

The Challenges of Achieving Conservation and Development

Elinor Ostrom*

I wish to thank Beloit College for inviting me to serve as this year's Upton Scholar. In this presentation, I will examine the challenges of achieving both development and conservation. In my research, one of the puzzles that I have been struggling with is how people and their ecologies can work together. Some scholars study only ecological systems, some scholars study only people. At the Workshop in Political Theory and Policy Analysis we try to study both. This approach is essential for understanding dynamic processes that lead to, mitigate, or avoid ecological and human disasters and move toward achieving sustainability of both ecological and social systems. This research requires that we break down the disciplinary walls that prevent such discussion from happening. How we address that problem is part of what I will talk about today.

One of the primary challenges in achieving sustainability is overcoming what I call the "Panacea Trap." Panaceas are named after the Greek goddess Panacea. In her hand, she held a medicine that she told the world was the medicine that everyone should use for every ailment. We have since learned that this is a trap. The medicine might be useful for many purposes, but it is not "the" answer. In the face of multiple ecological problems, people will often say that the answer is "X." They will offer a single blueprint, such as government control, or private or community ownership. Whenever you hear things expressed in this way, be

* Elinor Ostrom is the co-recipient of the 2009 Nobel Prize in Economic Sciences. She is the Arthur F. Bentley Professor of Political Science and the senior research director of the Workshop in Political Theory and Policy Analysis at Indiana University, Bloomington. Professor Ostrom served as the 2011-2012 Upton Scholar as part of the Wealth and Well-Being of Nations annual forum at Beloit College.

nervous. It means that somebody is posing something as a single solution—a solution that may be useful for some settings—but it is rare that we ever find “the” universal solution. The challenge instead is to develop a social-ecological system (SES) framework to address multiple ecological problems in a variety of settings. We need to develop better theories that help us understand institutional diversity. We also need to develop databases that collect the same data in multiple places over time so we can test those theories. This work helps us to discover the principles—what I have called the design principles—that are at work in sustainable ecological and social systems (Ostrom 1990). Thus, we have an ambitious agenda ahead of us, but because we have young people involved in developing the SES framework, we believe that we have a good chance of succeeding.

Since the classic work of Garrett Hardin in 1968, it was presumed by many scholars and officials that when it came to managing common-pool resource problems, people were trapped, and unable to solve the ecological problems they faced on their own. When it came to common-pool resources, it was presumed that the only way out was to have the government come in and tell them what to do or to privatize the resource. The emphasis was placed on one of these two “solutions” rather than understanding the immense diversity of social-ecological systems that exist in the world. What we found in our research is that privatization works in some settings, government works in some settings, community solutions work in others, but each system that works fits local circumstances.

Given this institutional diversity, our work is focused on developing a multidisciplinary, multitier framework for analyzing social-ecological systems. Figure 1 illustrates how we think about a resource system (RS) such as a lake, a forest, an ocean, or an urban campus, and how it is related to a governance system (GS) of rules, the actors (A) who are interacting in it, and the resource units and services (RSU) that are formed from it. These four encompassing variables generate an “action situation” in which people attempting to solve particular problems for that social-ecological system interact with one another and generate patterns of outcomes. The SES framework facilitates the cumulative study of those interactions (I) and outcomes (O) in diverse settings.

In turn, this framework helps us build and test theories. A framework is not a theory. A framework is a language system for helping identify potentially relevant variables that we need in building and then testing our theory. If we are going to study inshore fishery systems, for example, we can develop a database based on a framework that focuses on inshore fishery systems. This database will be different

than a data system that is dealing with river systems and irrigation, though there would be similar concepts that would remain the same. So we can study similar and related systems using a common language even though we study them in a slightly different way.

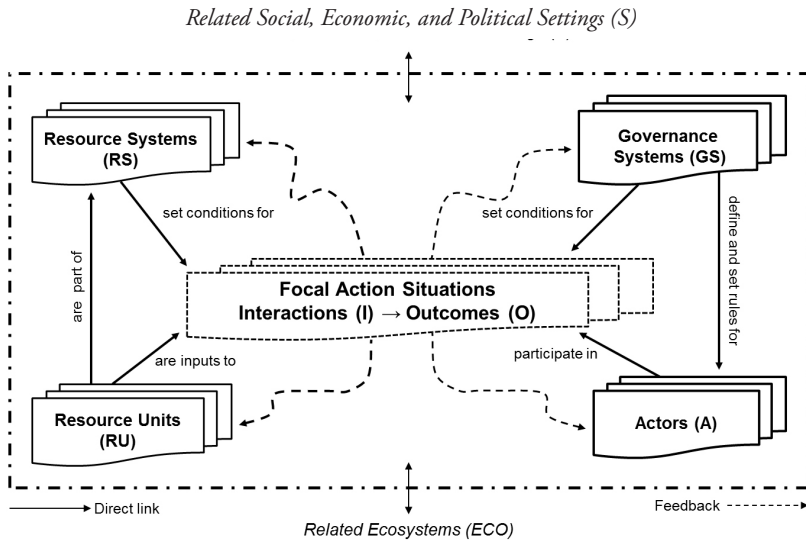


Figure 1. Revised SES framework with multiple first-tier components

Source: McGinnis and Ostrom (forthcoming).

Over time we have taken apart, unpacked, and refined the very broad variables that are commonly mentioned in empirical studies of SESs in order to identify sub-types that may themselves be very important in affecting interactions and outcomes (Ostrom 2009). (See Figure 2.) The rules governing one resource system, such as a fishery, will be quite different from those governing, for example, a pasture irrigation system or a forestry system. In fisheries, the resource units move around, while in forests they are fixed in place until the time of harvest. Ecological characteristics, such as the clarity of boundaries defining the resource, how large the resource site is, how many human-controlled facilities there are, and so on, make a significant difference in what kind of operational rules and organizational structures will work best. Similarly, the specific characteristics of the social system—such as the number of people who have access to the resource, the socioeconomic conditions, the history of use, the kind and quality of leadership

at work, and the norms operating within the community—all potentially affect an action situation. Each of these social characteristics potentially influence the ways in which people interact with the resource and with one another, and how they make decisions that lead to particular outcomes.

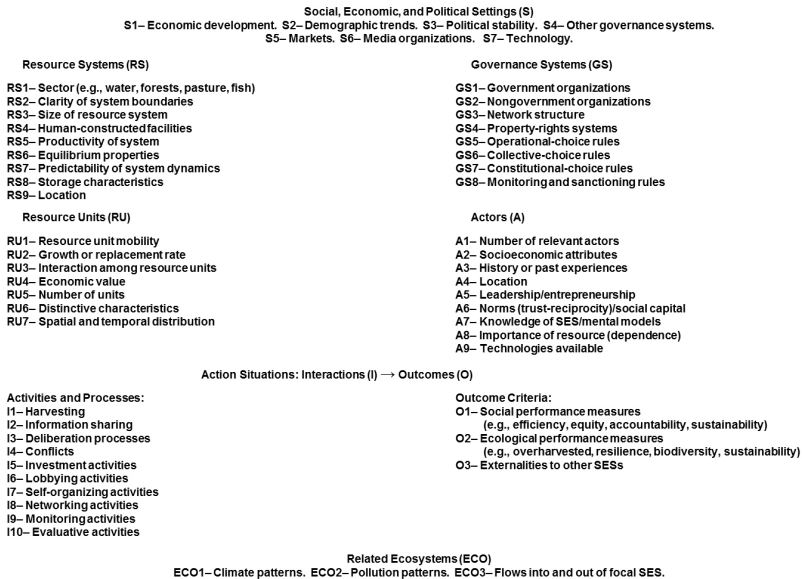


Figure 2. Second-tier variables of an SES.

Source: Adapted from Ostrom (2009, 421).

While this all looks very complex, we can use the framework to address three broad and critical questions. The first question has to do with what patterns of interactions and outcomes—such as overuse, conflict, collapse, or stability—are likely to result when a *particular* set of rules governs the use of a *particular* resource system in a *particular* socioeconomic and political environment? In other words, which rules generate sustainable outcomes for particular types of resources in particular social environments? What rules used in regard to grasslands and pastoral institutions, for example, generate overuse and collapse and which tend to generate adaptive use practices over time? Within the context of this very broad question, a wide variety of different rules emerge as relevant factors in generating sustainable outcomes. What we are basically interested in is identifying the kind of rules that lead to a long line of future success within these different systems.

The second type of question that we might want to address is how likely it is, in a particular setting, that people will be able to design their own systems? How likely is it that a community will be able to develop endogenous governance arrangements, use patterns, and outcomes without externally imposed rules or financing? In other words, do we need to worry about imposing institutions from the outside? Or, are well-tailored rules likely to evolve from within this type of setting? This, of course, depends on the autonomy of people living in a setting and the history and evolution of rules within different groups.

This then leads to the third type of question: How robust and sustainable is a particular configuration of rules, especially in a changing environment? In other words, what kinds of disturbances do we need to worry about in this kind of setting? Population change? Global warming? Draught? Changes in prices? In some settings, there are forest and water systems, for example, that have experienced tremendous stability for 200 years. But in the face of dramatic external changes, some of these systems are no longer robust. The question is how likely are those kinds of external or internal changes to occur? We must learn about the likely impact of such change if we are to learn how we can increase sustainability.

The next challenge then is to study social-ecological systems over time and across cases. Such studies tell us where people have developed, in some instances, very successful systems for centuries. Part of the reason that young people are very welcome in this research is that there are many case studies that have been conducted in the past that need to be replicated. Going back to those sites and studying them again is a perfect opportunity for a young scholar and has the potential to teach us a great deal about the robustness over time of rules that were identified in an earlier study.

Similarly, research that compares design principles across contexts can help us further refine our understanding of institutional diversity. Cox, Arnold, and Tomás (2010), for example, review 91 cases in which the design principles have been identified. Through this work, they find broad empirical support for the relevance of the design principles I identified in *Governing the Commons* (Ostrom 1990). But they also identified areas where further refinement was needed so as not to confuse ecological factors with social factors. They clarified, for example, that in discussing boundaries, it is important to treat the boundaries of the resource system itself and the boundaries that distinguish between legitimate users and nonusers of the resource. By separating these two different kinds of boundaries,

we can test, in the long run, whether the source of success or failure has to do with one, or the other, or both. Cox, Arnold, and Tomás (2010) also refined the design principle of congruence, or alignment of the rules with the specifics of the context. Once again, they argue that it is important to distinguish between rules that are congruent with the resource itself, and rules that help govern the distribution of benefits and costs to the people using the resource. Finally, in my previous work I have stressed the importance of monitoring. They agree that monitoring is indeed important, but again argue that it is best to treat separately the monitoring of users' activities and the monitoring of the resource system itself. With these refinements, we are able to develop better empirical tests and our understanding of why certain rules work best in particular contexts.

A central question is *why* institutional arrangements that develop in a local social-ecological context and are consistent with the design principles tend to enhance institutional robustness. One reason is the mutual investment such design principles require of participants. When you are expected to invest in costly activities, and you think that others are similarly invested, it is in your interest to make the most of that investment. Another common feature of robust design principles is that the people most knowledgeable about a system—those who know best what the effects of the rules will be—are the ones who make many of the rules. Further, robust institutions tend to be those in which resource users have developed effective mechanisms for managing the conflicts that will inevitably arise—mechanisms that are considered fair by the people governed by them. It is also important to recognize that a diversity of governance units stimulates learning and enhances performance. Institutional diversity helps to ensure that when one system fails to bring about sustainable results, resource users can search for a better approach and learn from the experiments of others. Part of this diversity is to allow for both large and small units to complement one another.

Our future work at the Workshop in Political Theory and Policy Analysis and with colleagues at multiple universities and research centers is to continue developing a common interdisciplinary language and identifying core concepts, definitions, and key terms for the multiple aspects of the SES framework. We will continue to develop a foundation for theoretical applications and future empirical studies. We have plans to study forests, water resources, and fisheries over time, including sites in the American West Coast, Kenya and Uganda in Africa, Bolivia

and Mexico in Latin America, and India and Nepal in Asia. And in each of these contexts we will be examining which propositions hold under diverse resource conditions.

I look forward to hearing more about the work being pursued by Beloit College students along these lines.

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