paper and are *not* used by participants as contrasted to rules that are common knowledge of the participants and enforced locally but not part of the formal legal structure.

Attributes of a Community

Many attributes of a community are also likely to affect provision activities, including the size of the group affected, the homogeneity or heterogeneity of interests, the patterns of migration into or out of a community, and the time horizon (length of time into the future taken into account) used by individuals in ongoing situations. For an institutional analyst, the important set of questions that needs to be addressed includes:

- Is there general agreement on the rules related to who is included as a member with both benefits and responsibilities?
- Do the members have a shared understanding of what their mutual responsibilities are as well as the formulae used for distribution of benefits?
- Are these rules considered legitimate and fair?
- How are the rules transmitted from one generation to the next or to those who migrate into the group?

A diversity of community attributes affects the answers to these questions. For an institutional analyst to understand the structure of the action situations facing that community, and thus examine the incentives facing the participants and their likely behavior and outcomes, the analyst must assume that a community is actually using a set of rules, and will continue to do so for at least the near future.

⁸ Cf: MYINT, Tun: Democracy in Global Environmental Governance: Issues, Interests, and Actors in the Mekong and the Rhine. *Indiana Journal of Global Legal Studies* 10(1) 2003. 287–314.

⁹ Cf.: OSTROM: *ibid.* and OSTROM, Elinor & NAGENDRA, Harini: Insights on Linking Forests, Trees, and People from the Air, on the Ground, and in the Laboratory. *Proceedings of the National Academy of Sciences* 103(51) 2006: 19224–19231.

Multiple Interacting Factors Affect Outcome

Leticia Merino, co-author of this volume, has written an important book on the factors that work together to improve the likelihood that local communities—who have already been assigned considerable autonomy to create their own governance structures—will actually design effective institutions for managing forest resources. She studied forestry resources in six communities located in three states in Mexico: Michoacan, Oaxaca and Quintana Roo. Merino demonstrates that the population density of the users of a forest is not a key determinate affecting resource degradation. She digs into a wide diversity of factors that could potentially explain the different rates of deforestation observed among the six communities. And, she investigates the relationship among local, regional and national factors. Instead of finding a single element as the primary cause of a community's successful or unsuccessful effort to manage forest resources, she finds a complex set of factors that together affect the incentives and behavior of citizen-users so as to lead to a better quality forest.

The communities in her study design well-working local institutions to manage local forests when effective social capital has been built over time within a community and when the interests of the more powerful members of the community are aligned with the effective management of forest resources. Local governance is, however, always embedded in and affected by regional and national policies. Merino finds, however, that the regional and national regulatory systems have not encouraged community forestry in Mexico.

Effective rules and incentives passed at regional and national levels are more the exception than the rule in Mexico. If anything, government policies have generated more incentives that work against the effective management of forests, than incentives encouraging sustainable development. When not an active negative factor adversely affecting responsible local management, state and national laws have simply overlooked the capacities of local users to develop effective rules, monitor them, and impose graduated sanctions that let users know that infractions are observed without engendering a overreaction to their imposition.

Decentralization as a Recently Recommended All-Purpose “Remedy”

Given the difficulties in achieving effective engagement of citizens in the governing of local commons, decentralization has become a frequently recommended policy.¹⁰ Andersson, Gordillo, and Van Laerhoven have published an excellent study of decentralization and rural development with a focus on Latin America.¹¹ In particular, they examine on Bolivia, Guatemala, and Peru drawing on extensive field studies largely undertaken in 2002. These three countries are relevant cases for a comparative study. All three share many essential biophysical, socioeconomic, historical and cultural characteristics, but they differ in regard to their decentralization policies. Bolivia, Guatemala, and Peru are relatively poor with large rural and indigenous populations, significant natural resources, high proportion of forest cover, and frequent land use-related disputes. But all three countries differ a great deal when it comes to

¹⁰ OECD: Final Report of the DAC Ad Hoc Working Group on Participatory Development and Good Governance. Paris: OECD. 1997.

¹¹ ANDERSSON, Krister & GORDILLO DE ANDA, Gustavo & VAN LAERHOVEN, Frank: Decentralization and Rural Development: Local Governance Lessons from Latin America. Tucson: University of Arizona Press. 2008.

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the degree of decentralized governance structure in each country's natural resource sectors even though all have locally elected mayors. Guatemala would have the greatest amount of regulatory power that a national government assigns to its local governments. Bolivia would have assigned a moderate level of regulatory powers to local government, while Peru has virtually no local decision-making power in the natural resource sectors.

Bolivia and Guatemala passed reformed forestry laws in 1996. These were the first efforts to decentralize several tasks and responsibilities in the forestry sector from central to municipal governments. Even with this reform, however, Bolivian municipalities are not authorized to collect any taxes on forestry activities, to charge user fees for services produced, or to impose fines on individuals who are caught disobeying the government laws and regulations.¹² In contrast, Guatemalan municipalities may own, manage and even rent out their forests. Within municipal and communal forests, Guatemalan municipalities are authorized to regulate and tax forest use, as long as the local rules do not contradict the national forestry law. In Peru, governance responsibilities were not decentralized at all. The central and regional governments retained complete formal control over the natural resource sectors' decision-making process.

To obtain sufficient data about local government institutions and actions, Andersson, Gordillo, and Van Laerhoven conducted field surveys in a random sample of 100 municipal governments in Bolivia, Guatemala, and Peru. The research staff interviewed the elected mayor to gather information regarding the mayor's policy priorities, staffing arrangements, relationships with central and nongovernmental agencies, and relationships with natural resource users and citizens at large. In addition, the research teams collected structural and socioeconomic information for each municipality, originating mostly from sub-national census data and national forestry sector databases.

Andersson and Ostrom draw on the data in this study to analyze the influence of seven independent variables on local commitment to invest in natural resource governance.¹³ We first include the percentage of the municipal government personnel that works with issues related to natural resource management. A second complementary dependent variable records the view of the mayor related to the political priority of natural resource governance for his administration.

In a polycentric approach to the study of decentralized natural resource governance¹⁴, we posit that multilevel processes have largely been overlooked in the conventional empirical literature on decentralization. So we examine the interactions between actors at three different levels of governance. We have a look at the financial transfers from the central government to the municipal government in the area of natural resource governance, and we examine how this interacts with political pressure from local community-based organizations and nongovernmental organizations working on local resource management. These variables capture important incentive structures related to political accountability and affect the local mayor's political commitment to natural resource governance.

Institutional incentives originating from interactions between actors *across* governance levels,

¹² PACHECO, Diego: An Institutional Analysis of Decentralization and Indigenous Timber Management in Common-Property Forests of Bolivia's Lowlands. Ph.D. dissertation, Indiana University. 2007.

¹³ ANDERSSON, Krister & OSTROM, Elinor: An Analytical Agenda for the Study of Decentralized Resource Regimes. Policy Sciences. 2008.

¹⁴ ANDERSSON, Krister & GIBSON, Clark: Decentralized Governance and Environmental Change: Local Institutional Moderation of Deforestation in Bolivia. Journal of Policy Analysis and Management 26(1). 2007. 99-123.

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i.e. between actors with different positions of authority, are important determinants of local government investment in natural resource governance. For example, when interactions with local organizations are at the minimum level the probability of observing high priority given to natural resources in a municipality is around one-third. In contrast, when these multilevel interactions are most frequent, the same probability more than doubles.¹⁵ Mayors are also strongly influenced by clear institutional incentives to focus on local natural resources, regardless of the extent of decentralization.

As a result of additional tests, we found no support for any systematic influence of decentralization on the two outcome measures: (1) the financial transfer from the central government to the municipal level and (2) the types of local political pressures related to environmental policies. Formal decentralization reform does not provide a good explanation of inter-country or intra-country variation in local commitments to natural resource governance. The results also suggest that the characteristics of local institutional arrangements, which govern the interactions between municipal authorities on the one hand and local groups and central government actors on the other, provide powerful explanations to the variability in local commitments to natural resource governance -- regardless of the formal structures of governance at the national level.¹⁶

As the physical scale of a resource changes, so do the types of collective goods that a resource offers to users (ranging from private goods of fuel-wood and local mushrooms at the micro-scale to global public goods of maintenance of a stable forest gene pool or storing carbon in trees to stabilize the climate). Users tend to be most interested in goods and services generated at a local level and take less notice of those generated by larger scales. The threat of major climate changes is the result of that lack of attention that citizens around the world have paid to the effect of their actions on the global atmosphere. Because of the strong actions of many environmental groups, more citizens are now paying attention to the global scale. Citizen awareness and action, however, are not sufficient to solve the problem of global climate change but are important in influencing national governments to change policies toward use of carbon generating processes.

To govern a process that can provide incentives to users to safeguard the long-term delivery of such a variety of goods requires more than financial resources and accountability mechanisms at a single level of governance. Most scholars agree that large variations in policy outcomes exist within countries that have decentralized their governance of public goods and services. Little or no consensus exists, however, about which factors explain this variation. Many extant empirical studies do not go beyond the boundaries of local governments to examine why some local units perform better than others. Nevertheless, the processes enhancing effectiveness of a governance system are usually larger or smaller than the internal dynamic of any particular governmental administration. A key to effective governance arrangements lies in the relationships among actors who have a stake in the governance of a resource and not just one level of government. The social capital that citizens can create by linking with each other, with non-governmental organizations, and with governmental actors at diverse levels is essential for effective feedback, learning, and crafting of new and better solutions.

By considering the interaction between actors at different levels of governance, it is possible to

¹⁵ ANDERSON & OSTROM: *ibid.*

¹⁶ ANDERSSON, Krister: *¿Cómo Hacer Funcionar la Gestión Forestal Municipal? Lecciones de Bolivia.* La Paz, Bolivia: Plural Editores. 2005.

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contribute to a more nuanced understanding of the variation in diverse governance outcomes in the management of common-pool resources based on the needs and interests of citizens. We have learned that citizens do play an essential role in the governance of common-pool resources and that efforts to turn over all of the responsibility for governing these resources to external experts are not likely to protect them in the long-run. The complexity of the resources at local, regional, national, and global levels do require complex governance systems involving citizen input in diverse fashions.