Elinor Ostrom and the Bloomington School of Political Economy

Volume 2, Resource Governance

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Contents

Introduction to Volume 2

This second volume of *Elinor Ostrom and the Bloomington School of Political Economy* focuses on the work for which Lin[1] was most famous, and for which she received the Nobel Memorial Prize in Economic Sciences in 2009. This volume may be something of a salve for readers who know Lin exclusively through *Governing the Commons* (1990), her groundbreaking book on local community governance of "common-pool resources" (CPRs).[2] Those readers might have found volume 1 of this book series somewhat confounding, as it contains relatively little about natural resource governance. However, it is important to appreciate that Lin's work on common-pool resources was informed by, and consonant with, her earlier police studies and other work on local communities stemming from the polycentric approach pioneered by Vincent Ostrom (along with Charles Tiebout and Robert Warren). *Governing the Commons* was not born sui generis. It made a major contribution to social science, but it was very much part and parcel of other work going on in the Workshop in Political Theory and Policy Analysis, all of which is encompassed within the Bloomington School of Political Economy.

When Lin turned her attention from police departments to natural resources in the 1980s, it marked a return of sorts. As a young PhD student at UCLA in the 1960s, Lin cut her teeth on groundwater management systems in Southern California. Her 1965 doctoral dissertation consisted of an extended case study in the complexities of local governance, and she revisited that case in chapter 6 of *Governing the Commons* and in other outlets, including chapters included in the current volume. And while she did pathbreaking work on many other types of "social dilemmas" during her long and storied career, she always gravitated back to the combined and complex social-ecological problems of natural resource governance. Her shifts in research focus, ranging from local policing to resource com-

mons to global climate change to the "knowledge commons" (see Hess and Ostrom 2007), were less significant than they might appear.

Everything Elinor Ostrom studied involved resources, goods, or services that were, to varying extents, shared among multiple policy actors. Members of communities in different empirical settings may have been consuming water resources drawn from commonly shared sources, or helping police officers in the coproduction of neighborhood security, or working together to collectively manage a fishery, forest, or irrigation system, but all of these groups confronted a similar array of collective-action dilemmas. Details of the relevant dilemmas varied widely, but all shared a broadly similar (though not identical) profile of characteristics, namely, that boundedly rational actors with access to limited information were collectively engaged in activities that involved, at least potentially, significant disparities between *private* costs and benefits and *social* costs and benefits, and whose outcomes could not be determined by any actor acting alone. Lin's police studies, in particular, proved an important precursor for her subsequent work on natural CPRs because, in addition to supporting the general theory of polycentricity (see volume 1 of this series), they demonstrated that local governance could be both effective and relatively efficient.

Although Lin used the term "commons" in the title of her most influential book, in the analysis detailed therein she was always careful to sharpen her focus to a particular type of commons, specifically known as "common-pool resources." Vincent and Elinor Ostrom had introduced this technical term in 1977, in a paper reproduced as chapter 1 of this volume. Two decades earlier, Paul Samuelson (1954) had drawn the major distinction between public and private goods along two dimensions of rivalrousness in consumption (or subtractability) and excludability. Private goods, such as small pieces of land, books, and other things people tend to privately own, are rivalrous in consumption and excludable (at fairly low cost); public goods, such as public defense and sunlight, are neither. James Buchanan (1965) added a third type of good, "club goods" (also often referred to as "toll goods"), which are not rivalrous in consumption but from which exclusion is possible at reasonable cost. A prime example of a "club good" is a country club, where the golf course is rivalrous in use (at least at a certain population size), but from which it is relatively easy for members to exclude nonmembers. In 1977, Lin and Vincent added a fourth distinct category of goods by strictly defining CPRs as goods that are rivalrous in consumption, but from which exclusion is impossible (or very costly).[3] This completed the set of logical possibilities, although, of

course, many complex combinations of different types of goods and services might coexist in any specific policy setting.

The importance of making these careful analytical distinctions became more apparent over time, but even so it can remain a point of potential confusion even today. The Ostroms were working within the wider context of a literature on collective action that had grown increasingly pessimistic about prospects for ordinary citizens with heterogeneous preferences to successfully manage common resources, and their supposed inability to avert what had come to be known (after Hardin's famous 1968 article) as "the tragedy of the commons." That literature, with roots extending back to Aristotle's *Politics*, burgeoned in the twentieth century, especially in the context of the economics of fisheries. Early works by Warming (1911), Gordon (1954), and Scott (1955) explored the basic problem of overfishing, where extraction rates exceed the replenishment rate of a fish stock. A fishery is perhaps the clearest exemplar of the technical concept of a common-pool resource, given the clear separation between the resource extracted (a fish caught in a net) and the common pool (in which the as-yet-uncaught fish continue to swim). Incentives for overfishing stem from a combination of biophysical and institutional attributes, including: (1) the boundaries of the fishery, (2) the population size and replenishment rate of the fish species, (3) the absence of property rights in fish prior to "capture," (4) the population of fishers and their fishing technology, and (5) the resulting extraction rate.

Hardin's (1968) allegory of the "tragedy of the commons" generalized the implications of those earlier fisheries studies. His open-access pasture basically mimicked the biophysical and institutional attributes of the common-pool fishery, with units (e.g., individual blades) of grass, instead of fish, subject to appropriation by capture, in this case not directly by humans but via their privately owned bovine "agents." Just as fishers have incentives to overextract fish from the common-pool because that is the only way to own them, so Hardin's herders have incentives to add more and more cattle to the open-access pasture, where the grass cannot be "owned" until it is consumed (see Cole, Epstein, and McGinnis 2014).

Like the fisheries economists before him, Hardin (1968) observed that the "tragedy" of overexploitation is not inevitable but might be averted by institutional measures designed to control access to and use of the resource (whether fish or pasturage). Under the heading "mutual coercion, mutually agreed upon," Hardin proffered two solutions: (1) privatization, that is, conversion of the CPR to a single, privately owned good or a set of parcelized, privately owned goods; or (2) governmental regulation of

access to and use of the unowned resource. At about the same time, prominent property-rights economists were touting the combined economic and environmental advantages of private property, including its tendency to reduce externalities and transaction costs (see, e.g., Demsetz 1967); and early Public Choice theorists were doubting the abilities of individuals to engage in meaningful collective action to solve their own problems, including managing CPRs (see Olson 1965). For his own part, Hardin began advocating for a draconian government one-child policy (as China eventually adopted), strictly enforced, if necessary by sterilization (see Ostrom 2010, 8).

Reacting directly to Hardin and Olson (but only indirectly to Demsetz), Lin Ostrom sensed that arguments about the (mis)management of CPRs were impoverished by (1) the conflation of the resource system with the management/property system (a persistent problem) and (2) the failure to consider not only the possibility but the reality that in many cases local groups of resource users were managing CPRs quite successfully over very long periods of time. That sense, the impetus for *Governing the Commons*, must have solidified during the one face-to-face meeting Lin had with Garrett Hardin, when he visited the Ostroms' Workshop at Indiana University in 1976. Over dinner at the Ostroms' home, Lin and Vincent both expressed deep concern about Hardin's "totalitarian" birth-control policy. Lin's own studies of community policing, although not about *natural* resources per se, suggested that local mechanisms for collective action sometimes provided feasible alternatives to either governmental or private property-based solutions to commons tragedies (Ostrom 2010, 8; Harford 2013).

Motivated by what she facetiously referred to as Olson's theory of "collective *in*action," as well as by Hardin's draconian solutions to CPR problems, Lin began systematically studying cases of local CPR management from all over the world. This process was facilitated by two developments, the first of which was the Ostroms' (1977) crucial conceptual distinction between public goods and common-pool resources (discussed above) in combination with a related distinction between commonly consumed resources and resources that are owned or managed collectively (see chapter 2 in this volume).

The precise, technical definition of CPRs, which the Ostroms offered, is extremely important but often neglected. Because CPRs, public goods, and toll goods can all be considered "commons" in a general sense (as can any resources or goods that are collectively consumed, produced, or managed, or any combination thereof), the CPR concept often is confused

or conflated with those other types of goods. What is worse, it is often conflated with property and other institutions for managing resources. Natural goods or systems are one thing; institutional systems for managing such goods are quite another, as Lin constantly reminded her readers. Her precise and consistent definition of CPRs is critical for understanding Lin's work.

The second key development facilitating Lin's work on CPRs occurred in 1986, when the National Research Council convened an interdisciplinary committee, including Lin, to examine management of CPRs. Within six months, that committee identified more than one thousand existing case studies. A relatively small subset of those studies—those that were conceptually and methodologically consistent enough to be coded for purposes of meta-analysis[4]—became the empirical basis for *Governing the Commons*.

The various articles and book chapters collected in this volume are intended to provide a richer understanding of the larger theoretical and empirical context within which *Governing the Commons* was written, and the evolution of Lin's thinking and work on CPR problems subsequent to its publication. The volume's three sections are organized to move from the more general to the more specific:

Part I begins with the all-important distinctions between biophysical resources and the humanly devised institutions designed to govern them. The first chapter, coauthored in 1977 by Vincent and Elinor Ostrom on "Public Goods and Public Choices," makes the important contribution to the theory of socioeconomic goods noted earlier, by precisely defining, and identifying the special management problem of, the category of "common-pool resources" (CPRs), as distinguished from private goods, public goods, and toll (or club) goods. The term CPR refers to resources (or resource amenities) themselves. It does not reflect any particular institution or set of institutions for managing such resources or resource amenities. Institutions, as distinct from resource types, are introduced in chapter 2, Lin's 1986 article, "An Agenda for the Study of Institutions," which begins her exploration of rules and rule-types that ultimately led to creation of the Institutional Analysis and Development (IAD) framework. The article also sounds an important theme that runs throughout all of Lin's works concerning "the need for a consistent language" for any major study of institutions, especially one that cuts across disciplinary boundaries. Chapter 3 combines types of goods (from the first chapter) with institutions (from the second chapter), primarily in the form of property rights, to explore diverse solutions to CPR problems. Chapter 4, which Lin coau-

thored with her student Edella Schlager, unpacks the concept of property (as most legal scholars today would) into various specific rights (and obligations), including rights of access, withdrawal, management, exclusion, and alienation. Part I concludes with Cole and Ostrom's more recent effort to move beyond the rather simplistic categorizations of property systems (public, private, and common) upon which most social scientists and legal scholars continue to rely, by pointing to the tremendous variety of mixed, context-specific, and often contingent, property arrangements in operation throughout various parts of the world.

Where Part I focuses on delineating and explaining basic concepts, Part II moves to the policy level, addressing how various sets of humanly devised institutions work better or worse, in various social and ecological circumstances, for the long-run sustainability of biophysical resources. Chapter 6 returns to the theory of CPRs, and reintroduces the set of "design principles," which she initially derived from her meta-analysis of hundreds of case studies in *Governing the Commons*. A "design principle" is an "element or condition that helps to account for the success" of institutions in sustaining CPRs over long periods of time. Contrary to the understanding of some scholars, it is not necessarily an element or condition that can be *designed* into a set of institutions by plan. Rather, it is an empirical condition that Ostrom observed to be in effect across the successful cases of community-based resource management she studied, and absent from the cases that proved to be less sustainable. The more the various design principles obtain, in the aggregate, the more we might predict that a common-property management regime for a CPR is likely to succeed. That, of course, becomes a testable proposition (duly tested by Michael Cox, Gwen Arnold, and Sergio Villamayor-Tomas in chapter 9). In chapter 7, coauthored with Roy Gardner, Ostrom provides a game-theoretic explanation for why regimes for managing CPRs sometimes succeed and sometimes fail, based primarily on information asymmetries that can impede successful collective action. Such information asymmetries are not obviously accounted for in the original set of "design principles," but could well affect several elements including, for example, boundary conditions (Principle 1), cost-benefit estimations (Principle 2), and monitoring (Principle 4). Chapter 8 reviews those and other "design principles," more clearly explicates what each design principle means, and expressly cautions planners who might try to design top-down CPR management regimes based on the design principles. In chapter 9, three of Ostrom's former students examined 91 case studies that had explicitly or implicitly evaluated Ostrom's "design principles." They found all of her "design

principles" were well supported empirically, but they also proposed a reformulation (in reality, more of a decomposition) of them in light of their findings. The final chapter in this section brings a more dynamic element to bear beyond Ostrom's initial focus on institutional success or failure, seeking to develop a method for analyzing institutional change over time. This paper directly relates the "design principles" from *Governing the Commons* with Ostrom's IAD framework, which she designed specifically to serve as a basis for dynamic or evolutionary assessments of institutions and institutional change over time.

Part III takes us full circle back to Ostrom's first work (as part of her PhD) on water resources in Southern California, which was a topic she returned to, along with her students, throughout her career (and totaling more than fifty years' worth of studies), with the specific intention of gathering data for dynamic (or, at least, comparative static) longitudinal analyses of combined social (including institutional) and ecological change. The first chapter in this part is by Vincent Ostrom, who first motivated and framed Lin's interest in the "water economy." Chapter 12, coauthored by both Ostroms, is their first large-scale case study of a coastal aquifer in Southern California, and its management by and for a variety of stakeholders and constituencies. Chapter 13, by Ostrom and her former student William Blomquist, focuses on the role played by formal legal rules administered by California's state courts in the evolution of Southern California's water management system. Part III of the book concludes with a review article published shortly before Ostrom's death. We chose that specific article to conclude the book for several reasons, not least of which is that it is a commentary on an article published in 1911 in the very first issue of the *American Economic Review* by another distinguished female economist Katharine Coman, who was Dean at Wellesley College, which still has a professorship in her name. Beyond that significant gender connection, the substance of Ostrom's review article ties in her early interest in western water law/management with the Social-Ecological System framework that Ostrom constructed toward the end of her life, and which is further explored in volume 4 of this collection.

Notes

1. Elinor Ostrom was a dear colleague of ours, and she always asked everyone to refer to her as Lin. Even in the formal role of book editors, we find it impossible to refer to her in any other way.

2. The phrase common-pool resources appears in quotation marks to signify that, for the Ostroms, it was a term of art, distinguished from other categories of goods, including "public goods," "private goods," and "toll (or club) goods." See below.

3. Most economists would more loosely refer to such goods as "subtractable public goods" or "congestible public goods."

4. Her first-hand experience of the difficulties involved in coding case studies from scholars of various disciplines, who used inconsistent terms, definitions, theories, and models, drove Lin's subsequent efforts to create broad interdisciplinary frameworks—notably her IAD and SES frameworks—that would facilitate meta-analyses and even large-*n* quantitative analyses by providing a common structure, as well as common definitions of common terms, for analysis that nevertheless would be conducive with varying theories and models.

References

Buchanan, James M. 1965. "An Economic Theory of Clubs." *Economica* 32(125): 1–14.

Cole, Daniel H., Graham Epstein, and Michael D. McGinnis. 2014. "Digging Deeper into Hardin's Pasture: The Complex Institutional Structure of the 'Tragedy of the Commons.'" *Journal of Institutional Economics* 10(3): 353–69.

Demsetz, Harold. 1967. "Toward a Theory of Property Rights." *American Economic Review* 57(2): 347–59.

Gordon, H. Scott. 1954. "The Economic Theory of a Common-Property Resource: The Fishery." *Journal of Political Economy* 62(2): 124–42.

Hardin, Garrett. 1968. "The Tragedy of the Commons." *Science* 162(3859): 1243–48.

Harford, Tim. 2013. "Do You Believe in Sharing?" *Financial Times Magazine*, August 30. http://www.ft.com/cms/s/2/afc5377e-1026-11e3-a258-00144feabdc0.html#axzz2dUg7k6rR.

Hess, Charlotte, and Elinor Ostrom. 2007. *Understanding Knowledge as a Commons: From Theory to Practice*. Cambridge, MA: MIT Press.

Olson, Mancur. 1965. *The Logic of Collective Action*. Cambridge, MA: Harvard University Press.

Ostrom, Elinor. 1965. "Public Entrepreneurship: A Case Study in Ground Water Basin Management." PhD diss., University of California, Los Angeles.

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

_____. 2010. "An Interview with Elinor Ostrom." *Annual Reviews Conversations*. http://www.annualreviews.org/userimages/ContentEditor/1326999553977/ElinorOstromTranscript.pdf.

Ostrom, Vincent, and Elinor Ostrom. 1977. "Public Goods and Public Choices." In *Alternatives to Delivering Public Services*: *Toward Improved Performance*, edited by E. S. Savas, 7–49. Boulder, CO: Westview Press.

Ostrom, Vincent, Charles M. Tiebout, and Robert Warren. 1961. "The Organization of Government in Metropolitan Areas: A Theoretical Inquiry." *American Political Science Review* 55(4): 831–42.

Samuelson, Paul A. 1954. "The Pure Theory of Public Expenditure." *Review of Economics and Statistics* 36(4): 387–89.

Scott, Anthony. 1955. "The Fishery: The Objectives of Sole Ownership." *Journal of Political Economy* 63(2): 116–24.

Warming, Jens. 1911. "Om 'Grundrente' af Fiskergrunde." *Nationalokonomisk Tidsskrift*, 495–506. Translated in P. Andersen, "On Rent of Fishing Grounds: A Translation of Jens Warming's 1911 Article, with an Introduction," *History of Political Economy* 15 (1983): 391–96.