

Elinor Ostrom: Politics as Problem-Solving in Polycentric Settings

Michael D. McGinnis

Professor, Political Science and
Co-Director, Workshop in Political Theory and Policy Analysis
Indiana University, Bloomington
mcginnis@indiana.edu

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Not only is Elinor (Lin) Ostrom the first woman to win a Nobel Prize in Economics¹, but she is also the first winner, since Herbert Simon in 1978, to have a primary academic degree in Political Science or, in Simon's case, the closely related discipline of Public Administration. To be fair, Ostrom did complete a minor in Economics as part of her Ph.D. degree programme at UCLA, which she finished in 1965.²

Since then, Lin Ostrom has spent her entire academic career at Indiana University, where she is currently the Arthur F. Bentley Professor in Political Science, and Professor in the School of Public and Environmental Affairs.³ She also serves as Senior Research Director of Indiana University's Workshop in Political Theory and Policy Analysis, which she co-founded with her long-term collaborator and spouse Vincent Ostrom. From 1973 until 2009, Ostrom served as Co-Director of the Workshop, first sharing those responsibilities with Vincent and later with younger colleagues like myself. Ostrom has received many honours other than this Nobel Prize, including serving as President of the American Political Science Association, the Public Choice Society, and the International Association for the Study of Common Property, an inter-disciplinary

organization that she helped found and that is now known as the International Association for the Study of the Commons.

By itself, the Nobel Prize committee's recognition of 'her analysis of economic governance, especially the commons' need not automatically qualify Ostrom for admission to a grouping of the most influential political scientists, as defined by the editors of this volume. Perhaps she is merely someone trained in political science who managed to do well in a cognate field.

In this chapter I argue that Lin Ostrom deserves a full complement of accolades within political science, precisely because her work reminds us of our disciplinary roots in the search for practical solutions to complex policy problems. At the same time, her pioneering work on community-based management of commonly-held resources will continue to have ramifications far beyond the narrow confines of either political science or economics.

Despite this chapter's focus on the work of Elinor Ostrom, it is not possible to ignore the importance of her many collaborations with other scholars. She has co-authored papers or co-edited books with over 120 different individuals. Many are her students, but others are drawn from such fields of study as economics, anthropology, geography, ecology, biology, mathematical social sciences, and complexity sciences.

Unique among her many collaborators stands Vincent Ostrom, her mentor and spouse. The academic careers of Lin and Vincent Ostrom are intertwined in a truly remarkable fashion.

Ostrom's dedication of her most influential book *Governing the Commons* to 'Vincent, for a lifetime of love and contestation' sums it all up quite nicely.

Despite their long collaboration, each retains his or her own personal tendencies or predispositions: Vincent towards more philosophical and historical inquires, Lin towards inductive generalizations based on rigorous empirical research. Together they have built a uniquely vibrant intellectual community known variously as the Bloomington School (Mitchell 1988, Aligica and Boettke 2009), the Ostrom Workshop (McGinnis and Walker 2010), or institutional analysis (Ostrom 2007b).⁴

Finally, there is the Workshop, the institutional manifestation of their shared vision of research. Ostrom regularly acknowledges that her Nobel Prize recognized not just her as an individual scholar but instead the collective product of research programmes that have been truly collaborative in nature, involving an ever-expanding network of scholars and students.

Originally founded as a small research enterprise within the Department of Political Science in 1973, today the Workshop supports an extensive interdisciplinary research agenda and affiliated faculty in Anthropology, Economics, Geography, Political Science, Psychology, the School of Business, the Schools of Law on both the Bloomington and Indianapolis campuses, and the School of Public and Environmental Affairs. Beyond Indiana, scholars from around the globe are affiliated with the Workshop through their participation in a wide array of research projects. The Workshop has established collaborative relationships with 18 research and policy institutions located in 16 countries. The still-growing scale of this network is suggested by the 144 scholars

from 27 countries who attended the fourth Workshop on the Workshop held in Bloomington during June 2009.⁵

In this chapter I focus on Ostrom`s position as an exemplar in the discipline of political science. As someone fortunate to have known her for many years, I could elaborate at considerable length on this subject.⁶ Here I limit myself to developing two primary themes.

First, I consider Ostrom`s unusual choice to devote so much of her career to developing and fine-tuning complex frameworks for analysis. Rarely in her work does she follow the social scientific convention of hypothesis testing. Instead, her work typically takes the form of an exploration, a careful investigation into some of the many factors relevant to her subject. She endeavours to be as parsimonious and as systematic as possible in her investigations, and yet does not allow this taste for simplicity or rigour to get in the way of her concern for truly understanding the complexity of the policy situation at hand. Ironically, the frameworks for analysis that she uses to contextualize her investigations into many diverse fields of study end up being rather convoluted, and yet there remains a fundamental simplicity that ties together all these strands of her research. I try to identify the basic principles driving her search for a better understanding of real policy problems.

Although Ostrom has received many accolades within the discipline of political science, specifics of her research projects remain strangely marginal to the core concerns animating each of the major subfields within political science. To develop this point I draw upon the assessment of contributors to a recent symposium in *Perspectives on Politics* (Isaac et al. 2010), in which

prominent scholars in comparative politics, international relations, and public policy specify the ways in which Ostrom has avoided grappling with the core preoccupations of those fields.

In each of the primary subfields of political science, Ostrom's work stands outside the mainstream. And yet each contributor to the *POP* symposium is deeply appreciative of her contribution to the discipline of political science, and each points to ways in which her work could be used as a foundation for even more progress in their chosen fields of study. The intensity of their enthusiasm for Ostrom's work varies, but all find much of value there. So do scholars in several other disciplines, as is demonstrated by her trans-disciplinary cohort of collaborations and, of course, by her selection as the 2009 Nobel prize winner in Economic Sciences. I find this conjuncture of subfield marginality and disciplinary and even inter-disciplinary prominence puzzling and worthy of further attention.

Frameworks both Simple and Complex

Scholars associated with the Indiana University Workshop have been at the forefront of extensive research programmes on community management of irrigation systems, fisheries, forests, and other critical resources (Ostrom 1990; McGinnis 1999a,b, 2000). In brief, researchers have documented the ability of resource user groups to govern themselves. User groups devise rules to limit the extraction of water, fish, or forest products in a sustainable fashion. They monitor each other's behaviour and sanction those who violate these rules. They meet together to revise or update these rules and procedures when necessary. Some of these

institutional arrangements have survived intact for centuries, often with only minimal assistance from government officials.

Success in community self-governance is by no means automatic. In some cases individual users extract the maximum amount of the resource they can, triggering a ‘tragedy of the commons.’ Or traditional patterns of resource management may be disrupted by the imposition of new rules and regulations from national officials, especially those willing to grant concessions to multi-national firms interested only in quick exploitation of local resources. In other cases, resources that were previously managed communally have been divided up into private plots, often at the insistence of international donors, even if these smaller units are not economically viable over the long term.

Despite these potential dangers, the important lesson is that many communities can, under the right circumstances, craft effective institutions for resource management and self-governance. Ostrom herself has summarized the import of this research programme as constituting a kind of existence proof for the possibility of self-governance. Scholars such as Hardin (1968) and Olson (1965) may demonstrate formally how difficult it is for rational individuals to cooperate, but Ostrom proves that it is not impossible.

Taken as a whole, Ostrom’s work is exemplary for its success at integrating theory, method, and empirical analysis. She routinely integrates subjects and methods typically treated in isolation. For example, Ostrom, Gardner, and Walker (1994) begin by specifying a formal game model in which participants are allowed to establish procedures to enforce their own rules. In the

remainder of the book these principles are tested in a series of experimental settings and applied to extensive reviews of field studies in different resource sectors. This integration of formal theory, experiments, and field research sets a high standard for subsequent analyses.

Several themes recur throughout Ostrom's research record: an abiding appreciation of the boundless creativity of individuals and the communities they inhabit (V. Ostrom 1980; E. Ostrom 2005), her demonstration of the many ways in which collaborative research can help realize the productive complementarities among diverse modes of research (Poteete, Janssen, and Ostrom 2010), and her drive to pay equal attention to scientific rigor and policy relevance. To me one central tension stands out most distinctly, namely, her life-long search for a practical and effective balance between simplicity and complexity.

Policy processes are inherently complex, far too complicated for any single person to comprehend in their totality. To understand any particular issue, we need to simplify, to select some aspects upon which to focus our attention, while holding in abeyance any pretention that we can understand that issue in its full complexity. Theory is needed to guide us in that selection of an effective analytical focus, and yet no one theoretical perspective can suffice for all feasible situations. This is why Ostrom has devoted so much attention to the development and articulation of general frameworks for analysis, to provide a foundation upon which proponents of alternative theoretical explanations may build.

Within the discipline of political science, Ostrom is perhaps best known for her work in establishing the **Institutional Analysis and Development (IAD) framework** as one of the

leading analytical tools in the study of public policy (Sabatier, 2007). This framework helps organize the task confronting a scholar or policy analyst approaching a policy issue by directing attention to the rules-in-use, rather than the rules on paper, and to the underlying biophysical nature of the good under consideration as well as the most relevant attributes of the community directly affected by that resource issue.

Never one to rest on her laurels, Lin Ostrom (2007a, 2009a) recently developed a more complex framework intended to provide a comprehensive approach to the study of closely-coupled systems of complex human-environment interactions, or social-ecological systems. This **SES Framework** is intended to give equal weight to both the social and ecological sides, whereas the IAD framework focused most of its attention on the social-institutional side of policy problems.

Looking back in time, IAD was foreshadowed by a **Public Service Industry (PSI) framework** that Ostrom developed with her many collaborators on the study of police services and metropolitan governance in the United States. Indeed, it was these police studies that served as the impetus for the initial growth of the Ostrom Workshop. Although the Nobel Prize committee singled out her work on the commons as the primary reason for selecting her, the magnitude of Lin's accomplishments can be fully appreciated only when seen as a coherent whole. The topics of the specific research projects she pursued at different times may seem at first glance to be unconnected, but running throughout all of them are the same core themes and preoccupations.

Space restrictions preclude any effort to cover all of her many research projects in detail, so instead I offer the following overview, paying particular attention to the role that the

development of frameworks has played in this ever-expanding agenda of research on metropolitan governance, commons management, and social-ecological systems.

Public Service Industries and Local Public Economies

In her initial years as a junior faculty member at Indiana University, Ostrom organized a series of collaborative research projects beginning with the quality of police services in Indianapolis and concluding with a multi-method study of police service delivery in 80 metropolitan areas across the United States (Ostrom, Parks and Whitaker 1977, 1978; Oakerson 1999; McGinnis 1999b). This empirical demonstration that public services can be most efficiently provided under a system of multiple and overlapping jurisdictions reinforced the wisdom behind the founders of the American constitutional order, who were guided by a political theory articulated by Vincent Ostrom (2008). Although this lesson did not comport well with the prevailing inclination towards governmental consolidation, the relevant policymaking communities are now more open to a wider range of alternative approaches, partially as a response to the disappointing record of national policy initiatives.

The origins of this research on policing as a public service industry lie in the still-classic 1961 *APSR* article by V. Ostrom, Tiebout and Warren which introduced the concept of ‘**polycentric political system**.’ The basic idea is that any group of individuals facing some collective problem (or seeking to achieve some shared benefit) should be able to address that problem in whatever way they best see fit. They might appeal to existing public authorities to help coordinate their actions, or they might take care of it themselves. If the problem is likely to persist, and if

informal modes of cooperation do not prove sufficient, then the members of this group may decide to set up a new organization, one that may be empowered to charge fees for its services. Over time, the result will be a complex patchwork of long-standing and newly-established formal organizations and informal arrangements through which individuals and the groups they form can work together to solve common problems and achieve shared goals.

Ostrom, Tiebout and Warren assert that this is exactly what one sees when one looks at metropolitan areas in the U.S. In any urban setting analysts will find a complex array of public authorities with shared responsibilities over overlapping jurisdictions. More recently, Hooghe and Marks (2001, 2003) have identified similarly complex systems of multi-level governance newly emerging in the European Union. Hooghe and Marks make a useful distinction between Type I and Type II jurisdictions. Type I is exemplified by a federal arrangement, in which multi-purpose governance units are established at each of a few levels (local, district, national, international), with jurisdictions at one level being neatly nested within a jurisdictional unit at the next higher level. Type II organizations emerge to encompass specialized tasks that cut across the borders of Type I units. Type II units combine public officials, private firms, and voluntary organizations in ever-changing configurations of collaboration. The topics of 'new public management' or 'network governance' or 'collaborative governance' (Bryson et al. 2006; Goldstein and Eggers 2004) have become prominent themes in the fields of public policy and public administration, but the basic idea dates back at least to Ostrom, Tiebout, and Warren's 1961 article.

This article introduced terminology that has not been widely adapted by the policy community as a whole, but which served as the foundation upon which the later police students were built, and eventually the IAD framework. Specifically, they distinguished between the *providers* and the *producers* of local public goods and services. Production refers to the physical processes by which a public good or service comes into existence, while provision is the process of determining which public goods or services the members of a community will be able to enjoy.

Public officials representing a community (or the members of that community themselves) can select from alternative mechanisms for the production of public goods or services. These producers may be private firms, public agencies, or some other entity entirely. In this system the ‘providers’ of public goods and services can make arrangements with those ‘producers’ of the good or service that operate at the most efficient scale of production. This enables the system to achieve a degree of efficiency while still allowing communities a wider range of choice. Ostrom and Ostrom (1977) use the term ‘**public service industry**’ to denote the network of large and small organizations that are involved in the production and provision of any particular type of public good or service. In effect, then, a polycentric order contains interrelated networks of public service industries.

Since we are dealing with public goods or services, the relevant consumption unit is a neighbourhood, community, or some other grouping of people. For market exchanges of public goods, this distinction is not relevant, since the consumer both selects which private goods to purchase and then enjoys the benefit (and endures the cost) resulting from that purchase. For publicly experienced goods and services, however, there may be a distinction between the

providers and the consumers. In some cases of self-organized groups, the members of that group may themselves make this provision decision, but in many situations competing public entrepreneurs may promise different packages of goods, services, and the taxes needed to produce or purchase those benefits.

The complexities do not stop there, because it may be possible for the members of the collective consumption unit not only to select which goods they want, but also to directly participate in the co-production of that good or service. For example, if police officers and neighbourhood residents coordinate their efforts to monitor crime in that neighbourhood, then public safety results from a process of co-production. It is not simply a matter of police supplying their customers with a better product, but rather a consequence of ongoing cooperation between police officers and members of the community.

Still another layer of complexity is added with the realization that the finances needed to support production of a public good or service need not be taken from those who directly benefit from that good or service. Instead, there may be a separate financing unit that supplies the money or other resources needed to produce and/or provide a given public good or service. Transfers of this type are a major preoccupation in the literature on inter-governmental relations and fiscal federalism (Salamon 2002, Shah 2007), as well as in the literature on international development aid (Gibson et al. 2005).

In rare circumstances, the members of a collective consumption unit may themselves supply the financial or other resources needed to produce (or co-produce) the goods or services that they

have decided to provide for themselves. More generally, however, we expect to see the development of a complex network of interactions among provider, producer, and financial units. Since there is every reason to presume that disputes will inevitably arise in this process, we also need to incorporate procedures for dispute resolution, and formal organizations may be specifically designed for that purpose.

By now the reader should appreciate the complexity that emerges from this conceptualization of governance as a dynamic configuration of inter-related processes of group-formation, shared consumption, provision, production, financing, and dispute resolution. It is this vision of polycentric governance that has grown into such products as the PSI framework (Ostrom 1983; Toonen 2010) or the local public economy (LPE) framework (Oakerson 1999; Oakerson and Parks 2011), and, eventually, to the IAD framework (Ostrom 2005, 2007b; McGinnis 2011a,b).

Institutional Analysis and Development in the Commons and Beyond

In her Ph.D. dissertation, Lin Ostrom (1965) investigated the complex political manoeuvring around the prevention of groundwater contamination in southern California in the 1960s. These arrangements have, for the most part, remained in place since then (Blomquist 1992; Steed and Blomquist 2006; Blomquist and Ostrom 2008). As a result, other less well-resolved aspects of California's water supply have attracted more public concern.

Only much later, with her publication of *Governing the Commons* in 1990, did Ostrom's work become widely known, both within and well beyond the political science community. In this hugely influential book, which has been reviewed by journals in a wide array of disciplines and

inter-disciplinary resources, Ostrom summarized the results of her comparative study of mostly small-scale resource management systems in many different parts of the world, primarily dealing with groundwater, irrigation, or fisheries (and, in subsequent work, forests). Although many of her students and colleagues contributed to an ongoing effort to document the ability of self-governing communities to manage effectively common-pool resources critical to their own survival, Ostrom's book has become the single most influential riposte to the unremitting pessimism of Garrett Hardin's too-effective image of communities trapped in a 'tragedy of the commons.'

In addition to these field studies and comparative case analyses, Lin Ostrom also worked with colleagues to test the ability of experimental subjects to self-organize within the limiting constraints of laboratory settings. When experimentalists gave the subjects an opportunity to communicate and to sanction each other, the experimental subjects demonstrated an ability, even an eagerness, to monitor each other's behaviour (to the limited extent made possible by the experimental design), and to enforce their agreement by punishing transgressors. What was remarkable was how easily a modicum of self-governance could be introduced into the admittedly artificial situations of a laboratory experiment. If self-governance is possible in such a starkly limited environment, then it is certainly relevant to more consequential interactions in the real world. Even today, however, experimental research remains a niche market in the discipline of political science.

One important contribution of this experimental research has been to develop the micro-foundations that underlie the dynamic operation of applications of the IAD framework. This

research has focused especially on the foundations of trust and reciprocity (Ostrom 1998, Poteete, Janssen, and Ostrom 2010). Much work remains to be done if we are fully to understand how trusting individuals select among the options available to them, and thereby achieve a fuller understanding of individual thought processes as well as processes of collective deliberation, a point Ostrom herself emphasized as far back as Ostrom (1989).

The IAD framework provided the conceptual context for this research on commons, but this framework was designed to have much broader implications. Space precludes a complete exposition of the full array of conceptual distinctions that have emerged as part of the IAD framework writ large.⁷ In particular, I will not be able to cover such important conceptual innovations as the design principles, or ‘good practices’ of sustainable resource governance (Ostrom 1990; Cox et al. 2009) or the grammar of institutions which provides a common template for strategies, norms, and rules (Crawford and Ostrom 1985; Ostrom 2007; Basurto et al. 2009; Siddiki et al. 2010).

At the heart of the IAD framework is the ‘**action situation**’ in which individuals (acting on their own or as agents of formal organizations) interact with each other and thereby jointly affect outcomes that are differentially valued by those actors. This framework highlights the social-cultural, institutional, and biophysical context within which all such decisions are made. Specifically, the IAD framework helps organize the task confronting a scholar or policy analyst approaching a policy issue by directing their attention to (1) the rules-in-use, rather than the rules on paper, (2) the underlying biophysical nature of the good under consideration, in terms of it being a private, public, or toll/club good or a common-pool resource (CPR), as well as (3) the

most relevant attributes of the community, especially ambient levels of trust and shared norms of reciprocity. The IAD framework explicitly distinguishes three levels (or arenas) of choice: (1) operational level choices (of actors as individuals or as representatives of specific collective entities); (2) collective level choices involving the determination of which strategies, norms and rules are, should be, or are not available to actors fulfilling the specific roles defined by that group (as well as specifying who is assigned to fill these roles); and (3) constitutional level choices relating to who is or should be empowered to participate in the making of collective and operational level decisions. The critical insight behind this framework is that the outcomes of interactions in different arenas of choice are explicitly connected to each other.

The actors in any action situation are presumed to be boundedly rational. They seek to achieve goals for themselves and for the communities to which they identify but do so within the context of ubiquitous social dilemmas and biophysical constraints, as well as cognitive limitations and cultural predispositions. Within this broad framework a range of theoretical perspectives may be employed to develop and analyze models of specific situations.

This distinction among framework, theory, and model is critical to understanding Lin's commitment to the careful development of conceptual frameworks. A "framework" provides the concepts and terms that may be used to construct the kinds of causal explanations expected of a "theory," while a "model" constitutes a more specific manifestation of a general theoretic explanation in terms of specific variables and functional relationships. Just as different models can be used to represent different aspects of a given theory, different theoretical explanations can be built upon a common conceptual framework. Of course, not everything goes in the

construction of alternative theories, since they must be built out of the core components of that framework.

Rational choice theory, grounded in methodological individualism, provides the general inspiration for the IAD framework, but different models may be relevant for different situations. For example, the same individual might follow Simon's (1955) satisficing procedure in one decision context while engaging in more extensive information search and evaluation in other situations. Selective pressures may be strong enough to eliminate habit-driven behaviour in some contexts but not in others. There is no reason to presume that any one individual acts exactly the same in all circumstances; still, there is merit in trying to locate the relevant range of decisional procedures within the context of a common explanation.

Despite what some rational choice theorists may presume, there is no single model of rational choice, equally relevant for all situations. Instead, rational choice *theory* subsumes separate *models* of rational behaviour within the context of different types of markets, games, auctions, experimental settings, hierarchical organizations, and other institutional arrangements. The IAD *framework* reminds analysts that to model individual behaviour it is important to incorporate, in some manner, the actors' self-understanding of their roles and their conceptions of proper or acceptable behaviour in particular contexts. By incorporating factors not typically considered by rational choice theorists, the IAD framework can encompass approaches to analysis that many of them would no longer recognize as rational choice. Indeed, Ostrom (1998) has called for a 'second-generation' of rational choice theory more firmly grounded in behavioural regularities, many of which have been discovered by critics of the rational choice tradition.

Although it is most used as a tool to categorize factors deemed to be relevant to understanding the patterns of behaviour and outcomes observed in specific policy areas, the IAD framework was originally based on a dynamic view of policy processes. Social, institutional, and biophysical factors were seen as inputs to a process of decisions made by individuals (with those decisions presumed to be influenced by their pre-existing cognitive capabilities and cultural presuppositions), and these decisions were then aggregated to constitute policy outputs that would then interact with exogenous factors to produce observable outcomes, and evaluations of these outcomes by these actors (or by other observers) would then feed back into all of the previous components of this never-ending process. In effect, the IAD framework is an extended elaboration on a basic systems model of policy processes.

Institutional arrangements shape and constrain the behaviour of individuals, but there is no need to presume that individuals will always follow the rules. In the IAD framework considerable importance is attached to the means by which actors (at all levels) monitor each other's activities and sanction undesirable or inappropriate behaviour. Monitoring and sanctioning are often said to constitute a 'second-order' collective action problem: to deter free riding a group needs some mechanism of monitoring and sanctioning, but since such activities are themselves costly individual monitors or sanctioners have an incentive to shirk their responsibilities. Despite the intimidating barriers to collective action that have been identified by political philosophers and rational choice theorists, many groups facing real life problems have found successful and sustainable ways to organize their own activities. Demonstrating the possibility of self-

governance in a wide variety of empirical contexts has been the overriding theme of Ostrom's career.

In a series of progressive changes, Ostrom (1986, 1990, 2005) demarcates the working components of an action situation. These components specify which actors are legitimate participants in that interaction, what options they have available to them and which evaluative criteria they are likely to use to evaluate alternative outcomes. To take one critically important example, who is empowered to impose sanctions on those who violate commonly agreed-upon rules of behaviour? In empirical research it often turns out that those systems which involve local participants in monitoring and sanctioning are more likely to be sustainable than those in which those functions are instead fulfilled by agents of the national government. Clearly, this result resonates with earlier Workshop research on police services.

Ostrom initially introduced the 'action situation' to serve as a generalization of standard game models. Although game theorists must also define each of these components in order to specify fully any model, there remains an important difference in emphasis.

For Ostrom, and for other Workshop scholars, it is essential to keep in mind the extent to which actors' preferences as well as the choice options available to them are determined by the institutional arrangements that define their position or that shape their perceptions and options. Concurrent games in other arenas of choice interact in subtle ways with any ongoing process of interaction. The payoffs and menu of choices available to participants in operational games have been defined by collective choice processes. Games over collective deliberations are in turn

shaped by the positions and interests defined or manifested in the constitutional choice arena. In a strict sense this may be no different from a complete specification of a game model, but in practice this concern with simultaneous consideration of multiple choice arenas inspires Workshop-affiliated scholars toward a more inductive mode of analysis (Mitchell 1998).

Specifically, Ostrom calls for a shift away from the analytical practice of considering changes in the rules of the game in isolation. She argues that the implications of sets of rules are not easily understood, since they act together in a configural manner. Nor is it easy to connect distinct games together into an overarching model. Still, doing so in some way is critical if the full potential of the IAD framework is to be realized (McGinnis 2011b). If that framework had never been developed, it is difficult to imagine how this opportunity would even have seemed possible.

Future Directions in the Study of Social-Ecological Systems

Although resource management has rarely been considered to be among the elite topics of policy analysis within the field of political science, such issues have acquired increased prominence in recent years, thanks to the growing realization of the potential costs of global climate change. All this has added to the prominence of Ostrom's research, as well as encouraging her to extend her horizons to study more general forms of interactions between human communities and their environment. As noted by Axelrod in his contribution to Isaac's *Perspectives* symposium, (2010: 581), Ostrom's *Governing the Commons* is now much more widely cited than when it was first published, and the trend in citations continues to grow at a steady pace.

As Ostrom and other Workshop-affiliated scholars began to work more intensively with ecologists, they frequently heard criticism that the IAD framework did not treat concepts of particular relevance to ecologists as completely as it covered concepts related to institutions. Consequently, Ostrom began slowly to expand the original IAD framework to encompass the broader set of variables that are needed for the analysis of a social-ecological system. Since the publication of the first version of the SES framework (Ostrom, 2007a), there has been considerable interest by scholars across a wide diversity of disciplines in that approach. In 2009, a revised version was published in *Science* (Ostrom, 2009) and readers are encouraged to stay tuned for still further modifications.

The SES framework is *complicated*, as an early commenter put it politely. However, it is essential to establish a common conceptual language if we are to ever glean general lessons from a growing number of empirical investigations of particular examples of the specific institutional arrangements used by community user groups (and other entities) in the management of common-pool resources of diverse kinds in all regions of the world.

In conclusion, it is worth noting that Ostrom's most recent research on social-ecological systems has appeared not in political science journals but instead in prestigious multi-disciplinary outlets such as *Science* or *PNAS*. This observation provides a nice segue into the second major topic of this chapter, namely, the extent to which Ostrom's body of research does or does not fall within the disciplinary purview of her home discipline.

But Is It Political Science?

When political scientists focus on high-profile issues of war, elections, and lawmaking, they may neglect practical matters of more direct concern to real people. From the very beginning of her career, Ostrom has recognized that ‘governance’ has a much broader scope than the activities of governments.

Many, but by no means all, of the examples of effective community management of communal resources that Ostrom and her many collaborators have studied happen to have been located in remote and isolated regions. In these more isolated communities, it is easier to identify the reasons why some communities manage to solve their own problems while other communities flounder or fail. But their distance from the centres of political power does not make these local regimes an inappropriate basis for the study of governance.

For those whose lives or livelihoods depend on the continued availability of plentiful water or fish stocks, nothing could be more important. Politics is surely involved in local regimes of resource management, but rarely in the form of noisy confrontations between competing ideologies. Instead it is a matter of the concrete politics of practical problem-solving. Many political scientists might not even recognize such mundane activities as political, but the central theme of Ostrom’s extensive research agenda has been to seek a better understanding of the conditions under which self-organized collective action can be successful.

Ostrom's strategy of tracking self-governance wherever it may lead has had the effect of making much of her work seem marginal to the mainstream of the professional discipline of political science.

The June 2010 issue of *Perspectives on Politics* includes a symposium edited by *POP* editor Jeffrey Issac in which eight prominent political scientists comment on *Governing the Commons* and on Lin Ostrom's work more generally.⁸ Robert Axelrod (580) offers the most succinct summary of Ostrom's primary contribution to interdisciplinary research on collective action, stating that 'Ostrom's observations in real-world settings such as inshore fishing and allocation of irrigation water showed that repeated interactions among the users of a common resource allowed them to build institutions that could provide effective monitoring and discipline of free riders, thereby achieving efficient and sustainable use of the resource.'

Although each of the authors is respectful of Ostrom's accomplishments, most express reservations about the relevance of her work to what they consider to be core concerns of their particular understanding of political science. Nancy Bermeo (570) begins by noting that '*Governing the Commons* is not part of the modern "canon" of the subfield of comparative politics.' After lauding Ostrom for her 'field-work sensibility,' Peregrine Schwartz-Shea (587, 589) expresses concern that Ostrom 'bypasses such key methodological questions as how researchers proceed when participants have different views of "the problem" and thereby fails to recognize 'the constitutive dimension of political language'. Ben Fine (584) complains that 'her analysis, like that of mainstream economics, is silent about class, power, and a specification of capitalism and its history.' Even Margaret Levi (574), the most enthusiastic of the participants in

this symposium, admits that Ostrom's focus on 'the power to enforce' 'does not go as far as she might in identifying inequalities of power that inhibit trust and constraints on that power.' More pointedly, Robert Keohane (579) expresses regret that neither she nor others working in the institutional analysis tradition 'seem to have had the imagination and boldness to think about applying her theory and methods' to the study of world politics.⁹

After admitting that 'Elinor Ostrom pays little attention to many issues that I have found central to how policies evolve,' Frank Baumgartner (575) nonetheless concludes that her work 'represents a true model of what political science has to offer.' In particular, he finds much to praise in her Ph.D. dissertation.

Real people solving concrete problems, or failing to do so, has constantly been the focus of her work. Her dissertation was conducted right in her own backyard and on a topic that in lesser hands could simply have been about intergovernmental relations among municipalities in a metropolitan area as they negotiate shared use of the underground aquifer. ... Through a complicated history of legal procedure, happenstance, individual entrepreneurs and middlemen, and the development of norms, she explained how competing and mutually [interdependent] actors managed to produce what neither central authority nor the market could provide.
(Baumgartner 575)

Perhaps it is this unrelenting focus on observing how real people resolve real problems that leaves Ostrom's work so marginal to all of the recognized 'camps' within political science.

Thoonen (2010) summarizes the long history of Lin and Vincent Ostrom's shared disenchantment with the dominant themes of the literature on public administration. Nor is it possible to identify Lin as an exponent of the core tradition of rational choice theory in political science, not after reading her APSA Presidential Address (Ostrom 1998) in which she advocates development of a 'second generation' of rational choice theory that would fully incorporate the effects of social norms and contextual factors on decision processes.

How can work so marginal to all of the major components of the discipline of political science still be considered essential to the field as a whole? Here the comments of Nancy Bermeo strike me as the most insightful of all of the contributors to this *POP* symposium. After documenting the almost complete absence of *Governing the Commons* from lists of core texts in comparative politics, Bermeo (570) suggests that 'it was neglected because it makes no reference to many of the institutions that comparativists (rightly or wrongly) take seriously.' Although Ostrom mentions in passing the importance of 'political regimes,' she "focuses almost exclusively on whether the political regimes in which local institutions are situated are "obstructive," "neutral," or "facilitative." Whether these regimes are democracies or dictatorships, whether their relations with the actors in potentially self-governing institutions are mediated by social movements, electoral considerations, or party, ethnic, or religious links goes unexamined.' Even so, Bermeo (572) later concludes that 'in chronicling and explaining people's capacity for self-government, it is also a book about inclusionary decision making and, thus, a book about democracy.'

Yet, as noted by Jane Mansbridge (592), the word democracy per se rarely appears in Ostrom's writings. Although Ostrom concludes that participation by some actors in the design of their own

rules is an important foundation for any sustainable system of resource management, there is no presumption that these rules need to be established by recognizably democratic processes.

Ostrom's refusal to commit to democracy is a product of her realism. The coercion that makes a system of governing the commons work must be sociologically legitimate, that is, legitimate in the eyes of the users. Whether sociological legitimacy requires democracy depends on the time, place, and local culture. Indeed, the imposition of democracy, whether electoral or otherwise, may undermine sociological legitimacy. Ostrom's vagueness about the ways the individuals might be 'included' in the design process could signal that democratic theorists need to expand their understanding of normatively legitimate forms of government. We should perhaps not fixate on direct democracy or elections but instead investigate the bases of express and tacit consent in *any* regime.

Mansbridge goes on to note that Ostrom does not presume that the outcomes of self-governing processes will necessarily be fair or equitable. 'The negotiations that lead to stable systems of preserving a commons often build on existing inequalities.... Because she is interested in systems that succeed, Ostrom urges decisions by consensus, or at least decisions that command the agreement of most of the powerful parties.' (Mansbridge 592) In his critique, Fine (585) goes further to suggest that a focus on explaining successful collective action leaves much left unsaid or unexamined. He correctly notes that 'collective action is everywhere and highly successful in promoting the dominance of the powerful and vested interests of the few over the many.'

In Ostrom's defence, I can say that in discussions she often makes reference to concerns about the dangers of local tyranny. Just because a solution has been arrived at locally is no guarantee that it is just. The Ostrom approach is often mistaken for assuming that 'small is beautiful.' Yes, local community action can be effective for many public purposes, but other circumstances require coordinated policies at the regional, national, or international levels. Public officials at all levels of aggregation have important roles to play in helping communities provide for their own needs.

A basic tenet of the Ostrom perspective on institutional analysis is that multiple arenas, or centres, of interaction and participation need to be considered simultaneously. Self-governance works best if the overall governance structure is polycentric. The word itself may be awkward, but it encapsulates a way of approaching the study of politics and policy analysis that stands in sharp contrast to standard modes of thought. Governance does not require a single centre of power, and governments should not claim an exclusive responsibility for resolving political issues. Instead, politics should be envisioned as an activity that goes on in many arenas simultaneously, at many scales of aggregation.

This concept of polycentricity has subtle implications for democratic systems of governance. To be fully polycentric a political system should facilitate creative problem-solving at all levels of aggregation. From this perspective one of the most critical tasks facing government officials should be to protect the rights of groups to self-organize.

Maintaining future access to this diverse menu of institutional options is one of the key challenges facing the world today (Ostrom 2005). Environmental activists have successfully articulated the benefits of maintaining biological diversity; a similar rationale can be proffered for the benefits of institutional diversity. In both contexts, diversity serves as a storehouse of variety and alternative options for changing circumstances. Each has intrinsic value. Biodiversity is seen as a natural aspect of healthy ecosystems, and institutional diversity is an essential ingredient in sustaining a community's capacity for self-governance. Self-governing capabilities are in turn essential for the continued enjoyment of liberty.

A society's existing set of governance institutions can be seen as a resource that is available for the use of its members whenever some dispute or shared problem arises that the primary parties are unable to resolve by themselves. Some policy problems, however, are likely to evoke affected public subsets that cannot be directly related to an existing governance unit of either type. In a polycentric system, that subset of citizens enjoys the opportunity to devise its own institutional mechanism by establishing a new unit of governance.

In an ideal system, public entrepreneurs will actively offer their services to potential customers or supporters. In doing so, they effectively reduce the transaction costs faced by newly emerging groups. However, there is no guarantee that this market in assisted mobilization will operate with perfect efficiency in all circumstances. Biases against certain groups may be built into the system. Olson (1965) famously demonstrated the intrinsic advantages enjoyed by members of small, concentrated interest groups in a pluralistic environment. In democratic systems in which

all disputes are settled by majority vote, the advantage will always lie with those who happen to have been born into the majority.

Implicit in the notion of polycentricity as a normative value is the presumption that public officials should act to improve the efficiency of this process of institutional formation and maintenance. Polycentricity can be sustained only if governing authorities take as one of their primary missions the task of minimizing the costs involved in bringing groups of all sizes and kinds together to resolve their own problems.

If the costs of collectively organizing are kept as low as is feasible for groups of all size and interest configurations, then it should be extremely difficult for any one group (A) to pass the costs of their own collective action onto some other group (B). Members of group B might voluntarily contribute to the resolution of A's problems, especially if they feel a sense of community with the needy members of group A. However, as long as B's costs of collective action are low, group B should be able effectively to resist any effort by A to force B to pay for some benefit desired by the members of group A. Although any public authority can be used for nefarious purposes (V. Ostrom 2008), under conditions of polycentricity blatant efforts to externalize one's own transaction costs should be relatively easy for potential victims to resist. In addition, any form of tyranny should, in the long run, prove vulnerable, especially via subtle methods of undermining the legitimacy of existing forms of exploitation.

Yet, as Lin Ostrom so frequently reminds us, there are no panaceas. Even polycentricity can have its down side, especially the high costs in time and effort that citizens must devote to maintaining

their own capacity for self-governance. The take-away point here is that polycentricity provides the requisite supportive framework for the possible emergence and the potential sustainability of self-governance.

Although the concept of polycentricity is far from being universally acknowledged as a critical concept in the discipline of political science, its centrality to the success of Ostrom's research programme cannot be denied. In her most recent work on social-ecological systems, Lin Ostrom draws particular attention to the 'focal' action situation within which individuals interact and jointly affect each other as they extract resources from a common pool and use these extracted resources for their own purposes. Whether or not the resulting form of interaction between resource users and their ecological environment is sustainable is affected by a large number of influences, but, ultimately, it comes down to the ability of that community to craft and implement procedures that can prove effective under real-world conditions.

Conclusion

To conclude, I return to my opening comparison between Elinor Ostrom and Herbert Simon, neither of whom received advanced degrees in Economics but went on to build careers that fully justified their selection as recipients of the Nobel Prize in Economics. Both have also been deeply involved in path-breaking trans-disciplinary research. Simon's work has had a profound influence on that of Lin Ostrom, even though, after taking inspiration from him, her own work has gone in quite a different direction.

Both Nobel laureates share an abiding interest in identifying simple processes that can result in complex institutional arrangements. Simon (1981, 1997) demonstrated that human behaviour is driven by a relatively small number of simple processes, or modules, and that very complex hierarchical organizations can be constructed from these relatively simple information processing modules. For Ostrom, the fundamental building blocks are the rules of the game, the working components that jointly define the institutional setting within which individuals interact as they struggle to make sense of their world and specifically to arrive at more satisfactory policy outcomes. The resulting framework of inter-connected action situations at operational, collective, and constitutional choice levels is necessarily complex, but it is built upon a few key identifiable component parts.

In his contribution to the *Perspectives on Politics* symposium on Ostrom's research, Frank Baumgartner recognizes the deep similarities between the research trajectories of Elinor Ostrom and Herbert Simon, and his concluding thoughts serve as a fitting ending to this chapter on Ostrom's contributions to the discipline of political science.

Both emphasized how human decision makers behave in actual settings in and around government. Both share a background in public administration at the local level, with extensive experience studying how individuals struggle with complex problems in equally complex organizational settings. Both are comfortable with ambiguity and messiness, but do not allow this to infect their own thinking, which remains clear. Both share Einstein's insight that a theory should be as simple as possible, but no simpler. Both received extensive funding from government

agencies interested in solving practical, real problems of public administration and policy implementation, as well as general support for purely theoretical advances. Their feet-on-the-ground observations were somehow able to meet the heads-in-the-clouds theorizing halfway with a transforming effect on both practical communities seeking answers to complicated problems and on intellectual communities with their own serious fault lines. If we learn nothing else, perhaps we should take pride in being a discipline where the observational and the deductive both have such pride of place. (Baumgartner in Isaac et al. 2010: 577)

Notes

¹ The official award, which Lin Ostrom shared with Oliver Williamson of the University of California Berkeley, is The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2009. For the official announcement, see http://nobelprize.org/nobel_prizes/economics/laureates/2009/. For the published version of her Nobel acceptance speech, see Ostrom (2010a).

² Ostrom also has practical experience in the business world, which sets her apart from most of her fellow laureates. Those interested in learning more about Ostrom's life experiences are encouraged to read her own riveting account of her professional journey (Ostrom 2010b).

³ In 2006 she became Founding Director of the Center for the Study of Institutional Diversity, Arizona State University, Tempe, but her academic home remains in Bloomington, Indiana.

⁴ This point about the close intertwining of the research programmes of the two Ostroms is elaborated in more detail by Algicia and Boettke 2009, 2010, Thoonen 2010, and by James Walker and I in our contribution to a special issue of *Public Choice* (2010) celebrating Ostrom's Nobel Prize.

⁵ For an overview of the history of the Workshop, see Jagger et al. 2009. For updates, see the website maintained by the Ostrom Workshop, at <http://www.indiana.edu/~workshop/>

⁶ In the interest of full disclosure, I should state my personal perspective. I have never met anyone quite as impressive as Lin Ostrom, with the possible exception of Vincent. Their ability to engage colleagues intensely and yet in a supportive fashion is truly remarkable. I have seen the care with which they mentor students and visiting scholars, and the respectful decency of their interactions with staff and persons of all backgrounds. I consider it a true privilege to have known both of them so long, and to have been lucky enough to co-author papers and co-teach seminars with them both. I currently serve as Co-Director of the Ostrom Workshop, where my primary goal is to insure that the Workshop will continue to serve as an institutionalised legacy of their life-long dedication to the art and science of institutional analysis.

⁷ The IAD framework has undergone several changes over the years, as can be seen by comparing Kiser and Ostrom (1982), Ostrom (1990), Ostrom, Gardner, and Walker (1994), Ostrom (2005) Poteete, Janssen, and Ostrom (2010), and McGinnis (2011a). One potentially confusing detail is that the D initially stood for Design rather than Development. However, 'design' too easily conveyed the suggestion that wise institutional analysts can stand apart from specific settings and dictate to communities how they might design 'better' institutions. Development conveys a sense of dynamism to the process of institutional change, emphasizing that even as we are analyzing existing institutional arrangements, at least some individuals are actively involved in efforts to change the conditions under which they interact. Institutions develop over time, according to a set of dynamic processes that we can only imperfectly understand, but which do not remain totally impervious to our efforts at analysis.

⁸ This symposium is listed as Isaac et al. 2010 in the references. Since contributor comments are not given separate titles, the author's name and page numbers are used to cite quotations.

⁹ Keohane's challenge has not gone unaddressed. Efforts to use the IAD framework to examine global issues include Gibson et al. 2005, McGinnis and Ostrom 2008, Miller and Dolšak 2007, Ostrom 2009b, Pradash and Potoski 2007.

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