

Elinor Ostrom and
the Bloomington School
of Political Economy

*A Compendium of Key Statements,
Collaborations, and Reactions*



VOLUME 1: POLYCENTRICITY IN PUBLIC
ADMINISTRATION AND POLITICAL SCIENCE

Edited by Daniel H. Cole and Michael D. McGinnis



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Elinor Ostrom and
the Bloomington School
of Political Economy

Volume 2, Resource Governance



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*Volume 3, A Framework for
Policy Analysis*



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*Volume 4, Policy Applications
and Extensions*



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Introduction to the Four-Volume Compendium

Elinor (Lin) Ostrom was awarded the 2009 Nobel Memorial Prize in Economic Sciences for her research on “economic governance, especially the commons.” In her Nobel lecture, she placed this research within the broader subject of the “polycentric governance of complex economic systems” and generously extended credit to her many colleagues who had helped her investigate the ways in which human groups craft, implement, and adapt complex institutional arrangements in their practical efforts to address common problems and realize shared aspirations.

When Mitchell (1988) named this community of scholars the “Bloomington School” of political economy, he was referring to the physical location, on the Bloomington campus of Indiana University, of the Workshop in Political Theory and Policy Analysis that Vincent and Elinor Ostrom established in 1973 and that continues to this day, having been renamed in their honor shortly before their deaths in 2012. Four decades of students, faculty, visiting scholars, and other colleagues have participated in the many activities of this Ostrom Workshop.

Lin (as she insisted everyone should call her) spent her entire academic career at Indiana University, and we were fortunate to be able to work with her for many of those years. We offer this four-volume compendium as a guide for those interested in learning more about Lin Ostrom’s research, specifically how it fits into the broader context of the Bloomington School of political economy and related approaches to the analysis of institutions, broadly construed. Each volume collects published and unpublished papers on a broad theme needed to more fully contextualize the research for which she was awarded the Nobel, and to more fully convey the complexity of this still-evolving school of thought.

Basic Principles of the Bloomington School

The basic concern of this community of scholars has been to understand how fallible human beings can nonetheless achieve and sustain self-governance in the face of a complex and ever-changing social and physical world. In brief, we do so by working together and by remaining attuned to the consequences of past actions, and especially by learning from our own and from others' mistakes. By saying that humans are fallible, we acknowledge limitations on our own cognitive abilities, and admit that anyone can undertake actions that seem reasonable at the time but that can lead to disastrous consequences in the long term. Such tragedies become less likely when we engage others in respectful contestation, by truly listening to their concerns and remaining open to changing our own views in response to the arguments and evidence they contribute. Respectful contestation is critical if a society is to be self-governing, that is, if community members are to actively participate in the making and enforcing of the rules that shape their own collective behavior (V. Ostrom 1991, [1971] 2008a).

The term "institution" takes on a very broad meaning within the Bloomington School. By institutions are meant all the formal and informal means that groups of fallible individuals build and/or use to facilitate their joint activities (McGinnis 2011). Formal means include written laws, rules, and regulations, as well as organizations in which agents are assigned the responsibility to act on behalf of some larger group. Informal mechanisms include mental models, modes of understanding, values, norms, and shared strategies (E. Ostrom 2005). In this way, the Bloomington School has been deeply shaped by the influence of Alexis de Tocqueville, whose *Democracy in America* ([1835] 1969) remains the classic statement that culture and social practices provide the ultimate foundation of all political processes. In short, self-governance is feasible only if a sufficient number of the members of that society understand and enact the "habits of heart and mind" to which so much of that work is dedicated (V. Ostrom 1997). Bloomington School researchers are trained to carefully consider all of these potential factors whenever they are conducting a full-fledged institutional analysis.

This openness to the political, economic, social, and cultural factors of a given situation is demonstrated clearly in the problem-centered research that predominates among adherents of the Bloomington School. Powerful analytical tools are used to better understand practical policy dilemmas that diverse groups wrestle with in their own lives. As a consequence, scholars from this tradition are particularly open to learning from

the people most directly involved, rather than presuming that we, as policy experts, have some special hold over useful knowledge. In all of her many empirical projects, Lin Ostrom was particularly effective at balancing scientific rigor and policy relevance. This balance is a distinctive characteristic of the Bloomington School approach to the study of political economy, policy, and institutions.

Another dominant characteristic of the Bloomington School, and one that is particularly associated with the work of Lin Ostrom, is the creative use of multiple methods of analysis, even in a single research project. Among the analytical tools that Lin Ostrom and her many collaborators used on a regular basis are: formal models, statistics, case studies, field research, meta-analysis, lab experiments, simulations, remote sensing. Of course, no one person could be an expert in all of these methods, which is why Lin participated in so many different multidisciplinary research teams. Her collaborations routinely included faculty, students, visiting scholars, and practitioners, since Lin was always willing to work with anyone who could bring a fresh perspective to bear on whatever policy setting was under investigation. She also encouraged these research teams to revisit the sites of previous research projects in order to track the way a group's choices over time were related to changes in the nature of the problem they confronted (Poteete, Janssen, and Ostrom 2010).

The Ostroms encouraged all institutional analysts to fully embrace both the reality of institutional diversity and its normative desirability. As a species of organisms whose very survival has always depended on our ability to work together in groups, human societies have constructed a bountiful repertoire of institutional responses to critical challenges (E. Ostrom 1998). Lin's most influential research finding is the list of eight design principles she identified in *Governing the Commons* (1990) as being necessary if local communities are to manage resources critical to their survival over long periods of time. But there is more to this story of institutional diversity and self-governance, indeed, more than enough to fill the four volumes of this compendium.

Our Goals for the Compendium as a Whole

Lin's own writings, for obvious reasons, dominate these volumes, but so too does the work of Vincent Ostrom, her spouse and lifetime collaborator. Vincent was already an accomplished scholar in political science, public administration, and policy analysis when they first met and decided to

marry, early in Lin's graduate program. For obvious reasons, Vincent did not serve on her research committee, but together they pioneered the mode of research that defined the heart and soul of the Bloomington School.

Theirs was a remarkable partnership, with their respective skills and interests nicely complementing and completing each other. We consider it unfortunate that the Nobel committee did not recognize Vincent's significant contribution to the body of work for which they awarded Lin this high distinction, and these volumes are, to a great extent, our effort to correct this oversight.

In retrospect, it is understandable why a committee of economic scholars would have overlooked Vincent's contribution, because, unlike Lin, Vincent rarely followed the conventions of modern social science. His interests ranged widely, from detailed analyses of the implications of water law in the American West to philosophical musings on the foundational influence of language on human civilization. Our selections cannot do justice to the full range of his contributions, but that task has already been accomplished by our Workshop colleague Barbara Allen, who edited two volumes of his unpublished papers (V. Ostrom 2011, 2012) and prepared updated versions of his most influential books (V. Ostrom [1971] 2008a, [1973] 2008b).

Our compendium also includes examples of some of the most important collaborations of the Ostroms. Lin was especially prolific in her range of coauthors, more than two hundred in total, as befits her practice of drawing upon the unique skills of researchers trained in other disciplines and methods of research. Especially later in her career, she showed a remarkable ability to balance her contributions to multiple research programs operating simultaneously. Lin was a consummate social scientist, always sensitive to the need to define her terms carefully and to subject her expectations to empirical testing, which required careful attention to how these terms and all relevant factors could be measured. Throughout her career, she remained remarkably open to learning about new methods of analysis, an attitude that is most clearly demonstrated in her (appropriately) coauthored book entitled *Working Together* (Poteete, Janssen, and Ostrom 2010). Clearly, we cannot include examples from all of her collaborations, and we strongly encourage readers to pursue any of the other strands of research that the authors mention in the papers that we were able to include.

We have chosen to reach beyond the most accessible and already influential examples of their writings, to identify unpublished papers, lectures, or articles published in less prestigious outlets, in order to show how the Ostroms communicated their core ideas to different audiences. Lin, in par-

ticular, was a great communicator, always putting even the most complex analytical topics in familiar, human-sized contexts.

Our primary intention in preparing this compendium has been to provide readers initially exposed to the work of Lin Ostrom with a guide to help them begin to explore the broader contours of the Bloomington School of political economy. Each volume includes an introductory essay in which we draw out connections among the readings included in that volume. Thus, our coverage of these themes will be brief here. After stating the themes explored in each volume, the remainder of this introduction highlights what we consider to be the foundational principles upon which the core contributions of the Bloomington School to the study of political economy and policy analysis have been built.

A Brief Overview of the Four Volumes

Governing the Commons focuses on one particular mode of governance, namely, community-based governance of natural resources. Volume 1 sets this extended example within the broader context of the concept of polycentric governance, a system in which multiple forms of collective action are being undertaken simultaneously, each focused on a specific realm of authority, but with a considerable degree of overlap among the jurisdiction of these concurrently operating policy realms. Polycentricity is the concept that forms the core of the Bloomington School, and this volume includes the first major statement of this concept (a 1961 *American Political Science Review* article written by Vincent and two coauthors) as well as Elinor Ostrom's defining statement of the "polycentric governance of complex economic systems" in her Nobel address. Also included are overviews of their careers and elaborations of the implications of this concept for the fields of public administration, political economy, and political science.

"Polycentricity" is the word that Vincent Ostrom chose to encapsulate his vision of the complex interweaving among political, economic, legal, and social forms of order in human societies. In its initial incarnation, in Vincent's early collaboration with Charles Tiebout and Robert Warren (1961), this term was used in reference to the complexities of governance in metropolitan areas in the United States, where the typical situation was one in which multiple authorities with overlapping areas of responsibility interacted with each other in the absence of any single overarching final authority. At that time, and to a great extent even today, critics of urban politics called for consolidation of authority in hopes of clarifying lines of

accountability and achieving better levels of economic efficiency. Ostrom, Tiebout, and Warren instead articulated the reasons why a polycentric system of multiple centers of overlapping jurisdictions might actually make more sense in the metropolitan context. Later research, overseen primarily by Lin, demonstrated the reasonableness of this presumption in the specific context of police services (McGinnis 1999b).

Volume 1 explores the broader meaning that the Ostroms came to assign to this concept of polycentricity. In effect, they came to use this term as a label for the reasons why they were never able to fit comfortably within the confines of any single discipline. To understand governance in a polycentric system, it is not enough to understand only the legal or political institutions upon which legal scholars and political scientists concentrated. Instead, one also needed to investigate the way in which the economy was organized, and this required institutional analysts to look beyond the markets and firms upon which the discipline of economics was focused. Social structures and informal social practices also need to be considered, not only in and of themselves but especially for the ways in which patterns of human cognition and their interactions with others shape, in fundamental ways, processes of political, legal, and economic transactions.

A polycentric order nicely complements the strengths of markets (which can efficiently distribute information via voluntary exchange) and majority vote procedures (to make contentious social decisions, including regulating markets and providing oversight), because markets and votes are supplemented with social institutions and cultural practices that prove effective at instilling and reinforcing the skills necessary for individuals to fully participate in their own self-governance. In effect, polycentricity encompasses markets and democracy as components within a broader institutional context, and provides the social support needed for these processes to be both effective and sustainable.

The first volume illustrates how the Ostroms differentiated their approach to research from the confines of the disciplines of public administration, economics, public choice, and political science. They drew extensively from many fields of study, and their unique vision of polycentricity as the ultimate foundation of self-governing societies needs to be understood in contraposition to disciplinary boundaries.

Volume 2 focuses on the many institutional arrangements used by human societies for the purpose of managing natural resources critical to their survival. *Governing the Commons* details the conditions that make it possible for resource-dependent communities to effectively manage their shared resources through the institution of common property. But

there are other forms of property rights that can be equally effective, and this volume provides needed context on the relevant literatures on natural resources, property rights, and why institutional diversity is needed to realize this kind of success on a broader scale.

Governing the Commons is devoted to understanding one particular type of institutional arrangement (common property) when applied to a particular class of goods and services (common-pool resources). By focusing her attention on this one combination of a specific type of good and property institution, Lin was able to powerfully demonstrate the reality of an important alternative to the better-understood combinations of private property found in markets and public property as manifested in governments. Many variants of markets and states have long been known to scholars, especially those trained in the disciplines of economics and political science, respectively, but the absence of a discipline focused on common-property institutions had made it difficult for observers to realize just how important those institutions have been and continue to be.

But this analysis of common property as a means of managing common-pool resources was located within a broader understanding of the many available variants of property and resource types (Cole and Ostrom 2012). The second volume in this compendium explores this broader context of institutional diversity. One important theme is the ways in which understanding this broader context has enabled later researchers to expand upon the eight “design principles” that Lin highlighted as the central finding in *Governing the Commons*. These revisions (by Lin as well as other scholars) fine-tune the conditions she identified as being necessary for sustainability of those resources. These elaborations include revisions to her original list as well as generalization to a broader range of group behavior.

Volume 3 shows that researchers in the Bloomington School have much to say about policies that have little to do with natural resources per se. Although in the title of her Nobel Lecture Elinor Ostrom specifically points to “complex economic systems,” her analysis clearly demonstrates that the systems she was concerned with were by no means limited to just economies. Instead, she fully realized that polycentric systems interweave economic, political, legal, and social threads into a coherent whole. Terms like “policy systems” or “institutional complexes” might have been more appropriate, except for the fact that this particular prize was given for research in the economic sciences!

In *Governing the Commons*, Elinor Ostrom makes only a passing reference to the Institutional Analysis and Development (IAD) framework, but this research tool was critical in both the development of her research

program and in her interpretation of results (McGinnis 2011). Volume 3 includes papers that illustrate how this framework (and related analytical tools) has been applied to a wide range of policy topics. Of particular interest are papers in which Elinor Ostrom explains how this framework helped organize her own research, and thus how it might be more effectively used by other analysts. Topics include the study of police services in US cities, international development projects, and recent extensions to questions of intellectual property, health care, resource conflict, and the power of entrenched interests.

Volume 4 demonstrates that the reach of the Bloomington School extends to the study of social-ecological systems much larger than the cases of common-pool resources in *Governing the Commons*. Included are papers that explore implications for more effective policy responses to an especially critical problem confronting our shared future, namely, global processes of climate change. Lin made significant contributions to climate policy, specifically by encouraging more creative thinking about a wider range of polycentric policy responses. Her papers in this volume emphasize that climate change is a multifaceted problem that generates complex patterns of negative (as well as some potentially positive) externalities at all levels of aggregation, from the most local to the global level. As a consequence, policy responses need to come from all jurisdictional levels, and by implication by all of us individually working through the many types of organizations and communities to which we belong.

Ostrom's approach to climate change exemplifies her general perspective on our need to better understand how we, as fallible but creative individuals, working together in productive and destructive ways, shape our physical environment, and how changes in the environment affect how we act as individuals and the consequences of our actions in corporate entities. Here, as always, her focus was on improving our collective understanding of the innovative responses that communities have made, and continue to make, to practical problems and opportunities. Lin remained optimistic that we can solve difficult problems of collective action, but also realistic about the limits of any one type of institutional response.

Lin's interactions with a wide range of social, biological, and physical scientists led her to formulate what she called the SES framework, for application to social-ecological systems. This is a very ambitious endeavor, but then they rarely award Nobel prizes to anyone who thinks small or who spends their professional lives worrying about trivial problems!

Volume 4 reviews the origins and subsequent modifications to the SES framework, which remains very much a work in progress. This

framework is a natural line of elaboration upon themes that have always been central to the Bloomington School. If one combines an overriding concern with the role of institutions in human affairs with a long-standing focus on natural resources that groups share in common, it is quite natural to see this combination of human institutions and natural resources as constituting a system comprised of social-ecological or human-environmental interactions.

Relationship to Other Publications

We realize that even these four volumes are insufficient to cover all of the potential lines of development that spread from the core defined by *Governing the Commons*. We invite others to join us in our effort to more fully appreciate the contributions of the Ostroms to scholarship and to our collective self-understanding of ourselves as fallible yet creative citizens of self-governing societies.

We would like to highlight a few promising lines of future investigation that other researchers may consider pursuing. First, a dual intellectual biography of Vincent and Elinor Ostrom could critically evaluate the major influences on their work at all stages of their careers. Second, an institutional history of the Ostrom Workshop and the Bloomington School could locate them within the context of other major strands of institutionalisms from the disciplines of political science, economics, and sociology. Third, anyone contemplating establishing a research center to support new programs in multidisciplinary resource could benefit from more institutional histories of the interdisciplinary movements or institutes in which the Ostroms played leadership roles, notably the Public Choice Society, the International Association for the Study of the Commons (IASC), the International Forestry Resources and Institutions (IFRI) research program currently located at the University of Michigan, or the Center for the Study of Institutional Diversity that Lin helped establish at Arizona State University.

There also remain plenty of opportunities to apply the analytical tools of the Bloomington School to institutions and processes that have so far been relatively overlooked by scholars operating from within that tradition, such as nonprofit organizations, philanthropy, economic cooperatives, and religious movements. Meanwhile, as Lin often stressed, the basic methods used in this school require further development and increased rigor, perhaps through more systematic implementation of the techniques of social network analysis or systems design.

Other lines of development have already been pursued in detail elsewhere. Elinor Ostrom's *Understanding Institutional Diversity* (2005) deserves special attention, for its careful development of the technical foundations of her method of analysis for the study of rules and institutions more generally. Among her coauthored volumes, we highly recommend three. *Working Together*, coauthored with Amy Poteete and Marco Janssen (2010), uses the record of some of the many research teams in which Elinor Ostrom participated to investigate the strengths (and challenges) of multidisciplinary research, and in so doing states a powerful case in favor of this increasingly common mode of research. *Rules, Games, and Common-Pool Resources*, coauthored with Roy Gardner and James Walker (1994), with contributions from several of their students, is a unique combination of how formal mathematical models, laboratory experiments, and field research can be connected and combined in ways that deepen our understanding of the challenges of managing shared resources. Finally, *The Samaritan's Dilemma* (Gibson et al. 2005) provides an extended exposition of a Bloomington-style analysis of the potential strengths and weaknesses of international development assistance.

In a series of books, Vincent Ostrom developed his unique perspective on American governance (1991, [1971] 2008a), public administration ([1973] 2008b), and the foundations of social order (1997). The wide range of Vincent Ostrom's contributions to the Bloomington School have been covered in two volumes of previously unpublished papers (2011, 2012), and in papers written in his honor (Sproule-Jones, Allen, and Sabetti 2008; Sabetti, Allen, and Sproule-Jones 2009). Although now a bit dated, a 1988 textbook on *Local Government in the United States*, cowritten by Robert Bish and Elinor and Vincent Ostrom, is a clear statement of what polycentricity means in the American context.

In our selection process, we endeavored to not duplicate papers already included in other edited volumes, but some overlap was inevitable. We have included a few of Vincent's previously unpublished papers that Barbara Allen first published in her two-volume set, in part as a form of advertisement for her outstanding collection, which reminded us how much of the Bloomington School perspective was foreshadowed during the earliest stages of Vincent's long career. Our list shares only a few of the chapters from a shorter collection (Sabetti and Aligica 2014) of key statements by Vincent and/or Elinor Ostrom, focused on the epistemological foundations of the methods of research they used throughout their career. Aligica and Boettke (2009, 2011) and Aligica (2014) provide outstanding introductions to the social philosophy of the Bloomington School as a whole.

We were especially concerned about not duplicating many papers included in three earlier volumes of selections from the work of Bloomington School scholars, especially since those volumes were edited by one of us (McGinnis). The most commonly cited of these volumes (McGinnis 1999b) focused on the early Workshop research projects on police studies and metropolitan governance. The least-cited volume (McGinnis 2000) included examples of the diverse kinds of formal models that Bloomington School scholars have used to explore distinct research questions. McGinnis (1999a) was, in the editor's opinion, the least successful of the three, since it was intended to help contextualize *Governing the Commons* within a broader range of policy analyses. Looking back on it now, it is clear that more than a single volume was needed to accomplish that task.

Polycentricity and the Bloomington School

The Ostroms did not start out to build a new "school" of thought, but that is what, in the end, they did. This Bloomington School of political economy, or institutional analysis, includes scholars and practitioners shaped by their interactions with the Ostroms, either through direct personal contact, or through their writings, or through their contact with others more deeply affected by the Ostroms. We fall into this last category, as each of us was deeply influenced by their scholarship, their friendship, and by the examples they set for the proper life of a scholar and policy analyst.

For most of their careers, the Ostroms experienced considerable frustration at getting their point across. They had developed a clear vision of the way societies of fallible but creative individuals govern themselves, by coming together to form diverse kinds of informal groups, associations, and formal organizations. They do so because they share some interests in common, and need to work together in order to achieve those goals. These collective entities interact with each other in multiple ways, typically through the actions of individuals chosen to be the agents of that group or organization. These cross-organizational interactions may be cooperative or competitive in nature, and oftentimes both at the same time. Over time, a complex array of interconnected centers of authority is constructed and continues to evolve as circumstances change.

In collaboration with two colleagues, Vincent Ostrom borrowed the term "polycentric order" from Polyani (1951), but in the process dramatically changed the meaning of that term (Ostrom, Tiebout, and Warren 1961). Polyani envisioned a form of social order that emerged automati-

cally from the uncoordinated actions of individuals, but for the Ostroms and the rest of the Bloomington School, this order requires the continual active engagement of public entrepreneurs throughout that society (McGinnis 2005; Aligica 2014). It is this concept of polycentricity that forms the true heart of the Bloomington School, and its overriding purpose has been to better understand the nature of a polycentric political economy.

This vision does not fit into any of the standard categories of the academic structure in place then (or today). Each social science discipline (economics, political science, public administration, sociology, anthropology) is organized around a core set of themes, and precious few social scientists collaborate on research projects with experts in any of the natural, physical, or biological sciences. Since a polycentric order necessarily includes collective entities organized around specific problems that typically crossed not only conventional political boundaries but also the boundaries of any one scientific discipline, none of these disciplines could accept polycentricity as its core organizing concept.

Both Elinor and Vincent Ostrom received advanced degrees in political science, generally understood to consist primarily of the study of governments. But each realized, from early in their careers, that politics involves much more than just the behavior of public officials, and that governance is best understood as a set of *processes* through which groups of all kinds set and implement the rules that shape the ways they interact with each other. Governments play important roles in these governance processes, but no policy analysis could be complete while remaining within the confines of public organizations. In other words, government does not equal governance.

As they pursued their interests in learning how groups of people solve the practical problems they face in their everyday lives, the Ostroms developed the habit of seeking out and listening to anyone who had something useful to teach them, regardless of disciplinary lines. In so doing, they helped build new interdisciplinary communities. But even in this, they were challenged to mobilize enough colleagues to maintain a focus on the core questions of social order.

Throughout their long careers, the Ostroms never lost faith in the ability of individuals and groups to effectively manage their own affairs, given the right conditions. These conditions required that all participants share access to at least some of the same information and a willingness to freely discuss their concerns, and to listen respectfully to the concerns of their fellow participants. To some observers, Elinor Ostrom's Nobel Prize, occurring after the 2008 financial crisis widely attributed to runaway greed

on the part of financial institutions deemed “too big to fail,” had a decidedly positive spin. Her research had demonstrated that local communities around the world could solve the problem of the “tragedy of the commons” deemed by many experts to be insolvable, except by the intervention of government regulators or private property owners. This award sent a hopeful signal that solutions are possible, no matter how bleak things may appear.

The Ostroms genuinely respected ordinary people for the creativity they demonstrate in their everyday lives. When asked to comment on specific policy issues, they never responded with pat answers based on preconceived notions, but instead sought to elicit more details about the problem at hand. Although many policy analysts consider only certain kinds of institutional arrangements as legitimate solutions to policy problems, the Ostroms saw a world of ever-increasing institutional diversity. They fully embraced the complexity of the real world, and refused to fall victim to the temptations of ideological certainty.

Yet they also persevered in their search for the simplicity that lay at the heart of all this complexity. If relatively simple processes were not at work, then how could humans with necessarily limited cognitive abilities avoid being overwhelmed to the point of indecision and impotence? They insisted on digging more deeply to identify these deep structures of simplicity, which could then be used to build more effective coping strategies.

For Lin, this search for simplicity manifested itself in a lifelong obsession with frameworks as a precursor to the causal explanations, formal models, and statistical tests that constituted the gold standard of social science. She insisted that scholars from diverse disciplines first needed to build a common vocabulary of terms with shared meanings, before they could engage in productive cross-disciplinary research. Otherwise, they would continue to talk past each other, because if scientists trained in different disciplines assigned different meanings to the same term, then how could they arrive at a common understanding of the problem at hand? For a scholar of her stature, it was remarkable how much time and effort she devoted to building and fine-tuning general analytical frameworks.

For Vincent, the simplicity he sought was inspired by Hobbes’s presumption that since all humans share a “similitude of thoughts and passions,” we all have the potential of truly understanding and appreciating each other’s points of view. However, Vincent vehemently dissented from Hobbes’s pessimistic conclusion that any such common viewpoint would be powerless to guide human behavior, which instead was dominated by fear. For Hobbes, the only order was one in which someone, some levia-

than, was ultimately in charge—Vincent Ostrom embraced the more polycentric notion of overlapping centers of authority that was built into the very fabric of American political life by the designers of the US Constitution. If ambition could be countered by the ambition of others, in the context of shared foundational norms and social expectations, then a complex and resilient social order could be constructed and maintained, but only if each generation of citizens in their turn learned the “art and science of association” that Tocqueville so famously identified as the foundation of a new science for a new age.

The core concept of polycentricity is, at heart, a simple concept, but it is manifested in often bewildering complexity. Better to see polycentricity as a never-ending process of learning and adaptation to changing conditions, driven by respectful contestation among individuals and groups pursuing their shared and conflicting interests in endlessly shifting configurations of competition and collaboration. The simplicity lies in the ability of fallible but creative individuals to learn from each other and to work together for their mutual benefit. It is not as simple as those who see market exchange as the core principle of social order, but too much simplicity can also create problems. There is much more to this world than markets or states.

A useful comparison can be drawn to the profoundly influential work of Herbert Simon, who in 1978 became the first PhD in political science to win the Nobel Prize in Economic Sciences. (Lin was the second.) For Simon, humans are best understood as boundedly rational information processors, who, if placed in the context of well-designed organizations that provide them with the information needed for them to make good decisions, can manage to effectively cope with situations of great complexity, even though the individuals are themselves capable of only relatively simple decisional tasks (Simon 1996). The Ostroms were deeply influenced by Simon’s (1955) concept of bounded rationality, but they also insisted on the intrinsic creativity of human minds, and their remarkable ability to work together in innovative ways to accomplish seemingly impossible tasks. Both perspectives use simple premises to construct explanations of how human societies can cope with complexity, but the Ostroms’ approach includes a dose of open-ended creativity missing in Simon’s perspective.

For the Ostroms, policy analysts can learn a great deal from observing how human communities solve practical problems. As a consequence, they encouraged their students and colleagues to select research questions that focused on problem solving and not on making distinctions between arcane points of purely academic significance. Throughout their careers, the Ostroms, and Lin in particular, sought to balance scientific rigor and

policy relevance. Their focus on problem-focused research led them to be open to learning new methods of analysis, and to work with scholars or practitioners of any stripe, to seek out anyone who might have something productive to add to the team.

Among the problems studied in depth by scholars of the Bloomington School during its first four decades of operation are groundwater depletion, the organization of police forces in metropolitan areas in the United States, international development assistance, forestry management, democratization, intellectual property rights, health care reform, the sustainability of fisheries and irrigation systems, and global climate change. At first glance, this list of topics examined by scholars affiliated with the Ostrom Workshop seems to include topics with absolutely no logical connection to others on the list. Yet this impression of topical incoherence is seriously misleading. For these volumes, we have selected readings that demonstrate the fundamental continuity of perspective that unites all these seemingly unrelated topics. In many instances, the initial chapter of a section presages by several years or even decades the mode of analysis applied or the conclusions substantiated in research projects described in later chapters in that same section. It's not that they weren't learning anything new—they were doing so all the time—but the same core values remained to guide their selection of topics and the interpretation of possibilities.

It is revealing that Ostrom, Tiebout, and Warren defined the Bloomington School's core concept of polycentricity in a 1961 journal article, more than ten years before the initial establishment of the Ostrom Workshop in Bloomington. One of Vincent Ostrom's earliest publications (1953), although entirely descriptive on the surface, outlined the basic structure of the mode of analysis that was only some twenty years later captured in the IAD framework (McGinnis 1999a, 7–8). We will have occasion to note similar instances of conceptual continuity throughout the introductions to each volume of this compendium.

This high level of conceptual continuity might lead skeptics to express concern that this approach may be lacking in scientific rigor, but a more accurate interpretation would be to admit that these same fundamental principles have been shown to bear at least some relevance to a surprisingly wide range of policy problems. Or perhaps the IAD and SES frameworks, which were crafted to facilitate mutual understanding among scholars from diverse disciplines, encompass too much while not offering scholars sufficiently precise instructions for its implementation. Indeed, too often we have seen newcomers to this approach expect too much. Anyone who sees the IAD framework as a method as clearly defined and

demarcated as the interpretation of statistical regression is sure to be disappointed. These frameworks offer only a starting point for analysis, and each analyst has to make many decisions along the way in any effort to put this framework to use.

The Ostroms were also quite reluctant to use their research to support any particular position in partisan debates. “No panaceas” was Lin’s frequent response to anyone seeking advice on a specific policy problem. Although useful as a summary statement of their underlying attitude, this orientation grossly limited their potential impact on the policy community, which consists of people and organizations endlessly in search of answers.

Their own politics were impossible to pigeonhole in any standard ideological position, except for a long-standing commitment to academic freedom (see V. Ostrom 2011). Unfortunately, their reluctance to use their research findings for partisan political purposes has not prevented others from doing so on their own. Their ambiguity on most political controversies of the day has made it easy for ideologues of various stripes to claim Lin or Vincent as one of their own. Such claims are always misleading. For example, some commentators have sought to use *Governing the Commons* as the basis for advocating a general transformation of society into a communal utopia in which all resources are shared equally. But there is nothing utopian about polycentricity, which is about as messy a process as you can imagine.

The single most important contribution made by the Ostroms was their demonstration of the remarkable ability of local communities to creatively craft solutions to practical problems. They never claimed that this capacity was limitless, and yet the most common line of attack was to say that they were too optimistic about the ability of ordinary citizens to govern themselves in the technically complex societies in which we all now live. This may be a fair criticism, and yet some degree of optimism is required to accomplish difficult tasks. Perhaps they were merely overreacting against dominant themes of powerlessness in the scientific and policy communities—after all, unremitting pessimism seems a lousy way to run either a society or a scientific discipline.

Prominent among the factors the Ostroms supposedly ignored is the importance of power. Political scientists routinely define their field with Lasswell’s question of “who gets what, when, and how?” This reflects an understanding of power that is very much at odds from those working within the Bloomington School. Lasswell’s phrase presumes that politics is all about competition for domination over others and the resources they control, or more subtly, over the forces that influence what other actors

think they want to achieve. But for the Ostroms, power *with* is more important than power *over*. They consider institutional arrangements not just as setting constraints on their ability to accomplish their goals, but also as means critical to the ends of resolving common problems or realizing shared aspirations. The “power with” view sees politics as primarily an exercise in collective problem solving, and does not allow politics to be reduced to brute struggles for domination.

Even so, it is fair to say that the topic of power has not been sufficiently explored within the Bloomington School. It seems to us that a strong case could be made that the IAD framework gives researchers tools needed to understand a wide array of forms of power, ranging from the direct application of coercion in operational-choice settings, to the manipulation of collective-choice processes, to more subtle forms of indoctrination through language, culture, and other aspects of constitutional choice. However, to follow this line of argument would take us far from Lin’s actual body of work.

Polycentricity also has a lot to say about power, although its implications on this subject remain incompletely articulated. Vincent wrote that for a political order to be polycentric, so too must the corresponding economic, legal, social, and scientific orders be polycentric. We would add that these do not constitute separate cases of polycentric orders, but should instead be seen as interrelated components of an aggregative order that could be seen as fully polycentric. Any one of these orders could be partially successful on its own, but they really take off when they mutually support and reinforce each other. For example, competitive markets in the absence of a stable currency are much less efficient in terms of transaction costs than ones in which buyers and sellers can rely on a secure medium of exchange. Clearly, then, a market’s level of efficiency is not totally independent of the level of public goods that the relevant political authorities are able to deliver.

Polycentric orders are radically dynamic, as new forms of collective action continue to emerge to address new problems as old ones are resolved, or vice versa. For any one actor to realize a fully dominating position over all others, that actor would need to monopolize the levers of power in all aspects of society, and find some way to prevent other forms of collective action from emerging to undermine the actor seeking a dominant position of ultimate power. Just having complete control over the political process would not be enough, you would also have to have total control over the economy and all social relations, including religion and familial relationships.

This totalitarian ideal has been approached in some cases, but never fully realized, because there is always some other competing authority elsewhere in the system, or outside the system, presuming that there remain external states or other actors with the capacity to use military force on their own behalf. Even if some decision centers gather unto themselves complete control over some aspect of the entire system, their efforts to further concentrate power in their own hands, will, in the end, be undermined by opposition from the remaining diversity of actors. Economic monopolies can be broken up by regulators, religious monopolies broken up by reformations and religious wars, and we can only hope that partisan gridlock may be overcome by the emergence of new political alignments.

This points to another shortcoming of the Bloomington School as it currently stands. Public entrepreneurship provides the dynamic driving force within an ever-evolving polycentric system of order, but entrepreneurship, per se, has not been a topic of a great deal of analysis from within this tradition. There are some exceptions, but the level of analytical effort thus far devoted to this topic is grossly disproportional to the pivotal role it plays in the dynamic logic of polycentricity. Much more work is required if we are to understand the institutional basis of effective leadership for collective action.

Vincent and Elinor Ostrom frequently ended lectures or written works with a call for a renewed attention to the way in which individual citizens in a democratic society learn about the political, economic, and social settings in which they live and work. Too often, what passes for civic education in the US educational system introduces students to the logic of the three branches of the national government and the many ways these officials control so many aspects of our collective lives. Too often, our political discourse is dominated by ideological diatribes against the efforts of opposing forces to influence these officials to make the wrong kind of decisions. The Ostroms, and the Bloomington School as a whole, hold out an alternative vision of self-governance by fallible but creative individuals actively engaged in respectful contestation with others on multiple topics of shared concern.

Some Final Thoughts

We conclude this introductory essay by revisiting two phrases: “economic governance, especially the commons,” which the Nobel committee chose to summarize the prize-worthy contributions of Ostrom, and “polycentric

governance of complex economic systems,” which she used as the title of her Nobel lecture to suggest the broader context within which she conducted the specific research projects the Nobel committee chose to honor. This four-volume compendium is an extended demonstration of our contention that the Bloomington School is much more than that, maybe more than either of the Ostroms themselves ever realized.

The Bloomington School of political economy provides researchers (and ordinary citizens) with conceptual frameworks and analytical tools needed to understand the full scope of “polycentric governance.” These tools have been most effectively developed and applied to “the commons,” especially commons in specific kinds of natural resources, but the commons should be understood as merely one particular combination of goods and property institutions, and these same tools are equally relevant for application to any realm of policy or other public concern. The implications of using these tools will vary widely in different contexts, but that is to be expected, given the undeniable reality of the institutional diversity that surrounds us, in all aspects of life. Polycentricity, as understood in the Bloomington School, manifests the endless striving by fallible but capable individuals as they work together in local groups, formal organizations, and as a global community to innovate, implement, and improve the institutional arrangements they can use to alleviate their common problems and better realize their shared aspirations.

These activities will be most productive when all participants are guided by a spirit of respectful contestation that transcends boundaries set by cultural divisions or professional expertise. We return one final time to *Governing the Commons*, which Lin dedicated to Vincent, for a lifetime of “love and contestation.” For both of them, respectful contestation is the foundation of self-governance, and it is a skill that needs to be instilled through civic education and reinforced by everyday political discourse. Needless to say, that is hardly the case today.

Elinor Ostrom was especially good at explaining the implications of the analytical tools and concepts of the Bloomington School to diverse audiences, and so it is quite natural that so many first became acquainted with this school through her work. Now that she and Vincent are no longer with us, all of us fortunate enough to have been associated with this “Bloomington School” share in the responsibility of making the most we can of their legacy. In the end, the example they set cannot be the property of any single “school” of thought, but is instead an inspiring realization of our common heritage and of our shared future, a future that each of us is helping to construct, every day of our lives.

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Elinor Ostrom and
the Bloomington School
of Political Economy

*A Compendium of Key Statements,
Collaborations, and Reactions*



VOLUME 1: POLYCENTRICITY IN PUBLIC
ADMINISTRATION AND POLITICAL SCIENCE

Edited by Daniel H. Cole and Michael D. McGinnis



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Introduction to Volume 1

Elinor (Lin) and Vincent Ostrom were intellectual entrepreneurs. They were driven by an insatiable curiosity about human affairs, always asking people about the institutional arrangements and practices in their own lives. They not only studied institutions, they also built them, specifically the kinds of intellectual infrastructure they needed to conduct serious inquiries into the problem-solving capacities of human groups. Neither was willing to restrict their interests to any single discipline, and they regularly chafed at the constraints inherent in the disciplinary structure of academia. Their frustrations led to their establishment, in 1973, of the Workshop in Political Theory and Policy Analysis at Indiana University, an interdisciplinary center for research, teaching, and mentoring junior scholars that remains the institutional embodiment of their vision and of the Bloomington School of political economy.

In this volume, we have drawn primarily from the published and unpublished works of Elinor and Vincent Ostrom to tell the story of their intellectual entrepreneurship. Briefly, in Part I, we let the Ostroms speak for themselves in personal narratives highlighting the challenges they faced in their intellectual odyssey. Part II includes classic statements of their understanding of the concept of polycentricity and its implications for self-governance. The remainder of the volume deals with the problems they experienced in pursuing their studies of polycentricity in the interstices between established or emerging academic disciplines. Part III deals with the field of public administration, and the emerging tradition of public choice, with particular attention to Vincent Ostrom's challenges to the underlying premises of these fields of study and practice. Part IV turns to the discipline of political science, and shows how the professional concerns of Lin Ostrom, a political scientist who served as president of the American Political Science Association (APSA) and was awarded a Nobel

Prize in Economic Sciences, still somehow did not fit very well within the confines of political science as a discipline.

Part I is designed to ease the reader into the mind-set of Lin and Vincent Ostrom, the founders of the Bloomington School approach to the study of policy, institutions, and governance. At the prompting of her colleague Margaret Levi, Lin prepared the autobiographical reflections reported in chapter 1 in 2009, before she was awarded the Nobel. This autobiographical essay opens with brief comments on the petty slights she suffered in entering an academic community then almost totally dominated by males, but pays even more attention to professional challenges posed by her overriding interest in the multidisciplinary forms of research she thought was needed to truly understand policy problems.

Remarkably, she finds it necessary to defend the importance of the substantive topics on which she chose to focus much of her research, against critics in mainstream political science who questioned how much could be learned from the behavior of peasants or local communities. Lin also embraces complexity in the framework she developed in the course of conducting research projects involving colleagues from multiple disciplines, in the face of criticisms that by doing so she deflected attention from core theoretical questions in political or economic theory. In these choices, she was driven by her inherent curiosity about how ordinary people coped with their real-life problems, and by her amazement at the endless creativity demonstrated by peoples throughout the world.

In this chapter, Lin frequently refers to her early experiences as a junior faculty member directing a long-term and large-scale collaborative research project that began with a comparison between small- and larger-sized police departments in Indiana and other midwestern states and eventually entailed a survey of the organizational structures of metropolitan areas throughout the United States. (For more on this research program, see McGinnis 1999 and the works cited therein.) Even though the Nobel committee neglected to mention any of this research in its justification of her selection (Nobelprize.org 2009), Lin made a particular point to include findings from these police studies in her prize lecture (reprinted here as chapter 6). Although the Ostroms and the Bloomington School are most widely known for research on natural resources and environmental issues, this early project set the template for all its later successes. As was the case for later projects, students were intimately involved in all stages, from initial design to measurement strategy to analysis and interpretation.

Chapters 2 and 3 are interviews with the Ostroms from 2003. The interviewer, Paul Dragos Aligica, is a former student whose own work

(Aligica and Boettke 2009; Aligica 2014) has helped popularize the term “Bloomington School,” originally used by Mitchell (1988). Aligica’s questions prompt the Ostroms to weave together their intellectual vision and the practical challenges they overcame in realizing that vision. For example, in chapter 2, when asked to identify what he considers the most critical reason for their success, Vincent Ostrom points to their refusal to treat “the market” or “the state” as simple concepts, but to instead insist on understanding how economic, political, and social processes are interwoven together in complex ways. Vincent also explains the reasons why they named their interdisciplinary research and teaching center a “workshop,” in order to highlight the collaborative nature of the research process as an ongoing interaction between established scholars and their more junior apprentice scholars. (Readers interested in recent developments concerning the Ostrom Workshop are encouraged to visit its website at <http://www.indiana.edu/~workshop/>.)

In chapter 3, the interviewer presses Lin to explain why she devoted so much attention to resource commons rather than the private and public goods that have long dominated the concerns of most economists and political scientists. In response, she proclaims the continued importance of commons in today’s world, in sharp contrast to those who dismiss traditional forms of cooperation as exotic relics from a best forgotten past. After noting that biologists focus what might seem an inordinate amount of analysis on “the simplest possible organism in which the process under investigation occurs in a clarified, or even exaggerated, form” and “which can be studied more effectively using this organism than using another,” Lin identifies common-pool resources as her “organism” of choice for the concentrated study of broader issues of collective action and governance. She also asserts that institutional diversity is just as important for the world as a whole as is biodiversity. Given the overwhelming complexity of the real challenges that communities face, continued access to local forms of organization is a critical asset. The world is so complex that any policy intervention needs to be seen as an experiment that will need careful monitoring, because all interventions necessarily generate unintended consequences that in turn generate new problems to be resolved or open up new opportunities for collective improvement. As she so often emphasized: “there are no panaceas.”

Part II shifts gears to more explicitly professional explications of the Bloomington School approach. This part opens with the paradigmatic statement of the concept of polycentricity, a 1961 *American Political Science Review* article by Vincent Ostrom, Charles Tiebout, and Robert

Warren, and it closes with the version of Lin's Nobel lecture that appeared in print in a 2010 issue of *American Economic Review*. In between, we have placed a previously unpublished paper by Lin originally prepared as a lecture expressing the abstract vision of polycentric governance in terms that can be easily understood by a general audience.

Although written with specific reference to controversies over the organization of urban areas in the United States, chapter 4 introduces much of the conceptual apparatus of the Bloomington School, more than a decade before the physical establishment of the Ostrom Workshop in Bloomington, Indiana. After defining the "business" of local government as the selection and production of public goods and services, the authors proceed to investigate a long list of complications entailed by their public nature. Unlike private goods, which can be easily traded among individuals, most public goods cannot be easily "packaged" to prevent those not contributing to the cost of that good from enjoying its benefit. Drawing on Dewey's definition of a "public" as all those who are affected by certain transactions, the authors emphasize that this group need not correspond to the "political community," defined as those whose interests are taken into account in the determination of which public goods should be enjoyed by that public.

Also unlike private goods, the consumers of a public good are rarely the people directly responsible for determining the types and quality of goods or services that are worth obtaining. The authors explicitly distinguish this process of "provision" from the processes through which a public good or service is actually produced. This production may be carried out by public agencies, private firms, nonprofit organizations, or directly by members of a community. In practice, many public goods and services require a combination of efforts from different kinds of actors, acting either singly or in myriad forms of partnership. Since the scales of the units responsible for the production, provision, and consumption of a public good or service need not correspond to each other, this opens up a wide array of possible configurations of cooperation among these types of units.

Furthermore, members of any vibrant community will need to have at their disposal a wide array of goods and services, both private and public in nature. This variety leads directly to the authors' expectation that most metropolitan areas will be characterized by complex systems in which different public authorities assigned specific tasks and organized at varying scales will interact in diverse ways, a system through which these "centers" of collective action pursue their overlapping interests and responsibilities.

This is their vision of a polycentric order, an irreducibly complex network of institutional arrangements among diverse forms of collec-

tive action occurring at multiple levels of aggregation, a reality that urban reformers still routinely criticize as unworkable and inefficient. The authors draw upon contemporary examples, especially the Lakewood Plan in Southern California, to illustrate that some complexity can indeed be successfully managed. In later works, Vincent Ostrom further refined this concept, based on his intuition that polycentric systems can, in some settings, prove to be more normatively desirable than the more centralized systems preferred by most policy analysts and political reformers. A polycentric system is rife with redundancies, but it is this very complexity that enables the people living in and managing a polycentric order to learn from their past mistakes and to provide sufficient opportunities for new policy experiments to be undertaken and evaluated.

In chapter 5, Elinor Ostrom connects this theme to the concerns of ordinary citizens. She begins by critiquing the widespread “textbook” view of democratic process in which citizens do little more than vote for representatives who then write laws and appoint bureaucrats to actually deliver services to citizens who may be passive recipients of government largesse. It is a neat view, one that still appears in many civics primers. But that is not the way a truly self-governing society really works, and Lin articulates an alternative view in which citizens are active coproducers of their own governance, by directly participating in all stages of the policy process, from problem definition through implementation and evaluation.

In an appendix to this chapter, Lin describes an example from Brazil where basic improvements in urban sanitation were stalled until the people themselves were encouraged to participate in constructing and maintaining a low-tech solution. Another example of coproduction, discussed in both this chapter and in the following one, draws on her analysis of irrigation systems in Nepal, in which decidedly low-tech structures built and maintained by local farmers often outperform concrete infrastructures built for them by development agencies.

However, as noted earlier, Lin never held out hope for universal panaceas, and so she carefully cautions against unrealistic expectations that even locally based solutions can produce quick or easy solutions to complex policy problems. As was the case for chapter 4’s evaluation of the opportunities facing public officials in metropolitan areas of the United States, it all comes down to a question of getting the scale right. To be effective, a polycentric system of governance has to facilitate efforts by public entrepreneurs to match up the scale of a collective-action dilemma to the scale of formal or informal modes of collaboration intended to

address that problem. If a system is going to become or remain fully polycentric, citizens need to develop and sharpen their skills at all forms of participatory governance.

Since chapter 5 was originally a speech to a group of development practitioners in Mexico in 1996, its informal tone was appropriate. Yet, this same welcoming informality of style survives even in chapter 6—the official published version of the lecture Elinor Ostrom gave on the occasion of being awarded the 2009 Nobel Memorial Prize in Economic Sciences. This long address encapsulates her entire career, nearly five decades of original research conducted by her and her many colleagues from the Bloomington School and beyond.

This address effectively locates Lin's most attention-getting research within the broader context of the Bloomington School approach to political economy, the general contours of which had been laid out in the 1961 article by Vincent and his coauthors. Frankly, we suspect the Nobel committee got more than they expected, since their own statement of why her research deserved this high level of recognition (Nobelprize.org 2009) does not even mention the core concept of polycentricity, which is clearly the most important thread connecting these two works, as demonstrated in the very title of Lin's address.

The Nobel selection committee highlighted her identification of the conditions that enable some local communities throughout the world to successfully manage resources critical to their own survival, without reliance either on “the state” or “market-based” arrangements that previous theorists had presumed were the only viable options. But the content of this lecture ranges much more widely, as this Nobel laureate shows how those particular findings emerged out of a much broader approach to research. Lin generously shares credit with her collaborators, and is, in effect, arguing that this prize should have been awarded to the Bloomington School as a whole. In that she is, of course, being too modest, but this lecture is a remarkable distillation of this entire school of thought. (Readers are encouraged to consult the Nobel Prize website for videos of Ostrom's speech as well as other supporting materials.)

The overriding theme of Lin's Nobel address is the need to look beyond states and markets if we are to fully appreciate the rich universe of institutional forms of collective action available for our use whenever new problems arise or new opportunities become available. The remainder of this volume explores implications of this attitude of openness to institutional diversity to specialists in the interrelated fields of public administration and political science.

Part III addresses the impact of the Bloomington School on public administration. Since bureaucratic officials receive very little attention in *Governing the Commons*, or in Lin's Nobel address, too many have drawn the inappropriate conclusion that community-level processes of governance can be, or even should be, complete unto themselves. But Lin was quick to insist that "small is beautiful" is a slogan she could not support, a panacea that is ultimately incomplete and destructive of self-governance rightly understood. Thus, we thought it appropriate to devote an entire section to the critical roles that need to be played by public administrators in the construction and continued operation of self-governance.

Our selection of readings in this part is dominated by the works of Vincent Ostrom, who was a major figure in this field before the Ostroms first moved to Bloomington, Indiana. We begin with chapter 7, a joint statement from 1971, in which they articulate their understanding of the then-emerging interdisciplinary field of public choice. After briefly listing other participants in this movement to improve communication between the disciplines of political science and economics, they summarize the central premises of what would later constitute the Bloomington School.

What the Ostroms meant by public choice in this article is much closer to polycentricity than it is to what later became the characteristic attitude associated with public choice theorists, namely, that public officials are just as selfish as any rational actor and that their self-serving machinations can be made to serve public purposes only when public organizations closely resemble markets, in which selfish behavior automatically generates social good, via the invisible-hand mechanism first identified by Adam Smith. Although competition among political agents plays a role in a polycentric order, it is by no means as dominant a theme as critics of the public choice approach presumed.

In a 1988 article, William Mitchell introduced the term "Bloomington School" of institutional analysis and contrasted it against the "Rochester School" of social choice (which focused almost exclusively on mathematical models of voting processes and electoral institutions) and the "Virginia School" of public choice (in which basic presumptions and analytical tools of neoclassical economic theory are used to explain the behavior of public officials). Within this latter school, particular approbation has been attached to the practice of rent-seeking by which legal and policy tools under the control of public officials are used to raise artificial barriers to free competition in order to reward favored private actors who seek the excessive "rents" they can reap from these protective barriers.

For the Ostroms, however, the market is but one institution among many, perfectly suited to some purposes but woefully inadequate for others. Since markets require supportive political, legal, and social contexts if they are to fully realize their potential, they were unwilling to assign it a uniquely meritorious role. Instead, they lay out a vision of self-governing societies in which communities of all types and sizes find creative ways to enjoy public goods and manage their shared resources, a world of ever-increasing institutional diversity. In this oft-cited *Public Administration Review* article, the Ostroms began a long process of justifying the benefits of a polycentric order, as well as acknowledging its limitations.

In chapters 8 through 10, Vincent Ostrom considers different aspects of the ways public administrators should approach their assigned tasks if they are to further the prospects for self-governance among the people whom they serve. In chapter 8, originally published in *Natural Resources Journal* in 1975, he uses the ongoing explosion of government involvement in environmental regulation and natural resource management as an excuse to examine the conditions under which top-down policy interventions are most likely to be effective.

This chapter summarizes many of the key points Vincent makes in his best-known book, *The Intellectual Crisis in American Public Administration* ([1973] 2008b). After briefly introducing such key concepts as the distinction between private and public goods, and the dangers of a tragedy of the commons, Vincent contrasts his understanding of democratic administration to the more traditional view that administration is primarily a technical task best kept isolated from direct political influences. Here, he stresses that public officials should not be dismissed as solely self-interested, but should instead be encouraged to play creative and entrepreneurial roles as they confront an endless changing landscape of social dilemmas, policy problems, and shared opportunities. Vincent thought public administrators should work with citizens rather than assert authority over them—an example of his insistence that politics should be seen as the realization of power *with* rather than power *over*.

In this chapter, Vincent acknowledges the critical importance of what he calls “intelligent planning” and the need for some kind of coordination if a polycentric system is to achieve its full potential. He lists the potential advantages of relying on bureaucratic forms of organization for the production or provision of some public goods, as well as their likely shortcomings. Elsewhere, Vincent Ostrom (1991, 1997) expressed deep concern about the serious dangers of overreliance on public officials, and especially of their capacity to do grave damage to societies whenever they

rely on their ideological blinders rather than careful analysis of particular situations. Indeed, Vincent was so effective in his depiction of the dangers of overweening authority that readers are likely to have overlooked his appreciation of the critical role of coordination and effective leadership in a polycentric system.

In chapter 9, a paper he wrote in 1988 but that did not appear in print until its inclusion in a 2011 volume edited by Barbara Allen, Vincent ranges widely in his explication of the responsibilities of public entrepreneurs in a polycentric setting, drawing on diverse points of view to exemplify his basic assertion that effective governance requires leaders to bring heterogamous inputs together in ways that let their respective strengths and weaknesses best complement each other. It is a far remove from the kind of technical exercise of administration advocated by Woodrow Wilson and other scholars of public administration. Despite expressing concern with the continued influence of such concepts as unity of power or span of control as being the primary concerns of public managers, he still insists that their role of helping select and deliver public goods and services remains critical for democratic governance.

Vincent's essay "Artisanship and Artifact," chapter 10 in this volume, remains his most innovative rendition of the nature of public entrepreneurship in a polycentric order. Here, he strives to convince policy analysts that all institutions are social creations, grounded in shared understandings. Just as an individual craftsman or artist must imagine a tool or artwork before he or she can bring that creation to life, communities of individuals cannot govern themselves without some shared set of beliefs and norms, some shared conceptualizations. Here, we see a reminder of why they named their interdisciplinary center a "workshop," since institutional analysts and designers were just as much artisans as they were scientists (see chapter 2 of this volume).

Vincent's argument in this essay goes further, because he insists that this entrepreneurial spirit should not be limited to official position holders, but that instead each citizen of a self-governing society needs to develop basic skills in the "art and science of association" (V. Ostrom 2006; see also Lin's argument in chapter 14 of this volume). To the fullest extent possible, all citizens should be active participants in the coproduction of public goods and the comanagement of community resources, as well as being well-informed voters and responsible consumers of private goods.

An essential part of Vincent's point about artisanship is that values necessarily play integral roles in all forms of political interaction. As a consequence, public entrepreneurship is more of an art than a science, and

so the methods that have proven so effective in the study of natural phenomena may not be as relevant for the study of political processes. With this statement, Vincent Ostrom embarked on a journey toward the redefinition of the profession of public administration, but this was a journey that few public administration scholars, and even fewer administrators, were willing to undertake.

In chapter 11, Mike McGinnis and Elinor Ostrom look back on Vincent's career from the vantage point of fifty years after his appointment as editor of *Public Administration Review*, long considered the premier journal in this field. The authors argue that the concept of polycentric order, introduced by Vincent and his colleagues in the 1961 article reprinted as chapter 4 of this volume, presaged by several decades the recent fixation of public administration scholars on the need for better coordination with nonpublic organizations, and with governance by networks rather than governance by hierarchical command. The authors revisit the example of the Lakewood Plan that played such a central role in that earlier article, and conclude that governance by cross-sector collaboration may not be quite as new as it is generally considered.

Vincent's view of polycentric governance was prescient, but contemporaneous scholars of public administration did not quite understand where he was trying to lead them. In a provocative interpretation of the founding of the US Constitution (Ostrom [1971] 2008a), Vincent argued that the founders' vision of governance went well beyond a separation of powers among executive, legislative, and judicial branches at the state and national levels to also encompass other types of organizations and social processes. It was only much later that both scholars and practitioners came to appreciate the extent to which the implementation of policy was dependent on public administrators' relationships with a complex array of non-governmental actors. The opportunities and challenges of implementing "networked governance" is now a major topic of concern in this discipline, but this is very much the same as the vision of polycentricity that Vincent offered several decades earlier. Unfortunately, this early statement in favor of network governance did not reach its potential impact, because that message was swamped by the close association of Vincent's work with a public choice movement that emphasized quite a different agenda.

Chapter 11 offers an answer to the puzzle of how Vincent Ostrom came to be so closely associated with the public choice approach to the study of public administration, even though his point of view was very much at variance with the arguments and conclusions of "mainstream" public choice scholars. The public choice movement has proven to be the

most sustained intellectual challenge to the Wilsonian orthodoxy of public administration as primarily a technocratic exercise, but Vincent Ostrom was never comfortable with its near-deification of market competition. Long ago, Adam Smith showed that an “invisible hand” guides markets to produce socially desirable efficiencies, even though none of the participants had this outcome in mind. Since public officials rarely face the same kinds of competitive pressures, they instead face many opportunities to take advantage of their ability to restrict the behavior of other actors, and to profit from those who would seek to enjoy benefits from artificial rents that protect them from competition. Public choice analysts see free markets as the ideal institutional form that all forms of public decision-making should attempt to mimic, and they routinely recommend reforms that bring the benefits of competition to all kinds of political interactions. Vincent acknowledged that competitive markets can be very effective for the production and exchange of private goods, but insisted that polycentric governance also required other kinds of institutions better suited for other kinds of goods and services.

The distinction between mainstream public choice and the Bloomington School is nicely illustrated by Vincent’s analysis of effective responses to the inherent shortcomings of bureaucratic forms of organization in chapter 8. Vincent considers responses internal to a specific organization as well as the nature of their external relations. Since tastes for a public good or service are likely to vary among the constituency served by any single public organization, he insists that the internal organizational structure be crafted so as to facilitate the expression of diverse participant interests. However, since no single organization can be expected to produce or provide all relevant public goods or services, each organization should specialize on particular goods or services, and these organizations must find some way to work together in a productive manner.

At this point, a mainstream public choice scholar would highlight the benefits of having multiple public organizations competing to deliver similar goods or services, in order to capture the efficiencies of market competition. Vincent does not deny that this is a relevant consideration, but he is much more concerned that the relevant organizations as a whole be structured so as to internalize the critical interdependencies in place among the public goods and services desired by all relevant groups. It is not so much a question of requiring political processes to mimic the market to ensure more efficient production of public goods, but instead in crafting a polycentric arrangement of public and private organizations at multiple scales that, in the aggregate, is appropriate for this interlocked system of goals.

In Part IV, we pivot to political science, and to Elinor Ostrom's place within that discipline. Although she served as the president of the APSA (McGinnis 1996), she tended to focus on subjects that were not of great interest to the majority of her political science colleagues. In chapter 12, one of us (McGinnis) considers a puzzle posed by a symposium on Lin's most influential book, published in *Perspectives on Politics* shortly after she was awarded the Nobel Prize (Isaac 2010). In that symposium, eight prominent political scientists, each specializing in a different sub-field, comment on this book and on Lin's work in general. Although each respects her work, each also concludes that Lin does not really address any of the central concerns or puzzles that dominate the areas of political science with which they are most familiar. As a consequence, Lin is, at the same time, both prominent and influential in the scholarly community writ large, and yet so marginalized in her disciplinary home.

In the two final chapters of this volume, we give Lin the last word. Both were originally presented as lectures, the former to her political scientist colleagues and the latter to a more general audience. In both lectures, Lin articulates her vision of how she and other specialists in the study of collective action could (and should) make an important contribution toward civic education of citizens in a self-governing democratic society. As scholars, we must accept the responsibility for making sure that our research and teaching activities do not undermine the capacity of ordinary citizens to find effective ways to resolve their own problems. Too often, we tend to presume that we, as experts, can advise communities on what they should do, and especially on how they might more effectively exert influence over the officeholders who supposedly control policy outcomes.

In chapter 13, Lin addresses her fellow political scientists, using the occasion of being awarded the APSA's James Madison Award to raise concerns about the dangers of internal factions based on methodological specializations, and the opportunities of redirecting this profession to realize the dual goals of increasing our scientific understanding of political processes and improving our collective capacity, as citizens of a democratic society, to govern ourselves. For the former goal, she advocates increased recognition of high-quality interdisciplinary research, which is too often so difficult to realize within universities and professional associations dominated by disciplinary silos. This goal also requires a downsizing of expectations that political scientists should seek the kinds of universal laws familiar from the physical sciences, because if institutional contexts do really matter for the determination of policy outcomes, then any valid

proposition in the policy sciences must specify the contextual constraints under which it remains valid.

In our final selection, chapter 14, Lin expands on a point she raised at the conclusion of her interview reprinted as chapter 3 in this volume. In this 2006 address to a Finnish audience, Lin identifies collective action as the single most important topic of the social sciences, and urges teachers at all levels to encourage their students to learn and to practice the Tocquevillian “art and science of association” that lies at the heart and soul of polycentricity.

In this lecture, Lin also addresses one of her most enduring concerns about the overwhelmingly negative consequences of a long-term movement toward consolidation of primary and secondary schools throughout the United States over the previous decades. Both Ostroms were deeply influenced by Tocqueville’s contention that the ultimate foundation of democracy lies not in the details of political institutions but rather in the hearts and minds, and the personal experiences, of ordinary citizens. Schools were, and are, an important opportunity for new generations to learn the “art and science of association” needed to sustain self-governing societies. Such a dramatic reduction in the number of schools has surely made it much more difficult for students to directly experience the rewards and the challenges of participating in team sports or other kinds of extramural activities, as well as meaning that fewer parents will have the opportunity to serve on parent-teacher advisory boards.

The content of civic education also matters. When Elinor Ostrom was elected president of APSA, she organized a task force that she hoped would support fundamental changes in patterns of civic education at all levels of American education (Ostrom 1996). Not surprisingly, the reports generated by this task force show little if any effect of her distinctive vision of knowledge of the findings of collective-action theory as an essential foundation for democratic citizenship—the academic bureaucracy was just too resistant to transformation by any president-for-a-year (Leonard 1999; McCartney, Bennion, and Simpson 2013).

Although Lin never found the time to investigate these particular questions of education policy or reform in any detail, it was her conviction that a grave mistake was made when, in pursuit of greater economic efficiency, public officials closed down so many small schools that had given so many students, including herself, the opportunity to learn from their participation in clubs, sports, and other extramural activities. For Lin, it was her participation in a high school debating club that helped transform her from a stutterer into a very effective and personable lecturer. And those

of us associated with the Bloomington School of political economy could never have accomplished so much if she had chosen to meekly acquiesce to the disparaging advice she received when she first considered a career as a social scientist.

In chapter 1 of this volume, Lin reminisced about the difficulties she faced as a woman entering a distinctly unwelcoming professional environment, and the continuing battles she fought to pursue multidisciplinary research in a serious and sustainable way. We can only hope that the former problem has, for the most part, been resolved, but we must admit that multiple challenges continue to raise obstacles against the realization of multidisciplinary research programs, despite the rhetorical support given it by university administrators of all stripes. Clearly, the Ostroms left plenty of challenges unresolved, but they, along with their colleagues from the Ostrom Workshop and the Bloomington School more generally, have provided us with an inspiring example to follow, and powerful analytical tools we can use to wrestle with those challenges.

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Elinor Ostrom and
the Bloomington School
of Political Economy

Volume 2, Resource Governance



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Introduction to Volume 2

This second volume of *Elinor Ostrom and the Bloomington School of Political Economy* focuses on the work for which Lin¹ 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-analysis⁴—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.

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Elinor Ostrom and
the Bloomington School
of Political Economy

*Volume 3, A Framework for
Policy Analysis*



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Introduction to Volume 3

Before she was awarded a Nobel Memorial Prize in Economic Sciences in 2009, Elinor Ostrom was best known, within her home discipline of political science, as the driving force behind the *Institutional Analysis and Development (IAD)* framework, which has been applied to a wide range of policy settings (Ostrom 1999; McGinnis 2011b). The analysis of public policy can be approached along many alternative pathways, and this volume sheds new light on this well-trodden path.

This volume collects fourteen papers that explore the historical development of this framework, illustrate its application to specific policy problems, and highlight recent extensions that ensure it will remain a vibrant focus of research for years to come. Three chapters were previously unpublished; only one (chapter 13) had been included in earlier collections of papers from the Bloomington School (Cole and McGinnis 2015a, 2015b; McGinnis 1999a, 1999b, 2000; V. Ostrom 1991, 2011, 2012; Sabetti and Aligica 2014; Sabetti, Allen, and Sproule-Jones 2009; Sproule-Jones, Allen, and Sabetti 2008).

Understanding Institutional Diversity (Ostrom 2005) remains the most comprehensive and authoritative explication of the entire analytical apparatus of the IAD framework, and the role it plays in the broader context of the Bloomington School of political economy. Whereas that book focused on the IAD as a tool for rigorous scientific research, in this book we collect examples of *policy-relevant applications* of IAD to a wide range of policy sectors. Although adherents of the Bloomington School strive to balance scientific rigor and policy relevance (McGinnis 2011b), most published works lean toward the analytical side. Consider, for example, the special issue of *Policy Studies Journal* dedicated to the IAD framework, which consists entirely of research articles, not policy analyses per se (Blomquist and deLeon 2011).

The best published examples of the use of IAD for policy analysis date back to the 1990s: Ostrom (1992) and Ostrom, Schroeder, and Wynne (1993). As long-time Workshoppers, we knew the Ostrom archives included several examples of direct policy applications, and we decided to publish a few of the best in this volume. More recently, the IAD (and the related Social-Ecological Systems framework) has been applied to a wider range of environmental policy issues, especially related to global warming. We have included a few recent examples, and this strand of literature will be covered in more depth in the fourth and final volume of this compendium on *Elinor Ostrom and the Bloomington School of Political Economy*.

The first half of this introduction highlights how the mode of analysis based on the IAD framework clarifies the range of intellectual challenges and social dilemmas that must be overcome to realize effective policy reform. The second half highlights what we consider to be the most important contributions made in each chapter.

Understanding Action Situations and Policy Processes

Over the years, the IAD framework has undergone subtle changes (as illustrated in Kiser and Ostrom 1982; Ostrom 1986a, 1989, 1999, 2007, 2010, 2011; Oakerson 1992; Ostrom, Gardner, and Walker 1994; Ostrom and Ostrom 2004; Ostrom, Cox, and Schlager 2014; Cole, Epstein, and McGinnis 2014a, 2014b). The authors of papers included here highlight different aspects of this framework, or interpret some components in different ways, but all share common presuppositions. As will become apparent in later chapters, this framework is especially useful as a device to organize the questions policy analysts ask as they learn more about some particular real-world policy process.

At the core of this approach to understanding policy lies an *action situation*, an abstraction of decisional settings in which individuals and corporate actors interact with each other by making choices that jointly determine the outcomes of some particular aspect of a policy question. Decisions and outcomes are influenced by the beliefs and incentives of individual actors, as shaped by the responsibilities and social expectations attached to any official position they may hold, and by the information available to them. These action situations are also shaped by preexisting conditions, grouped for analytical purposes into three categories: (1) the “nature of the good” under consideration, including all relevant biophysi-

cal conditions; (2) the social ties and cultural attributes that characterize the individuals interacting on that policy problem; and (3) the existing configuration of laws, regulations, rules, norms, and shared understandings held by the participants to be relevant to deliberations on that policy area.

Biophysical, sociocultural, and legal-institutional factors interact in complex ways to shape patterns of interactions among relevant actors as well as policy outcomes. These interaction patterns and outcomes are then evaluated by the same actors, and perhaps others as well, and these evaluations (and the outcomes that triggered them) feed back into all three of the categories of preexisting conditions, thereby setting the stage for the next round of action situations to take place.

Unfortunately, the dynamism embedded in this framework is not very effectively represented in its canonical depiction (see figure 2.1 in chapter 2, and figure 1.2 in Ostrom 2005, 15). The representation conveys an inappropriate sense that any one policy situation can be understood in isolation from the many other policy situations with which it is, in the real world, complexly interrelated.

Instead, we presume that there is no such thing as an institution-free context (Cole, Epstein, and McGinnis 2014). Every existing situation is shaped, in complex ways, by the preexisting configurations of rules, norms, and shared understandings. No policy reform can be applied to a completely blank slate. Instead, all policy advocates necessarily are engaged in efforts to introduce purposeful interventions into an already complex ecosystem of institutional arrangements.

Action situations are created by groups seeking to cope with newly emerging challenges as well as those that recur on a regular basis, albeit in changing detail. And they link these action situations together in chains of decisions, some of which are repeated so frequently that they become important institutional arrangements within which policy participants operate. Some sequences of action situations take the form of legally required processes or the standard operating procedures found in any formal organization.

Organization provides structure to the actions of individuals seeking at least some shared goals, by assigning particular tasks to different individuals or subunits of that organization, and by setting in place sequences of decisions that become institutionalized procedures in their own right. Within the IAD framework, a formal organization is a complex configuration of institutional arrangements and action situations.

An organization is composed of one or more (usually more) action situations linked together by prescriptions specifying how outcomes from

one situation become inputs into others. Organizations may be thought of as a tree or a lattice with situations at each node. A particular set of rules structures the situation at each node. A general set of rules partially structures all internal situations and specifies the paths that may be chosen from one situation to the next. (Ostrom 2005, 57)

Although some action situations occur in regular sequences, many action situations will generally be active concurrently (Ostrom 2005, 56). Policy participants weave their ways through complex ecologies of action situations along multiple paths, which may proceed in a logical sequence, or become trapped in endless repetition, or double back upon themselves.

If we identify each significant decision mode as an action situation, then we need to identify the sources of the conditions that define this action situation. There has to have been some path of decisions that led us to our current plight. Some relevant decisions may be lost to the mist of deep time, but most will be identifiable, and can be imagined to have come out differently, or even to be changed to a different outcome by concerted action.

For analytical purposes, it is especially useful to conceptualize a policy process as a path through a complex network of linked action situations, with the outcome from any one node affecting the likely outcomes that will emerge from subsequent decision nodes. Some action situations will have only trivial consequences on others, but for many decisions of interest, the associated action situation may have very significant implications for later decisions, including ones to be made by other sets of actors. In effect, each *consequential* action situation constitutes a mini-critical juncture that shapes the opportunities and probabilities of subsequent steps, thereby imposing a form of path dependence at the micro level. Although the term “path dependence” is usually associated with more macro-level phenomena (North 1990), this same effect occurs in micro-level paths traced through the policy landscape.

In terms of the IAD framework, any collective decision to intervene in an ongoing policy process constitutes either a new action situation to be added to the existing system, or is a particular realization of a form of intervention that had already been incorporated into that system. Interventions frequently seek to influence the outcome of a focal action situation in an indirect manner, by effecting changes in other action situations that determine one or more of the factors that determine which outcomes are generated by that focal action situation (see chapter 4 for an extended illustration of this logic). Most interventions are intended to change the

beliefs, identities, incentives, or behavior of the actors making decisions in the focal action situation or in ones that are closely adjacent to it.

Each action situation denotes a nexus where a group of decision makers jointly confront important decisions related to some particular policy concern. To use the IAD framework, each of these critical decision nodes needs to be given separate consideration, and analysts face the difficult challenge of understanding how multiple action situations interact to jointly produce policy outcomes.

Two forms of connections between action situations have been examined in the IAD-based literature. The first is based on a long-standing distinction among different levels, or kinds, of decision situations. The IAD framework differentiates among three kinds of choice settings: (1) operational-choice settings in which the choices of the relevant actors directly impact tangible outcomes, (2) policymaking or collective-choice settings in which the actors shape the rules that constrain actors in operational-choice arenas, and (3) settings for constitutional choice in which decisions are made concerning which actors have standing in different choice situations as well as which kinds of alternative institutional mechanisms are available to them as they make their collective deliberations and operational-level choices (Ostrom 2005, 58–62). Although the IAD framework asks researchers to consider processes at all three of these levels, in most cases analysts focus on action situations occurring at only one or two of these levels.

A second form of linkage is manifested through an action situation's "working components," which define how the relevant actors interact in the context of that situation. In her presidential address to the Public Choice Society, Ostrom (1986a) acknowledges that this approach was inspired by the "rules of the game" that game theorists use to define game models, but she insists that a more general approach is needed to extend analysis to more informal settings in which real-life policy actors interact, especially since these boundedly rational actors are themselves influenced in subtle ways by social norms, shared understandings, and myriad other contextual factors.

Ostrom (2005) justifies this complexification of game models in detail. Briefly, each action situation is configured by interlocking components, which are related in the following manner:

Participants, who can either be individuals or any of a wide diversity of organized entities, are assigned to *positions*. In these positions, they choose among *actions* in light of their *information*, the *control* they have

over *action-outcome linkages*, and the *benefits and costs* assigned to actions and outcomes. (Ostrom 2005, 188; emphasis added)

The seven working components are italicized in their first occurrence in this quotation. Each of these component elements may be modified by concerted action, but for the purposes of studying any one “focal” action situation, each component is fixed for that period of time. Furthermore, any effort to change any of these components would itself have to take place within the context of some other action situation. For example, congressional elections determine which individuals can vote on bills that will be considered by the next Congress.

McGinnis (2011c) defines as “adjacent” any action situation whose outcome directly impacts any of the “working components” of the focal action situation that lies at the heart of that particular analysis. This type of connection between action situations was implicit in the distinction among operational, collective, and constitutional levels of analysis. Examples of specific linkages between action situations were posited in a few earlier works (Ostrom 1986b), then addressed more explicitly in general (McGinnis 2011c, and chapter 4 of this volume, previously unpublished) and in particular policy settings (Mincey et al. 2013, reproduced as chapter 7 of this volume). This line of investigation remains to be fully developed.

In sum, the “rules of the game” or “working components” of any single action situation are presumed to have been determined by the operation of other action situations, either at the same or different levels of choice. The following sequence of sentences from Ostrom (2005) demonstrates just how profound the implications of this conceptualization for policy analysis are:

- Rarely do action situations exist entirely independently of other situations (p. 55).
- Where one draws the boundaries on the analysis of linked situations depends on the questions of interest to the analyst (p. 58).
- An institutional theorist must self-consciously posit the kind of information participants possess, the relevant preference structure of the participants, and the process they use for choosing among actions. Assumptions about information, preferences, and choice mechanisms are thus the essential components [that] need to be specified in order to generate hypotheses about interactions and outcomes that can be tested in a particular type of action situation or linked set of action situations (p. 99).

- To dig under that situation, however, to think about changing it, one needs to know a lot about the underlying structure leading to the social dilemma (p. 189).

Unfortunately, the resulting networks of adjacent action situations can be very complex. If each action situation is envisioned as a nexus of strategic competition, then actors dissatisfied with the outcome of any particular action situation could engage in “level-shifting strategies” (Ostrom 2005, 62–64) to seek to influence the outcomes of the collective- or constitutional-choice processes where the basic contours of the focal action situation was established. Since there may be no logical limit to deployment of this strategy, and since each of the working components in any one action situation have been determined by outcomes from adjacent action situations, anyone seeking to use the IAD framework to understand the implications or improve the outcomes of a fully articulated network of action situations may be overwhelmed by the immensity of the analytical task.

However, it is not necessary to know everything about everything before one can make a decision regarding a specific thing. So, if policy advocates perceive that an unacceptable policy outcome is driven primarily by the decisions made by rule-makers, and that these rule-makers are susceptible to be persuaded otherwise, then the logical choice would be to focus on lobbying efforts. Alternatively, if certain pieces of information were not made available to some actors in a timely fashion, reformers could revise the procedures in place in whatever organization was responsible for distributing that information to selected actors. It is not necessary to know the entire network of adjacent action situations, so long as the analyst can identify critical deficiencies in the current understanding of the situation, and follow the trail of connections to locate the appropriate and most effective point of intervention.

The rationale that lies behind development of such a complex analytical framework is worth further justification, and for that we draw, once again, from the words of Elinor Ostrom.

The language developed in this book to identify the working components of action arenas that exist everywhere . . . ; to analyze the similarities and differences in rules, norms, and strategies . . . ; and then to group similar rules together by the component of the action situation they directly affect . . . , is undoubtedly more complex than many contemporary scholars would prefer. This complexity of language has not been introduced lightly. A scholar should also keep analysis as simple as possible—given the prob-

lem to be analyzed. Just as important, however, is developing a mode of analysis that enables scholars, policymakers, and participants in ongoing processes to grapple with the problems they face by digging through the layers of nested systems in which these processes exist. . . . Thus, we need a consistent, nested set of concepts that can be used in our analysis, research, and policy advice in a cumulative manner. (Ostrom 2005, 256–57)

Building this capacity for analytical complexity is required if institutional analysts and direct participants are to properly understand “the complex, polycentric systems of governance that are created by individuals who have considerable autonomy to engage in self-governance” (Ostrom 2005, 258).

Overview of This Volume

This volume is organized in five parts. Part I provides detailed explanations of the components of the IAD framework as well as guidelines for its practical implementation in research projects or policy analyses. Parts II and III cover empirical applications of the IAD (and related) frameworks to, respectively, the study of metropolitan governance in the United States and to questions of international development and environmental policy. Part IV illustrates ways in which the complicating factors of power inequities, patterns of policy discourse, and the diverse interests of multiple actors operating at different levels of aggregation can be integrated into policy analyses based on the core IAD framework. Finally, in the two chapters in Part V, Vincent and Elinor Ostrom raise critical concerns that should be kept in mind by future researchers as they continue to build upon the analytical frameworks bequeathed to us by these pioneers of the Bloomington School of political economy.

Part I: Implementing Institutional Analysis

Chapter 1 consists of introductory material from the course syllabus for Elinor Ostrom’s last graduate seminar. For more than two decades, she yearly taught this general introduction to institutional analysis and development, with particular attention to its application to processes operating at the micro level. Although the list of assigned readings changed from year to year, something very similar to this material was included every time.

In these introductory remarks, she succinctly summarizes the core foundations of the Ostrom Workshop approach to research and policy analysis. She begins by introducing four central pillars of this approach: (1) a focus on individuals as fallible, yet capable, decision makers (2) who use institutions to organize their collective problem-solving endeavors; (3) the need to develop better frameworks and theory to understand behavior; and (4) the active application of these concepts to diverse areas of policy concern. She warns students that they will be exposed to a wide range of theoretical conceptualizations and methodological tools, and highlights the role that the IAD (and in recent years the SES) frameworks will play in helping students integrate these diverse viewpoints.

Ostrom advises novice institutional analysts to remain open to learning from what they observe in real-world settings, and to avoid becoming too fond of any one theoretical perspective or mode of policy solution. For example, she cautions against thoughtless invocation of the phrase “the State” to designate some disembodied policymaker, and to focus instead on the individuals and organizations that are specifically responsible for framing, making, and implementing any particular policy decision.

Another point that comes through clearly concerns the balance between the promise and the limitations of policy analysis and design. After assuring the beginning student that the tools to be covered in this course will help them understand how groups have been able to craft effective institutions to cope with specific policy concerns, she cautions them against any presumption that this knowledge will enable any of them to put forward a comprehensive design for the ideal society (V. Ostrom 1991, 1997).

In my experience, students taking this course of study sometimes came away too harshly skeptical of any attempt to recommend policy intervention, even of a limited kind, in hopes that the people most directly involved would be able, if simply left alone by outsiders, to design their own institutions. This volume is intended to counter that overgeneralization of the Ostroms’ warnings about the hubris of social planning, and to bring this line of work back into the mainstream of policy analysis and scholarly research. Later chapters demonstrate that it is indeed possible to use the IAD framework, and related analytical tools, to offer constructive policy advice, provided those making recommendations retain a healthy dose of humility.

In chapter 2, Margaret Polski (a student whose professional career focused on active participation in the policymaking community) and Elinor Ostrom provide a comprehensive overview of how the IAD frame-

work can be used for purposes of policy analysis. Although previously unpublished, this paper has been cited on many occasions, and we are pleased to be able to include it in this volume.

The authors use an especially appealing list of questions to organize their presentation of the IAD framework and its application to policy analysis. These questions help structure an analyst's initial consideration of the policy situation being studied, as each draws attention to particularly important dimensions of consideration. In effect, the authors lead the reader through the components of the IAD framework step by step, and at the completion of this exercise the analyst should have a sound foundation for completing a comprehensive institutional analysis.

At this point, it may be useful to remind ourselves of the utility of an analytical framework, as compared to a causal theory or a formal model. Unlike more detailed analytical tools, there is no way to reduce application of the IAD framework to a recipe or simple set of instructions. Textbooks in statistical analysis, in contrast, lay out straightforward sequences of steps and specific criteria for comparison of alternative models, and anyone following those same steps should end up with exactly the same conclusions. That is not the case here.

Institutional analysis, when done in the Ostrom manner, does not follow an unambiguous path, nor does it offer any all-purpose standard for evaluation. Instead, the IAD framework helps guide a researcher through the long process of fully understanding all relevant aspects of a real-world policy situation, which is, by its very nature, highly complex and thus subject to multiple interpretations and evaluations. But application of this framework is, ultimately, only an initial step in any full analysis. The remaining steps are up to the researcher, and they remain an exercise in creative artisanship and not the routine implementation of specific rules of analysis.

Chapter 3 gives the reader a more in-depth overview of the critical distinctions that analysts should be aware of when they examine each component of the IAD framework in their particular policy situation. This chapter was originally published as a technical appendix to a report to SIDA, the Swedish International Development Agency, by a team of Workshop researchers, led by Elinor Ostrom. An extended selection of excerpts from the substantive portions of this report is included as chapter 9 in this volume, but this appendix was written with a broader audience in mind. (A related version is included in Gibson et al. 2005.) This appendix locates each component of the IAD framework within relevant literatures in policy analyses and the social sciences more generally.

The IAD framework incorporates a rich set of concepts and distinctions that may seem to some observers as a tangle of nearly impenetrable jargon. McGinnis (2011a) provides a glossary meant to make it easier for newcomers to this tradition to understand the terminology used by scholars deeply influenced by the Ostroms; since this terminology continues to be expanded and revised, an updated version is being maintained online (http://mypage.iu.edu/~mcginnis/iad_guide.pdf).

Since both of us have been fortunate to teach the course referred to in chapter 1, we can personally attest that this problem was especially noticeable with the arrival of each year's new cohort of graduate students eager to learn from the Ostroms and their colleagues. Chapter 4 was prepared by one of us (McGinnis) for distribution to members of the Y673 class several years ago, and we have included it here in hopes that it can help clarify the process involved in implementing the mode of institutional analysis exemplified in the many publications of Vincent and Elinor Ostrom.

The specific piece of research selected to illustrate application of this research framework is *Governing the Commons* (1990). Ironically, Elinor Ostrom makes only a passing reference to the IAD framework in this, her best-known and her most highly influential book. She avoided such side discussions in hopes that her presentation would be understandable to a wide audience, and she definitely accomplished that goal. For the purposes of this volume, however, we need to delve more deeply into the conceptual underpinnings of the conclusions for which she is so widely known.

This chapter directs attention to the separable action situations that lie at the heart of Ostrom's analysis of the many cases of community management of common-pool resources covered in that widely read volume. Each of the core action situations of appropriation, maintenance, rule-making, and monitoring is identified, and their interactions examined. By going through this exercise, it becomes easier to understand how Ostrom was able to discern the operation of the eight "design principles" that have proven to be the single most important take-away point from *Governing the Commons*. In effect, these design principles, when present, facilitate the smooth adjustment among, or the coevolution of, these core action situations. Each design principle points to ways in which changes in biophysical conditions, social and cultural attributes, and institutional arrangements adjust to each other, and thus effectively coevolve toward a sustainable balance. This chapter concludes with a series of questions inspired by each of these design principles (from Ostrom 2005, 270–71).

The presentation in chapter 4 draws upon the concept of linked action situations developed elsewhere (McGinnis 2011c). As discussed above,

the concept of networks of adjacent action situations introduced there was intended to inspire later efforts to understand specific policy settings. One example along those lines is included as chapter 7 of this volume.

Part II: Polycentricity in Regional Public Economies

Part II includes three chapters focused on different aspects of policy and governance in US metropolitan areas. The first substantive example, chapter 5, dates back to a time (1977) before the IAD framework had been explicitly formulated. However, the Ostroms' contribution to a conference where policy analysts provided contrasting evaluations of the prospects for metropolitan reform in Detroit draws from exactly the same vein of thought that led, in time, to the IAD framework, *Governing the Commons*, and a Nobel Prize. In terminology, it draws more explicitly on the initial articulation of polycentric governance (V. Ostrom, Tiebout, and Warren 1961; see Cole and McGinnis 2015a). The Ostroms conclude their analysis by reviewing a series of questions concerning the range of options that were then available to Detroit city officials, including ones that they might not have considered otherwise. Given the ever-expanding inventory of policy instruments, contemporary officials have a broader menu of options available to them, but still face the same challenges as expressed here.

In chapter 6, Richard Feiock updates this line of research on metropolitan governance by introducing an Institutional Collective Action (ICA) perspective focused explicitly on the behavior of the formal units of governance in metropolitan areas. It is not exactly the same as the IAD framework, especially since it focuses its attention on the actions of local public administrators. Feiock and his colleagues work very much in the mainstream of public administration scholarship, and this ICA framework is every bit as interdisciplinary in spirit as is the IAD framework. Here the focus lies on understanding the range of institutional arrangements that are available to metropolitan officials confronting long-term problems, ranging from informal policy networks to individual contracts, collaborative councils, and more fully consolidated regional authorities. Each option is best suited for a different set of conditions, and this line of research continues to be very productive (see Feiock and Scholz 2009).

In chapter 7, a team of Workshop affiliated faculty, students, and post-docs demonstrates how the IAD framework, initially developed for application to natural resource governance in primarily underdeveloped regions, can also be used to understand important policy concerns within metropol-

itan areas. They explicitly expand the core action situation in their analysis to more fully explore the nature of the working components within that action situation, and draw specific connections to adjacent action situations in which the available range of choice open to actors is set, and what positions each actor holds, what information they have access to, and how their choices are aggregated into overall policy outcomes. In doing so, they illustrate the usefulness of the network concept first introduced, in an abstract way, by McGinnis (2011c), and yet also demonstrate the limitations of that line of research. Although the complexity revealed by this analytical exercise makes it difficult for them to offer specific policy recommendations, their analysis provides a promising basis for further elaborations. From our perspective as long-term Workshoppers, we find it especially gratifying to see that this team nicely connects the current state of the IAD framework to the core concept of polycentric governance of metropolitan areas that lies at the heart of the Bloomington School of political economy.

Part III: Development and Nested Governance

Part III shifts attention to particular aspects of development policy. In chapter 8, Amy Poteete, also a long-time Workshopper, sets the context for considering questions of natural resources management from the perspectives of different levels, scales, and forms of linkages. Her discussion effectively encourages institutional analysts to open their minds to complex interplay of processes (or action situations) that determine changes in biophysical conditions, institutional arrangements, economic transactions, and social-cultural forces, with these processes operating at divergent speeds in widely disparate geographic scales. This same openness is equally valid for policy analysts working in any policy sector, and for citizens in any society.

Chapter 9 consists of extended excerpts from chapters 1, 4, 5, and 11 of the Ostrom Workshop report to SIDA discussed above. This analysis was inspired by the question of why so few tangible results have thus far been obtained from a long history of economic assistance to many countries throughout the developing world. This report was commissioned by a development agency with a strong reputation for professionalism in the delivery of economic assistance to particular countries with which they developed long-term relationships. SIDA's executives were genuinely puzzled as to why the results of their efforts were so disappointing.

Our selections highlight the theme of ownership and their construct of a development assistance octangle, a multiconnected network of public, private, and community organizations from both the donor and recipient countries. (Much of this material was published, in different form, in Gibson et al. 2005.) We also sought to reinforce our point that many IAD-inspired scholars tend to operate by asking a disciplined series of questions structured by the elements of the IAD framework.

Critics of development policy have long drawn attention to the relatively small amounts of money devoted to development aid, or to the general absence of competitive markets or secure property rights in the recipient countries, or to other missing institutions needed to support prosperous economies and democratic political systems. To this list the Ostrom-led team added the missing ingredient of making sure that the recipients of this aid saw themselves as full partners in these endeavors. In the end, this team of policy analysts drew upon the multifaceted IAD framework to identify the many ways in which the actual practice of development assistance fell short of getting local recipients fully involved in all of the most critical steps of the process, or in IAD-based language, in all of the core action situations ranging from basic operationalization to the details of policy design and to overall constitutional design of the overall process.

Selections from chapters 4 and 5 of the SIDA report demonstrate how these analysts used a series of questions to structure their understanding of the basic relationship between government officials in the donor and recipient countries. These questions cover pretty much the same material as those in chapters 2, 4, and 5 of this volume, focused this time on the nature of the action situation defined by ongoing negotiations between these two governments, and the lessons that might be drawn from their analysis.

This selection concludes with one of the general lessons they draw in the final chapter on this report. Although SIDA officials had long emphasized the importance of nurturing a sense of local ownership among recipients of their aid, the results remained disappointing. The authors demonstrate that this notion of ownership needs to be extended to cover the full range of core action situations, ranging over the entire spectrum from first identifying user demands to the final dissolution of a project that has run its course.

Chapter 10 examines a relatively new initiative in international environmental policy that has also fallen short of fully engaging local recipients in all program stages. Here the primary actors are United Nations agencies and community-based forestry management organizations, but

a remarkably similar range of problems emerge in this area as well. It remains to be seen how this particular policy initiative will work out in practice, and this preliminary analysis highlights a wide range of potential problems that future analysts should keep in mind.

Part IV: Integrating Multiple Actors, Interests, and Perspectives

The two chapters in Part IV introduce additional complications that must, in some way, be better incorporated into policy analyses based on the IAD template. In chapter 11, Floriane Clement, a scholar with only a marginal connection to the Ostrom Workshop, demonstrates why it is important to integrate questions of power into these analyses. Other scholars closely tied to the Ostroms, notably Agrawal (2003) and Epstein et al. (2014) have pointed to the unfortunate tendency of analysts working within this tradition to focus on the problem-solving aspect of policy problems and overlook, or at least downplay, the extent to which policy outcomes are driven by who has the most power to shape policy.

Clement does an excellent job of adding considerations of power and discourse analysis into the IAD framework in a natural manner. Since power is often exerted through subtle means of conceptualizations of policy alternatives, the incorporation of discourse analysis is especially welcome. In most works using the IAD framework, the attributes of the community are taken as given, although they may be changed, over long periods of time, by the experiences of that community as they govern themselves (see V. Ostrom, 1997). Clement puts this factor front and center, and thus makes an important contribution to this line of analysis.

In chapter 12, a long-term leader among Ostrom Workshop scholars, Eduardo Brondizio, and his colleague Esteban Ruiz-Ballesteros demonstrate how regional conditions and cross-level connections involving both the ecological and governmental aspects of resource management can be more explicitly integrated into detailed policy analyses based on the IAD framework. The resulting framework is quite complex, but this only goes to show how much the IAD framework remains a work in progress, one that is continually being refined and updated by those researchers and policy analysts who find it a useful tool to organize their own analyses, and to more clearly convey their findings to others. The process of refining and updating is closely associated with the Ostroms' commitment to empirically informed and policy-relevant political theory.

Part V: Foundations for Future Extensions

This volume demonstrates the continuing elaboration of the IAD-based mode of policy analysis or point towards continuing weaknesses that remain to be addressed in subsequent elaborations. In Part V, we include two papers in which Vincent and Elinor Ostrom separately offered words of encouragement and guidance for those seeking to further improve upon the analytical foundations they provided for us.

Chapter 13 remained unpublished until its inclusion in part one of Barbara Allen's two-volume collection of Vincent Ostrom's work (Ostrom 2011), and we thought it was well worth reproducing here. Originally written in 1982, when the IAD framework was first being formulated, this paper highlights the critical importance of evaluating the performance of public officials in the implementation of public policy. That theme was then emerging in public administration in a big way because of the new public management and decentralization and devolution movements, but in this paper Vincent demonstrates a broader concern with the evaluation of all of the many efforts that go into the implementation of policies, including those by community members and private organizations. Implementation is the process through which abstract policies have tangible impacts on the real world. It is often seen as primarily a technical exercise in the application of policy directives, but in practice this remains a very interactive, and an intrinsically political, process. Remarkably, the word "implementation" has rarely been used by Ostrom Workshop scholars, and we hope this chapter inspires future IAD-inspired researchers to remedy this unfortunate oversight.

In chapter 14, we give Elinor Ostrom the final word, from her contribution to a collection of autobiographical reflections by eminent economists. She devotes most of her attention to the early years of her career, before the IAD framework began to take shape in the 1980s. She acknowledges the formational influences of two scholars, Vincent Ostrom and Herbert Simon. From her husband and career-long collaborator, she drew the foundational concept of polycentricity (V. Ostrom, Tiebout, and Warren 1961), and from Herbert Simon (thus far the only other PhD in political science to have been awarded the Nobel Memorial Prize in Economic Sciences), Elinor Ostrom came to appreciate the ubiquity of bounded rationality in human behavior. Amazingly, individuals with significantly constrained cognitive abilities can nonetheless bind themselves together to devise and operate organizations and institutional configurations that enable them to effectively cope with situations of seemingly overwhelming complexity (see Simon 1972, 1981).

Elinor Ostrom concludes this essay by pointing to the fundamental similarity of the challenges facing public officials, policy analysts, and ordinary citizens—all of whom must decide the best they can in the presence of bewildering complexity, incomplete information, limited cognitive capabilities, and conflicting normative and strategic considerations. She leaves us with a powerful expression of her remarkably resilient yet realistic and restrained sense of optimism, secure in her knowledge that communities of fallible yet capable individuals can find innovative ways to jointly accomplish both “the long-term sustainability of common-pool resources and the efficient provision of public goods,” despite the daunting complexity of those tasks.

The IAD framework was built to serve as a foundation for the kinds of institutional analysis needed to understand and nurture the diverse forms of creative public entrepreneurship that are so critical to the long-term sustainability of democratic self-governance (V. Ostrom 1997). This connection was nicely summarized by Elinor Ostrom in *Understanding Institutional Diversity* (2005, 132–33):

As scholars and policy analysts, we need to learn the artisanship of working with rules so as to improve how situations operate over time. Human beings are neither all-knowing saints nor devilish knaves. The institutions they grow up in—families, schools, playgrounds, neighborhoods—differentially reward or punish them over time so that intrinsic and extrinsic motivations are learned and developed over time. The situations they find themselves facing as adults in the workplace and their community also affect which norms they use and the outcomes they reach. When individuals learn the artisanship of crafting rules, they can experiment and learn to create more productive outcomes (as well as participants) over time. Learning to craft rules that attract and encourage individuals who share norms of reciprocity and trustworthiness, or who learn them over time, is a fundamental skill needed in all democratic societies.

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Introduction to Volume 4

Scaling Up and Extending Bloomington-School Analysis

This, the final volume of *Elinor Ostrom and the Bloomington School of Political Economy*, may come as something of a shock to scholars who think of Lin mainly as someone who traveled to remote regions of the world to study local common-pool resource (CPR) problems. In this volume, we explore the later stage of Lin’s career, when she turned her attention, and her analytical frameworks, from local CPR problems to large-scale problems of the global commons—climate change and sustainability—and from natural to “artifactual” commons, including information and the “knowledge commons.” These extensions were fully consistent with Lin’s systematic approach to institutional analysis and polycentric governance, since the analytical frameworks she developed (in collaboration with Workshop colleagues)—the IAD and SES frameworks—were designed to be applicable to all problems of collective choice. As Lin stated in her Nobel Prize address (Ostrom 2010a, 646; original emphasis): “The IAD *framework* is intended to contain the most general set of variables that an institutional analyst may want to use to examine a diversity of institutional settings including human interactions within markets, private firms, families, community organizations, legislatures, and government agencies.” Similarly, Vincent Ostrom’s conception of polycentric governance was never meant to be limited to local (metropolitan) governments (V. Ostrom, Tiebout, and Warren 1961). Both he and Lin applied this same concept to federal governance systems, and suggested its relevance for global or regional problems requiring international negotiation and cooperation (V. Ostrom 1969; E. Ostrom 2010b).

This volume includes several examples of research topics that Workshops have been investigating since the deaths of Vincent and Elinor

Ostrom in 2012. Some are continuations of projects on which Ostrom was working; others take her work as a starting point and advance it. Some are methodologically or theoretically oriented; others carry on Lin's tradition of empirical work, closely examining local common-pool resources. What they all share in common is continued reliance on Bloomington School ideas, methods, techniques, and approaches to institutional analysis. They represent the beginning of the future of the Ostrom Workshop, without the Ostroms, but very much in their spirit and in dedication to empirically informed theory as the touchstone of good social science.

Part I: Climate Change and Sustainability

Before exploring these recent and future directions of research, this book returns to the time when the Bloomington School had not yet been born. Chapter 1 is a paper written by Vincent Ostrom in 1968, but which was not published until 2011. It concerns the use, development, and management of the atmosphere, which he described then as a "common-pool, flow resource." To this day, most social scientists refer to the atmosphere inaccurately as a "public good." Apparently, Vincent already had in mind a distinction between public goods and CPRs that he would elucidate nearly a decade later in a paper with Elinor ("Public Goods and Public Choices," Ostrom and Ostrom 1997), which was reprinted as the first chapter in volume 2 of this series. Vincent also presciently analyzed the atmosphere as a combined social-ecological system, though not in so many words: "Any consideration of the human use of the atmosphere involves an analysis of interaction between two systems—the atmosphere as a resource system and the organization of human endeavor and of human action as a social system concerned with the utilization and exploitation of the resource system" (p. 5). The conclusion of his paper foreshadows arguments explored in subsequent papers in Part I: "In the long run, national arrangements will not suffice. International arrangements will be required to deal with the continental and global dimensions of atmospheric phenomena" (p. 20).

Chapter 2 is a relatively early indication that Lin intended not just to focus on problems of small-scale local commons. Published in *Science* in 1999 with several coauthors, this paper begins to apply lessons learned from studying local and regional CPRs to "challenges of the global commons." It tackles, in brief, all of the major issues involved in scaling-up institutional analysis of CPRs, including homogeneity (e.g., cultural diversity), complications associated with interlinked CPRs, the unanimity rule

for collective-choice decisions in international governance, and the lack of multiple planets with which we might experiment and from which we could learn by trial and error. Even before this paper, Lin had sketched out many of the relevant ideas and problems in the introduction of a book she coedited with Robert Keohane, *Local Commons and Global Interdependence: Heterogeneity and Cooperation in Two Domains* (Keohane and Ostrom 1995).

When she began writing about the global commons, Lin's initial topic was not climate change but sustainability, as demonstrated in chapter 3, another coauthored piece. The paper is a "call to action," intended to mobilize the scientific community to focus research on sustainable development in the context of global environmental change. More specifically, the paper lists five "grand challenges" that require global coordination: (1) "Improve the usefulness of forecasts of future environmental conditions and their consequences for people"; (2) "Develop, enhance, and integrate observation systems to manage global and regional environmental change"; (3) "Determine how to anticipate, avoid, and manage disruptive global environmental change"; (4) "Determine institutional, economic, and behavioral changes to enable effective steps toward global sustainability"; and (5) "Encourage innovation (and mechanisms for evaluation) in technological, policy, and social responses to achieve global sustainability." It was a "call to action" Ostrom would reiterate throughout the remainder of her career, particularly as her attention shifted to the uniquely challenging problem of climate change. She believed strongly that Bloomington School approaches to institutional analysis and its normative commitment to polycentricity could be usefully applied to the largest-scale social-ecological dilemma humans have ever confronted.

Chapter 4 reprints Lin's first paper specifically directed to the topic of climate change, which she produced for the World Bank in the same year she received the Nobel Memorial Prize. In it, and in subsequent publications (Ostrom 2010b, 2010d, 2014), she urged a polycentric approach to that immense collective-action problem, explaining that national governments, state governments, local governments, private enterprises, and individuals did not have to wait for a workable global agreement before taking valuable steps to reduce their greenhouse gas emissions. It was a pathbreaking work that spawned a veritable cottage industry among scholars and policymakers seeking alternatives to the uniform, and generally unsuccessful, United Nations-based approach under the Kyoto Protocol. Other scholars began recommending various kinds of polycentric approaches (see Cole 2011, 2015, 311–12), whether labeled as "bottom-

up” (Leal-Arcas 2011), “building-blocks” (Stewart, Oppenheimer, and Rudyk 2013a, 2013b), or “regime complexes” (Keohane and Victor 2011) for climate change.

The final chapter in Part I, authored by one of this series’ coeditors, reinforces Ostrom’s arguments favoring a more polycentric approach to climate governance by explaining how cooperation in the international arena, as in local communities, depends on mutual trust between the parties. Among heterogeneous populations, mutual trust is difficult to generate and takes time to build. It is more easily developed if successful interactions between parties are more numerous and diverse (including activities unrelated to the chief issue of concern). Polycentric approaches to policy provide for more numerous and diverse interaction. This same point was highlighted in Lin’s 1994 book with Roy Gardner and James Walker on *Rules, Games, and Common-Pool Resources*—one of her most important but often overlooked works—which combined field studies and laboratory experiments to explore questions of trust and reciprocity in common-pool resource settings. As Cole explains in chapter 5, the bilateral US–China Climate Change Working Group had a pronounced effect on international negotiations leading up to the 2015 Paris Agreement, exemplifying how (quieter) interactions at lower levels—in this case, bilateral negotiations held in private, outside the intense media glare of the global UN meetings—can increase mutual trust between important players, thereby creating positive feedback to global negotiations. By the same token, cessation of such interactions, such as the Trump administration’s decision to shut down the working group with China, can generate mutual distrust, destroying earlier gains from increased cooperation and greatly reducing prospects for future cooperation.

Part II: The Artifactual Commons: Information, Infrastructure, and Public Health

In work initiated with her Workshop colleague Charlotte Hess, Elinor Ostrom also provided foundational contributions to a fast-growing body of work on the “knowledge commons” (see chapter 6 in this volume; Hess and Ostrom 2006, 2007; Ostrom 2010c). Lin’s conceptualizations gave impetus to several active, connected areas of research, a few examples of which are included in this volume. Indeed, this may turn out to become the richest “vein” of new research applying Bloomington School ideas and techniques.

In chapter 6, a paper that was originally published four years before their landmark book, *Understanding Knowledge as a Commons* (2007), Charlotte Hess and Elinor Ostrom provide a primer for intellectual property scholars and others interested in the “knowledge” or “information” commons, including lessons from more than 25 years of international studies of natural common-pool resources. They correct confusions and conflations frequently found in writings about the “knowledge commons,” including the common conflation of common-pool resources with property systems instituted to manage those resources. Phrases like “common-property resource” are rife in the literature, but they conflate the natural or artifactual resource with the institutional (e.g., property) system humans use to manage it. Pastures, new inventions, and paintings are all resources or “goods.” By themselves, they imply nothing about the institutions humans devise to manage them, such as property rights.

Each of the three coauthors of chapter 7 have made signal contributions to the literature on artifactual commons, including Brett Frischmann’s brilliant book on *Infrastructure* (2012); Strandburg, Frischmann, and Cui’s (2017) work on rare disease networks; and Madison’s (2000) work on copyright law. This same team has edited two very important books on knowledge commons generally and the medical knowledge commons in particular (Frischman, Madison, and Strandburg 2014; Strandburg, Frischmann, and Madison, 2017). In chapter 7 of this volume, they establish an analytical framework, based on the Bloomington School’s IAD framework, for “constructing” commons in the cultural environment. The term “constructing” is an important recognition that, unlike natural CPRs, in an artifactual world dominated by trade secrets and intellectual property, cultural commons may be deliberately created to solve certain problems. That said, in the “natural intellectual environment,” otherwise known as the “public domain” or, more recently, the “creative commons,” intellectual property rights do not exist, and a “vast pool of intellectual resources” is available to be shared by all. Some constructed cultural commons may create other problems by remaining too exclusive, which obstructs potentially life-saving and other socially valuable efforts to build on prior knowledge.

The theme of differences between problems in the natural commons and problems in the artifactual commons is picked up by Dan Cole in chapter 8, which originated when he and Lin Ostrom traveled together to a conference at NYU Law School that was organized around a book project (Frischmann, Madison, and Strandburg 2014). Ostrom was originally assigned to write a paper on this topic, but after her death, Cole attempted,

as best he could, to write the kind of paper he imagines Ostrom might have written as a caution to scholars working on issues of the knowledge commons. The chief caution relates to the overwhelmingly normative nature of writings on the knowledge and cultural commons, with authors typically advocating for a greater (or lesser) “public domain” of information. However, very little of what Ostrom wrote suggested normative answers to policy problems. Instead, she focused on improving techniques for accurately *analyzing* and *understanding* problems, in all their complexity, which is a necessary precondition to useful policy advice. She and Vincent certainly shared certain normative commitments to methodological individualism, the promise of self-governance, and polycentrism; but Lin (more so than Vincent) was reluctant to promote particular policy options. Though she is sometimes portrayed as an *advocate* for local self-governance, her actual commitment, based on a great deal of empirical and experimental evidence, was to the *idea* that local self-governing systems can sometimes be successful. She never believed in local self-governance as a panacea solution. “There are no panaceas,” she would say. So, what value does her work actually have for scholars of artifactual commons? Ostrom’s clear conceptual, analytical, and methodological techniques have a great deal to offer scholars who are not only interested in policy outcomes but in *understanding, analyzing, and evaluating* problems in the artifactual commons. The IAD framework, in particular, has great utility for their work.

In chapter 9, Rolf Künneke and Matthias Finger focus on a specific type of artifactual commons that differs significantly from the “knowledge commons.” Infrastructure, such as networks of roads (including bridges), electric power grids and transmission lines, oil pipelines, and flight routes for airlines, shares many features with natural commons. Both are congestible and degradable common-pool resources with (relatively) high exclusion costs but rivalrous consumption. Indeed, the kinds of irrigation systems that Lin Ostrom studied for many years as local CPRs could be described as either natural commons or systems of infrastructure, which create collective-action problems relating to maintenance, among others. Especially given the decrepit state of physical infrastructure in the United States (and presumably other places) today, due mainly to a lack of funding for proper maintenance (see, e.g., McBride 2017), the treatment of infrastructure as a CPR makes a great deal of sense, and may generate some insights for better management in the future.

Chapters 10 and 11 offer alternative viewpoints on a very different kind of infrastructure, namely, the scientific, technological, and policy foundations for public health and health care in the United States. In the first,

Robert Cook-Deegan addresses the importance of a “science commons” for continuing innovation in medicine and pharmacology. Genomics, in particular, has been the focus of contestation between intellectual property advocates and those who would keep genomic data in the science commons. As a field that emerged quite recently (the 1980s), it presented new issues that the legal system and the courts had never before confronted. But the conflict raises the traditional issue in intellectual property of balancing the need to provide incentives for innovators, which patents and copyright provide, against the broad public values that “free” scientific information serves by facilitating continued research to update prior knowledge. Where to strike that balance is hotly disputed by economists, the intellectual property bar, and policy wonks. Applying Bloomington tools and techniques, although unlikely to determine the most normatively desired answer, can assist in better framing the question and understanding how various solutions might differentially affect the various private and social interests at stake.

Michael McGinnis, in chapter 11, demonstrates how Bloomington-School analysis might help us better understand and evaluate options for allocating scarce common resources to address complex issues relating to health care, health insurance, and public health. McGinnis’s paper, written expressly for this volume, applies Ostrom’s “design principles” (from *Governing the Commons* [1990], on which see chapters 8–9 of volume 2 of this series) to certain health care resources that appear to be CPRs, including public access to emergency services, the time physicians allocate to patients, fixed budgets for social insurance programs, and the number of available hospital beds. One major complicating factor of this project is that, in the US health care system, all different types of goods—private, public, club, and CPRs—are interwoven and nearly impossible to disentangle. McGinnis reviews research that suggests that medical professionals and community leaders can effectively manage these common resources, by regularly communicating with one another and building higher levels of mutual trust and cooperation (along the same lines suggested by Cole in chapter 5). McGinnis concludes by imagining what a fully polycentric system of health care might look like, not as a guide to policy so much as a thought experiment of what such a system would require.

Part III: Continuing Projects

Even while breaking new ground, Lin Ostrom never stopped seeking to improve her analytical frameworks—the IAD and SES frameworks—

either in light of new empirical findings or as a result of ongoing discussions with other social and ecological scientists. From the time she published the initial version of the IAD framework in 1982 (Kiser and Ostrom 1982), it was subjected to almost continual improvement. Ostrom published at least ten distinct versions of the IAD framework between 1982 and 2011. Since her death, scholars have continued to apply and revise Ostrom's frameworks as they confront new problems and continue efforts to resolve old ones.

For example, in 2009, Ostrom and Michael McGinnis started a new "Program in Institutional Analysis of Social-Ecological Systems" (see McGinnis and Ostrom 2010). Its purpose was to more clearly combine the IAD and SES frameworks, but, unfortunately, many participants instead treated these frameworks as alternatives. McGinnis continues to pursue this same goal, via a different approach, along with Daniel Cole and Graham Epstein. (See chapter 14 in this volume for an application, by other scholars, of one version of their ongoing efforts to combine the IAD and SES into a common framework.)

Chapter 12 demonstrates how the Bloomington School's analytical frameworks can be used and sometimes misused, and suggests a means for reassessing and correcting previous misunderstandings. After rehearsing the basics of the SES framework, Cole, Epstein, and McGinnis observe that one of Ostrom's initial applications of the framework—to Garrett Hardin's "Tragedy of the Commons" (1968)—participates in a basic mistake Hardin (and most scholars following him) have made about the institutional structure of the common pasture in his allegory. The "Governance Systems" box in Ostrom's SES application was empty, suggesting the complete absence of any institutions. But in other settings, Ostrom expresses her fervent belief that humans, as social animals, could never have been completely preinstitutional. The authors conclude that the absence of institutions in both Hardin's account and Ostrom's illustration was inconstant with the "tragic" outcome so central to the power of Hardin's allegory. They show that the tragedy could not have resulted from open access to the pasture alone. It also required the efforts of ranchers responding to a level of demand for food beyond subsistence levels, the existence of private ownership of the cattle, and markets in which cattle are bought and sold (which in turn required enforceable contracts). Hardin's allegory is replete with assumed and unexplained institutions without which the tragedy of the commons could simply not have occurred. The authors provide a revised SES application to Hardin's pasture that more accurately characterizes the surprisingly complex set of maladjusted (to each other)

institutions required to lead to Hardin's "inexorable" tragedy. The chapter also shows that institutional "fit" is not just about how rules align with ecological circumstances but also about how various rules interact with one another.

In chapter 13, Ulrich Frey and Michael Cox take two of Lin Ostrom's basic tenets—the need to take complexity seriously and consequent need to recognize that no panacea solutions exist—and suggest how the use of ontologies—formal frameworks for representing knowledge based on clear, explicit specifications of conceptualized entities populating the world or some domain of knowledge—can help scholars who study social-ecological systems to move beyond diagnosing specific dilemmas to developing more general theories of the interactions of important variables within social-ecological systems. This effort is similar to, but not the same as, earlier attempts by Elinor Ostrom and Sue Crawford to develop an "institutional grammar" (Crawford and Ostrom 1995). It is also consistent with Ostrom's use of analytical frameworks to study social-ecological systems using consistent concepts, and the development of databases, such as the International Forestry Resources and Institutions database, originally created at the Ostrom Workshop but now housed at the University of Michigan (see www.ifriresearch.net). But what Frey and Cox suggest is an even more formal approach than either the IAD or SES framework. In fact, they attempt to convert the SES framework into an ontology, mainly by establishing clear relationships between its various tier 1 categories, recognizing that some primary categories are components or attributes of the SES, while others are related by interactions (such as related ecosystems). They similarly subdivide second-tier variables based on various relationships between them. The extent to which Frey and Cox's SES ontology succeeds will depend on applications and refinements over time.

Chapter 14 presents what may appear to be a standard Bloomington School-style case study of a local CPR: irrigation water in Kenyan villages. But this is the first paper to apply a combined IAD-SES framework, as yet unpublished, and still being developed by Dan Cole, Graham Epstein, and Michael McGinnis. In the early version of the combined framework as used here, the primary SES variables simply take the place of the "exogenous variables" or "preexisting conditions" of the original IAD framework (see Figure 14.1(c)). The same or enhanced second-tier SES variables then populate those boxes.

In chapter 14, Paul McCord, Jampel Dell'Angelo, Elizabeth Baldwin, and Tom Evans apply the combined framework to a case involving the social and ecological consequences of Kenya's 2002 Water Law. The

authors discuss how reforms under the 2002 law facilitated the rise of a more polycentric system of irrigation water governance. The authors use the combined IAD-SES framework because it provides a clear feedback mechanism that better facilitates multiple observations over time, so that as institutions change, the effects of those changes can more easily be tracked not just as outcomes but also as part of the “preexisting conditions” for future action situations that might lead to other institutional changes. In other words, the combined IAD-SES framework facilitates comparative static or punctuated equilibrium studies of institutions and their social-ecological effects.

As with the ontological approach in chapter 13, it remains to be seen whether the new combined IAD-SES framework will be widely adopted and applied. In any event, the McCord et al. paper stands as a compelling example of Bloomington-School analysis at work, since this case study shows how polycentric governance systems can be institutionally facilitated within nested national, regional, and local governance structures.

Part IV: Persisting Challenges

We had hoped to squeeze in another wide-ranging theoretical essay by Vincent Ostrom (1990), but space constraints would not allow it. For each of the four volumes of this compendium, we had to make very difficult choices about what to leave out. For some parts, we had twice as many papers as we could possibly include. Our guiding principle was to select papers that clearly represent both the diversity and the consistency of the thinking of the Ostroms and the ideas associated with the Bloomington School.

It is only fitting that Lin Ostrom should have the last word on the Bloomington School of Political Economy and the ongoing challenges faced by all social scientists seeking to understand human behavior, both individually and in groups, and for those engaged in policy analysis. Both chapters 15 and 16 address Lin Ostrom’s career-long concern about the need for more and better interdisciplinary research and analysis, as well as the structural impediments that need to be overcome to accomplish those goals. This was the central theme of one of Lin’s later books, *Working Together* (2010), coauthored with Amy Poteete and Marco Janssen.

As first named by Mitchell (1988), the Bloomington School epitomizes one way of approaching the study of public choice, the others being identified with the University of Virginia and the University of Roches-

ter (see Aligica and Boettke 2009). All developed from an initial 1963 conference that included, among others, James Buchanan, Gordon Tullock, William Riker, Mancur Olson, and Vincent Ostrom. One of the most significant aspects of the Public Choice Society was its interdisciplinary makeup, including from the outset economists, political scientists, legal scholars, and sociologists. Both Ostroms subsequently served as presidents of the Public Choice Society. When the Ostroms created their Workshop in Political Theory and Policy Analysis at Indiana University in 1973, their goal was to establish a place where scholars, from whatever discipline, who shared interests in political theory and/or policy analysis could meet, exchange ideas, develop common research projects, and help to develop a shared vocabulary for conceptualizing and analyzing problems such that scholars from diverse disciplines could more fully understand each other's research studies. Ever since, the quest to facilitate interdisciplinary cooperation and research, in conditions of Tocquevillian voluntary association, has been at the core of the Ostrom Workshop's mission. Nonetheless, impediments remain.

In chapter 15, Lin compares the important contributions made by the New Institutional Economics, Behavioral Economics, Political Science, Political Economy, Sociology, and both Cognitive and Social Psychology to our understanding of individual and group behavior with respect to resources (especially CPRs), under institutionally generated incentives. But in chapter 16, she strikes a less optimistic note, observing that "overcoming disciplinary limits" remains a "great need" (p. 414). She quotes one cynic: "The world has problems, but universities have departments" (p. 414). Cynical or not, that quote is not far from describing Lin's attitude about the negative effects of departmental "silos" on grappling with real-world problems.

As legal scholar Robert Ellickson (1987) explains, in order to develop useful theories of social and social-ecological dilemmas, "a theorist . . . needs a command of psychology, economics, sociology, organization theory, and political science" (quoted on pp. 415–16 of this volume). Of course, no ordinary scholar can hope to gain sufficient expertise in all of these fields (notable exceptions may include the likes of John Stuart Mill, Max Weber, Herbert Simon, and Elinor Ostrom herself). Which is why the ability to work together with other scholars is so fundamentally important to understanding and ultimately resolving complex problems in the world. Any single disciplinary approach may provide, at best, a necessary part of a comprehensive solution. At worst, they offer simple or simplistic policy solutions that cannot possibly explain, let alone resolve, complex

problems. As Lin writes, “we need to think about how to overcome the disciplinary walls that have been erected in the contemporary university . . .” (p. 421). One chief purpose of the Ostrom Workshop and associated organizations, such as the Center for the Study of Institutions, Population, and Environmental Change” (CIPEC), has been to ““cross-train”” students, learning not only the basic theories of anthropology, economics, or political science, but also “a healthy dose of ecology, the analysis of spatial metrics, the use of geographic information systems, and the analysis of remotely sensed data” (p. 421). In short, Workshoppers are trained to “analyze complex systems” (p. 421).

There are precious few places where cross-disciplinary theoretical and multi-methodological training and wide-ranging applications to empirical research projects have been so effectively integrated. Arguably, such spaces are needed now more than ever in a world and time of increasingly complex and interrelated problems. In a 2011 publication, Lin noted that “The research program facing IAD scholars, as they explore new questions, new research methods, and new modes of analysis, is immense!” (p. 24). Indeed, it is. But Lin gave us analytical tools and techniques that we can use to continue her important work. And, as she was known to quip, “What could be more fun than work?”

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A Compendium of Key Statements, Collaborations, and Reactions***

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