

The Struggle to Understand: Elinor Ostrom and Institutions for the Governance of Forests

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*I would applaud thee to the very echo
That should applaud again.*
Macbeth. Act V. Sc. 3

Like no other resource system, forests have been central to the application of Elinor Ostrom's intellectual enterprise. This essay is a modest attempt to highlight, in my own estimation, some of Ostrom's contributions to an improved understanding of how forestry institutions work and to options for problem-solving within the forestry arena. I begin with a consideration of Ostrom's well-known theoretical contribution before moving on to highlight some empirical applications and policy implications. I draw heavily from the work of Ostrom and her colleagues in the IFRI research program (see www.sitemaker.umich.edu/ifri/home for more on the IFRI program), and also attempt to locate CIFOR's own work within this effort.

While a student at Indiana University, I found two interim research reports to be exemplars of Ostrom's. These reports are: *Governing the Commons* (Ostrom, 1990) and *Rules, Games and Common Pool Resources* (Ostrom, Gardner and Walker, 1994).

These well-known studies provide a deeper reflection on factors that enhance the likelihood that individuals will engage in collective action. -Together the reports use a complement of methods, including in-depth case analyses, formal modeling and experiments, to generate dependable knowledge. Discontented with the three dominant models (i.e. the tragedy of the commons, the prisoners dilemma, and the logic of collective action) of collective behavior, which are all based on the assumption of the universal nature of the free-rider problem, and which all lead to nationalization or privatization as solutions to resource mismanagement, Ostrom explores and explains a third alternative. Though interdependent resource users might individually face temptations to free-ride or to act opportunistically, they often are able to develop a shared perspective of the resource system and organize themselves in order to obtain mutually-beneficial outcomes, including sustainable resource use.

Ostrom isolates design principles that successful, small-scale,¹ long-enduring common resource institutions all seem to share. These include clearly defined boundaries determining who has rights to withdraw a resource, internal monitoring, and a graduated system of sanctions. She argues that these institutions order interactions amongst individuals and have visible outcomes. The unsuccessful ones are characterized by resource overexploitation, frequent social conflict and lack a number of the design principles. Ostrom also finds that in the successful cases individuals repeatedly communicate, interact with one another, and learn whom to trust, what effects their actions will have on each other and how to organize themselves to consolidate joint benefits and to avoid harm. This leads her to conclude that when boundary, authority, monitoring and sanctioning rules are defined and enforced internally, the outcomes achieved are likely to be more effective than those achieved when the rules are imposed externally. For local resource users the

costs of obtaining relevant information about their use and of the condition of the resource are low relative to benefits that can be reached through designing institutions.

Overall, Ostrom found the role of communicating and monitoring, or of informal agreements without enforcement by external agents to be equally important across different methodologies in the field, in the laboratory, and in formal game theoretic approaches. The policy implications of these studies are twofold. First, that assigning property rights to local groups and/or communities can be a viable alternative in the management of natural resources; nationalization and/or privatization are not the only solutions to resource degradation. Moreover they often have unexpected outcomes that lead also to open access, exclusion, social conflict and ecological deterioration. Second, that an understanding of how individuals and groups work to solve common problems can help policy makers and practitioners design more effective policies, strategies and programs.

Throughout this endeavor, Ostrom has been (to a fault) a strong advocate for conceptual clarity, by, for example emphasizing the difference between the nature of the good (common pool resource) and the broad property rights structure for its access and control (e.g. individual, collective/communal, state). Importantly, she and colleagues have contributed substantially to the analytical characterization of property rights to forests and other resources as comprising of bundles of rights regardless of the broad recognized property regime (whether individual, state, communal/common property). Thus any property regime (i.e. the bundle) can be decomposed into its constituent sticks such as access, withdrawal, management, exclusion and alienation (Schlager and Ostrom, 1992). Such unbundling of property rights to forest resources uncovers their multidimensionality and recognizes that forest resources can provide different benefits to different user groups simultaneously and that even absent of complete ownership resource users can have access to resources that make significant contributions to their livelihoods and provide sufficient incentives for them to engage in resource-enhancing behavior (Mwangi and Markelova, 2009).

What more can we learn from Ostrom's research program? Many developing countries have over the past two decades adopted extensive reforms to devolve or decentralize authority over forests to lower levels of governance, including to districts, municipalities or even communities. It is unclear the extent to which Ostrom's foundational work may have influenced this shift, though it is not unlikely that her findings may have increased the momentum at which such reforms were advocated for by leading global institutions especially in the natural resources sector. The implementation of these forest sector reforms and policies can be further informed by emerging findings in forestry that highlight the nuances of Ostrom's foundational work. One such finding is that to be effective, property rights to forest resources must be enforced. Enforcement is a major undertaking that involves collective action. Even though community forests generally appear to be in better condition than state forests, the distinguishing feature between over-harvested and sustainably managed forests (whether used commercially or for subsistence) in different parts of the world is not necessarily the property regime but rather the ability to monitor the forest and sanction rule breakers i.e. enforcement (Banana and Ssembajjwe, 2000; Gibson et al. 2005; Nagendra, 2006; Persha and Blomely, 2009). Chhatre and Agrawal (2008) find that the probability of forest degradation declines with increases in the levels of local enforcement and local collective action, even in the presence of other factors such as forest resource size, levels of dependence, commercial value of other factors that influence forest resource regeneration and overall condition. Enforcement develops trust among individual users that other users are complying with agreed rules and that no individual is gaining an advantage over others (Gibson

et al. 2005). Thus monitoring and enforcement provide incentives for sustainable forest management, irrespective of the property regime, and can involve collaborative efforts between diverse actors, including local and central government agents, local communities and private, individual resource owners.

Local enforcement is in turn influenced by the salience of the resource to communities, their autonomy in decision making, effective leadership for conflict resolution and support from civil society agents who served as a bridge to government agents (Gautam and Shivakoti, 2005; Sudtongkong and Webb, 2008). Where rule enforcement institutions and mechanisms do not exist, property assignment loses value and forests can revert to open access (Dorji et al. 2006). An emphasis on institutions and governance, however, tends to overestimate their importance in assessing forest condition and sustainability (Agrawal and Chatter, 2006), and biophysical factors such as tree species composition, elevation, aspect and rainfall can overwhelm the significance of institutions and must accordingly be factored into any institutional analysis.

Similar frameworks have been applied to assess the impacts of major policy changes such as decentralization reforms (see Andersson et al. 2010). In Uganda, for example, because village level monitors and officials are poorly paid and receive no tangible benefits for their monitoring and sanctioning activities, enforcement is at best lax or absent and forests, especially those further away from the district headquarters exhibit higher levels of unregulated consumptive use (Banana, undated).

Decentralization of forest resources to the district level did not affect forest management and condition in Uganda in the desired direction (Banana et al. 2007), and may have resulted in declining income levels especially for poorer households (Jagger, 2009, 2008). Agrawal and Gupta (2005) suggest that in order for decentralization policies to achieve their equity objectives, they must provide mechanisms that enable poorer and more marginal households to access and interact with government officials. Other studies conducted at a different governance level demonstrate the beneficial effects of encouraging such interaction and suggest that regular, face-to-face interactions between municipal governments and local communities raise the performance of local forestry governance systems (Andersson, 2004). Indeed, the feedback interactions between local and central government monitors, as well as pressures from civil society and voters further serve to enable local government agents to better deliver on the goals of decentralization (Andersson et al. 2004, 2006).

The number and reach of studies in the forest sector that draw directly from Ostrom's foundational work is overwhelming. This account does not pretend to be exhaustive, but rather this limited selection is intended to provide a flavor of some of the significant findings relevant to ongoing policy debates, such as which institutions are the most effective in resolving forest resource problems. It draws mostly from the IFRI set of studies where methodologies are consistent over space and time. Clearly, Lin Ostrom's work (and the works of closely related colleagues) suggests that the more relevant question might be: what features of institutions are more likely to improve forest resource management while also improving the distribution of benefits from the resource? Their collective efforts show that institutional regimes that strengthen enforcement, regardless of property assignment are fundamental. Their collective works further suggest that increased interactions between relevant agents can improve governance, including even tempering elite capture of benefits, an enduring challenge of any decentralized initiative.

CIFOR's own governance research adds important nuances to Ostrom and colleagues' efforts. Work in Indonesia, Ethiopia and Uganda (Komarudin et al. forthcoming and German et al. forthcoming), for example, demonstrate that interactions between local communities, government agents, private companies and civil society, that are facilitated by trusted, external agents can serve to lower the transactions costs of collective action and to build trust, and can ultimately enhance equity and access to decision making in decentralized settings. CIFOR's ongoing work in climate change, in assessing the impacts of globalized trade and investments on the forestry sector, in re-assessing the conservation and development nexus, and in enhancing the sustainable management of production forests provide fertile ground for further testing and refining of Ostrom's hypotheses in a context of emerging global challenges. These emerging challenges threaten to roll back the gains of the past decades that saw a formal devolution of resource rights and authorities to local communities. There is also, I think, further opportunity for researchers to more better separate out policy failures attributable to weaknesses of relevant implementing agents from implementation difficulties attributable to the uncertainties and complexities of the social, political and legal setting in which implementation occurs.

Ostrom has paid great attention to the relationships between different institutional forms and the incentives that they generate and/or the practices they prompt. Forest research, policy and practice are all the better for her discomfort with easy answers and her unrelenting exposure of the 'wickedness' of natural resources problems. In the end, Lin Ostrom's Nobel Prize opens the door not only for more knowledgeable and responsible policies, but for greater visibility and trust to local actors—communities with no voice or power—and a growing recognition of the need for a more 'comprehensive Economic Science' that incorporates social values.

When I sought to identify the design principles, I did not know whether I had discovered anything of long term value. I was simply struggling with a way of understanding what held some systems together better than others.
--Elinor Ostrom