

CHAPTER ONE

Beyond a Precarious Balance:

Improving the Scientific Rigor and Policy Relevance of Institutional Analyses from the Bloomington School

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The Bloomington School of political economy, or institutional analysis, has produced a corpus of research ranging from the highly abstract to the deeply descriptive, from representations of game models and laboratory experiments to historic accounts of the development of water management institutions in specific locations, with many variants in between. Yet, to a remarkable extent, it all fits together as a relatively coherent whole.¹

Elinor Ostrom and others in the Bloomington School tradition have done institutional analysis in a way that strikes a uniquely productive balance overall between scientific rigor and policy relevance. That point is one of the key topics my colleague Jimmy Walker and I emphasized in our assessment (2010, 299) of Ostrom's contributions to scholarship after she won the 2009 Nobel Prize in Economics:

The methodological legacy of the research programs that underlie Lin's success includes three key characteristics: insistence on both scientific rigor and policy relevance, openness to multiple techniques of empirical and formal analysis, and sensitivity to nested levels of analysis. An enduring legacy of her work is that the research literature on CPR [common pool resources] situations now routinely encompasses field studies, experimental methods, mathematical modeling, statistical analyses, and agent-based

simulations, each of which brings unique insights to this common object of study (Ostrom et al. 1994; Poteete, Janssen, and Ostrom 2010).

However, the balance achieved was rarely good enough to satisfy strong advocates of either rigor or relevance. If the criticism from both sides is left unchallenged, it might undermine the long-term sustainability of the Bloomington School as a recognizable tradition of institutional analysis. In this chapter, I explain the reasoning behind this balance and suggest ideas for future elaboration.

It is generally presumed that rigor and relevance are in constant tension with each other, because highly rigorous models cannot match the level of policy relevance in analyses finely tuned to the complexities of local conditions. I propose ways in which scholars working within the Bloomington School tradition can simultaneously improve their performance in terms of both rigor and relevance. By bringing into play a wider range of policy actors and institutional obstacles to collective action, while using similar methods to represent the behavior of all these actors, scholars may be able to explain in new ways the logical structure of a specific empirical setting, while still making the simplifying assumptions needed to examine interactions among so many actors with diverse interests and resource capabilities.

This chapter is organized into seven sections. The first section introduces tensions between rigor and relevance and in the study of political institutions and policy analysis more generally, and the second briefly reviews examples of research and policy analyses from the Bloomington School that illustrate various mixtures of analytical rigor and policy relevance. In the third section, I highlight a hidden theme running throughout this body of research and policy analysis. Briefly, an analyst can be said to be engaged in “**strategic rigor**” whenever both rigor and relevance are considered essential goals, and each goal is conducted in a way that also supports the other goal, thus balancing these seemingly contradictory goals. The fourth section illustrates how this balance is revealed in the research findings that Elinor Ostrom summarized in her most influential work, *Governing the Commons* (Ostrom 1990), and in the Institutional Analysis and Development (IAD) framework of complexly interconnected action situations that guided her investigations. In the fifth section, attention shifts to the Social-Ecological System (SES) framework she developed to organize further research on closely coupled social-ecological systems. I

argue that too much of this research has focused on compiling long lists of potentially relevant social and ecological variables and suggest an alternative research strategy in which these variables are interpreted as “pointers” to other sites of interaction, or *action situations*, where the values of those variables have been determined (and thus could conceivably be changed). The sixth section outlines a reinterpretation of the mode of institutional analysis pioneered by Elinor and Vincent Ostrom as a systematic process of zooming in and out of a complex network of interrelated action situations. I argue that both institutional analysts and the participants in the processes those analysts study are, in effect, navigating their way through a dynamic and polycentric landscape of interrelated action situations as they seek better policy intervention. The final section discusses how researchers continue to innovate on the foundations laid by the Ostroms, and it draws out potential connections between that work and the new conceptualization offered here.

My hope is that this chapter can help researchers and practitioners become more confident in their application of what is at best an imperfectly rigorous process of analyzing their own decision processes and the decisions made by individuals and groups most directly affected by policy outcomes. By implementing this mode of analysis in a more systematic manner, both policy analysts and active participants in policy processes could more effectively identify points of intervention that can strengthen the collective knowledge of those processes or improve the outcomes that emerge from those processes, and, in some circumstances, accomplish both goals at the same time.

Rigor and Relevance in Political Science and Policy Analysis

My home discipline of political science (and especially the subfield of public policy) has a long-standing tradition of controversies concerning the relative importance given to scientific rigor and policy relevance. Many in political science have sought to improve the level of rigor in the analyses of policy settings, even if that comes at a cost to its influence on practical politics. Others have decried the technical jargon that such research seems to require and advocated for clearer communication to nonacademic audiences.² Elinor Ostrom contributed to these debates, arguing strongly in favor of improved rigor in

research (see Ostrom 1976, 1982, 2005a, 2005b) and increased efforts to improve civic education by incorporating into educational materials a better understanding of research findings on collective action and self-governance (see Ostrom 1996, 2002, 2006a, 2006b).

Any attempt to review in detail the literature on rigor versus relevance would leave too little space for the core line of argument I develop here, so I base my discussion on an informal list of the primary attributes typically associated with rigorous or relevant modes of policy analysis. Table 1.1 summarizes key characteristics often used to evaluate the quality of research on the grounds of rigor versus relevance. I have arranged these points to highlight the contrast between respective characteristics listed together in the same row.

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For an analysis to be deemed rigorous in a scientific sense, all steps of the research process, including the initial statement of the research problem to be resolved and the hypotheses to be examined, need to be clearly stated. All concepts need to be measured, and the procedures for these measures need to be explicitly stated. Researchers need to select cases for comparison in ways that make it more likely that any conclusions they draw from the comparisons can be generalized to a broader population. Doing so requires that the researchers pay careful attention to selecting a research design that will enable them to make valid inferences to broader settings. Researchers should fully develop the logical implications of their preferred and alternative explanations and test these implications in a systematic manner. Because each discipline develops its own set of concepts and shorthand labels for complex procedures to facilitate communication among its members, the resulting technical language or jargon may preclude clear communication to anyone outside that intellectual community.

In sharp contrast, the whole point of policy-relevant research is to contribute to ongoing debates over alternative solutions to problems that the broader public sees. Institutional analysts working to enhance the relevance of their research findings must take great care to make it easy for nonexperts to understand the logic behind their policy recommendations. As a result, they should frame their arguments by using familiar terms from contemporary public discourse and connect recommendations to the policy

tools already available to officials in existing political institutions. For policy problems that require more creative solutions, an analyst/advocate should clearly explain how those solutions might be implemented. Ideally, policy analysts will carefully examine arguments on all sides of a particular controversy, but as a matter of practicality, no one researcher can be entirely objective.

These two clusters of desired characteristics need not stand in direct opposition to each other in all settings. Because the results of rigorously conducted empirical research can be used by proponents of different policy responses to evaluate alternative solutions to real-world policy problems, good science can contribute to good policy. But the political reality is that perceptions and interests often matter more than the current level of scientific understanding, especially if scientists studying a particular set of processes do not share a clear consensus. The points listed in the right-hand column of table 1.1 highlight the central importance that policy advocates attach to getting their preferred policies enacted versus the factors in the left column that emphasize getting the science right.

I admit these characterizations of analytical rigor and policy relevance are oversimplified, perhaps to the point of parody. Even so, they serve as bookends for the full range of work found within policy-related disciplines and professions.

Elinor Ostrom participated in research projects that range across the full spectrum, from rigorous formal models and laboratory experiments (Weissing and Ostrom 1993; Ostrom 1998) to highly detailed case analyses (Ostrom 1965, 2011b), but the bulk of her most influential research effectively combined both rigor and relevance, as she understood those criteria. Adherents of the Bloomington School can be found near both sides of this extreme, but a high proportion of this work maintains a balance somewhere in between. The next section highlights examples of various balances found within this tradition.

Finding Balance in the Bloomington School

The classic 1961 article by Vincent Ostrom, Charles Tiebout, and Robert Warren (hereafter OTW) introduced the concept of a “polycentric system of governance” to the political science and public policy literature. OTW used this concept to describe the underlying logic behind the high level of complexity

and duplication of effort that is evident to any observer of metropolitan areas in the United States. Proponents of urban reform decried this complexity as inefficient and wasteful, and they advocated consolidating governing units into a single comprehensive system at the level of the metropolitan region as a whole.

Vincent Ostrom and his colleagues were not convinced that consolidation was the best solution. They appreciated the benefits of maintaining units at multiple scales of aggregation to provide for all relevant public goods, because different scales of production would be efficient for different specific goods. They offered a conceptually rich framework, one that inspired a long tradition of subsequent research into different forms of metropolitan governance (see McGinnis 1999b; Oakerson 1999; Oakerson and Parks 2011; Feiock 2009). However, their argument here was not stated in a rigorous manner; nor did they pay any attention to how one might measure their core concept of polycentricity, which remains a difficult nut to crack (Carlisle and Gruby 2017; Blomquist, Thiel, and Garrick 2019; Van Zeben and Bobić 2019).

In 1965, Vincent and Elinor Ostrom obtained faculty positions in the Department of Political Science at Indiana University, Bloomington. In 1973 they established the Workshop in Political Theory and Policy Analysis as a home for interdisciplinary research on institutions and public choice (Mitchell 1988; Aligica and Boettke 2009). Elinor Ostrom led the first extended effort to subject the normative assertions made by OTW (1961) to rigorous empirical tests. She led a research team of faculty and students that undertook an extensive comparative analysis of police services in different units in Indianapolis, Indiana, just an hour's drive north of Bloomington. The researchers began by developing multiple measures of different aspects of police services, and they selected communities for study on the basis of sound principles of research design (see the articles collected in McGinnis 1999b).

In short, this team of Workshop researchers concluded that there were indeed advantages to allowing small jurisdictions to control some aspects of police work (or other forms of public services) while assigning other tasks requiring various forms of coordination to larger units. Their findings can be related to the policy of "community policing," but as it turned out, this particular research project did not

have much effect on public discourse on this policy area (Boettke, Palagashvili, and Lemke 2013, Boettke, Lemke, and Palagashvili, 2016).

Ironically, the OTW (1961) article did not attract much attention from policymakers either, even though its core point about the need for complex networks of governing units now seems so central in the public administration literature and practice on collaborative governance and other forms of cross-sector coordination (McGinnis and Ostrom 2012). An important step toward making this concept more attractive to analysts and practitioners in this area was supplied by Feiock (2009), who developed an Institutional Collective Action (ICA) framework in which the primary actors are conceptualized as public officials acting as agents for public, private, and community organizations operating at different scales. ICA delivers an effective balance between relevance and rigor by providing conceptual clarity to the range of cross-sector collaborations found in different metropolitan areas. For example, Swann and Kim (2018) use this framework to draw explicit practical lessons for public officials charged with the responsibility of managing fragmented governments.

Vincent Ostrom (1953a, 1953b) began his career as an expert on water resource law and policy. As a political theorist, he contributed to the classical liberal tradition of seeing constitutional restraints on the arbitrary abuse of executive power as absolutely critical to the sustainability of democracy. In particular, he expressed deep skepticism toward any effort by national leaders to design comprehensive plans for the future evolution of a complex political economic system, because doing so would require a nearly unlimited cognitive capacity for information gathering and analysis as well as an unreasonably naïve expectation of disinterestedness on the part of the planners (V. Ostrom 1994, 1997, 2008a, 2008b). But these works did not provide readers much in the way of practical policy advice.

Governing the Commons (Ostrom 1990) is by far the most accessible and influential example of policy-relevant research from the Bloomington School. Other noteworthy examples of policy-focused works in the Bloomington School tradition include V. Ostrom (1953a, 1953b, 2008a, 2008b), Ostrom (1965, 1976, 1992, 2010b, 2011b), Ostrom, Schroeder and Wynne (1993), Oakerson (1999), Gibson et al. (2005), and Andersson and Ostrom (2008). In addition, Polski and Ostrom (2017), Polski (2017), and

McGinnis (2017) go through the steps necessary to apply the mode of institutional analysis to the study of specific policy problems.

Even though the phrase “policy analysis” was included in the original name of what is now known simply as “the Ostrom Workshop,” actual policymakers, as traditionally conceived, play surprisingly minor roles in most publications from scholars associated with the Ostrom Workshop. Instead, community leaders and ordinary citizens take center stage, especially in Ostrom’s highly influential research on community-based management of common pool resources (Ostrom 1990, 2010a). Although widely praised for raising general awareness of the ability of self-governing communities located in remote regions of the world to solve complex problems of collective action, this work has been criticized for not taking into account the gross inequities of power that can sharply curtail the effectiveness of local reforms (Clement 2010). Also, Frank Baumgartner (2010, 575), a prominent policy scholar, noted in his contribution to a symposium on *Governing the Commons* that “Elinor Ostrom pays little attention to many issues that I have found central to how policies evolve,” yet he praises her PhD dissertation (Ostrom 1965) as an excellent example of policy-relevant analysis. Contributors from other subfields of political science similarly find selected aspects of her research to be compelling, but none have considered her a leader in their own subfield (McGinnis 2011c).

Elinor Ostrom’s preferred style of research contributed to her marginality in the discipline of political science. Except for her early research on police services (Ostrom 1976; McGinnis 1999b) and her later experimental research (Ostrom et al. 1994; Ostrom 1998), she rarely stated explicit hypotheses or tested them in any traditionally rigorous manner. Instead, she devoted careful attention to the framework for analysis within which she was working, rather than using those concepts to build a causal theory or formal model (McGinnis 1996, 2011c). She was the primary driving force behind the initial development and subsequent revisions of the IAD framework (Ostrom 1989, 2005b, 2010a), which has become one of the most prominent theoretical perspectives in scholarly research on public policy (Weible and Sabatier 2017; Cole and McGinnis 2017). Later in her career Ostrom (2007, 2009) introduced the SES framework, which fine-tuned the IAD framework to apply more directly to the study of resource systems.

Ostrom envisioned both frameworks as a means whereby scholars from multiple disciplines could more effectively communicate with each other as they used diverse disciplinary and methodological perspectives to better understand complex policy settings. She expected that anyone using the frameworks as a foundational set of concepts would combine those concepts into different theories or models that specify causal relationships among the concepts in clearly defined circumstances. As frameworks, they were intentionally designed to fall short of the gold standard of a clearly specified formal model or a fully developed causal theory. Even so, it seems to me that Ostrom and others in this tradition have systematically neglected opportunities to expand the logical depth or completeness of the IAD or SES frameworks.

For example, when Sue Crawford and Elinor Ostrom (1995) added a delta parameter to a rational actor's utility function, to represent the intrinsic benefits or costs of following or violating some normative rule, they did not follow up by explicitly incorporating the actors supervising the socialization processes through which the individual actors had internalized those normative rules. Yet Ostrom also faced constraints on the level of complexity that her colleagues would accept in a "mere" framework. For example, in her presidential address to the Public Choice Society (Ostrom 1986), her introduction of an "action situation" as a generalization of the formal definition of a game model was not welcomed by scholars present at that lecture, because her concept was too complicated to be fully represented using mathematical notation. Similar concerns about the lack of mathematical or statistical precision in Ostrom's frameworks were expressed by some economists who criticized her selection as a corecipient of the 2009 Nobel Prize in Economic Sciences.

A unique exemplar of the efforts by Bloomington School researchers to explicitly connect rigorous and relevant modes of research in a single project can be found in *Rules, Games, and Common Pool Resources* (Ostrom et al. 1994). The first part of this book generalizes game models to laboratory settings in which experimental subjects are allowed to discuss their common interests and establish institutional procedures for monitoring and sanctioning each other's behavior. The remainder of the book consists of case studies of real-world field settings in which communities of farmers, fishers, or other

resource users learned to resolve similar dilemmas through their own efforts. This book highlights the commonalities behind these social dilemmas in natural and artificial settings, but the specific lessons from these very different two modes of analysis were not entirely integrated, beyond their common grounding in the IAD framework.

Elinor Ostrom combined rigor and relevance in a similar manner when she led a multiyear collaborative research project focused on comparative analyses of forested areas. Scholars and students associated with the Institute for Forestry Resources and Institutions (IFRI) developed and field-tested a rigorous method of measuring the characteristics of forested areas and their user communities in Bolivia, Ecuador, Guatemala, India, Mali, Nepal, Uganda, and the United States. The central goal was to understand which combinations of institutional arrangements are most likely to support sustainable development of forestry resources. Rigorous comparison lies at the heart of their method: the coding form includes measures of more than a hundred variables on the physical, economic, and institutional characteristics of specific forested regions. Furthermore, the data and analytical conclusions from the IFRI project were made freely available to local people in a user-friendly form meant to aid local efforts to improve living conditions. However, its broader policy relevance (beyond any effect on the local communities themselves) lies primarily in the contribution these research projects made to the conclusions Ostrom presented in *Governing the Commons*.

Understanding Institutional Diversity (Ostrom 2005b) is the most analytically rigorous explication of the entire analytical apparatus of the IAD framework and how it might best be used as a tool for social scientific research. More traditionally rigorous examples of research from this tradition have been published in social scientific or policy analysis journals, and the ones collected in McGinnis (1999b, 2000) demonstrate the range of rigorous models and statistical analyses that scholars have produced. Poteete, Janssen, and Ostrom (2010) is a more widely accessible overview of the range of interdisciplinary research projects that scholars have built upon the IAD and SES frameworks, with particular attention to practicalities of coordination within teams of researchers.

Precise use of language is essential for purposes of rigor, but it can get in the way of policy relevance. The most important example from the Bloomington School tradition is the word *provision*, which OTW (1961) took great care to distinguish from the actual *production* of a public good. Provision is typically the responsibility of a public entrepreneur, who needs to arrange for the production or purchase of any collective good to be consumed by the groups that the entrepreneur serves. (Provision does not play such a role in the exchange of private goods, because the purchaser is typically also the consumer.) Or provision can be done by the consumers themselves, as in the common-pool resource setting, where provision includes efforts by resource users to build or maintain infrastructure needed to extract resources from the common pool.

The problem with respect to unclear communication to mainstream policy scholars is that the term *provision* is so close to *service provider*, which generally is used for a person who delivers the services, but who would have to be called a producer in Workshop terminology. Perhaps a better word would have been *provisioning*, in the sense of gathering supplies in preparation for a long journey or some other collective endeavor. Leaders who play this provisioning role also need to find sources of funding and plan how the collective task will be organized as a whole.

Perhaps the biggest obstacle working against the practical influence of this work was that the Ostroms were reluctant to use their research to support any particular position in partisan debates. “No panaceas” was Elinor Ostrom’s immediate response to anyone seeking advice on a specific policy problem. Although useful as a summary statement of the Ostroms’ underlying attitude, this orientation limited their potential effect on the policy community, which consists of people and organizations endlessly in search of answers. Once her work became widely known, advocates on opposite sides of policy debates used her name to support directly contradictory positions, suggesting that neither side had fully understood her profound appreciation of the intrinsic value of practical problem-solving and the institutional diversity that will naturally result from those efforts (Ostrom 2005a, 2010a; McGinnis 2011c; Cole 2014; Sarker and Blomquist 2019).

In sum, the Ostroms pursued a unique vision of policy relevance. Within the disciplines of political science or policy studies, researchers often decry the lack of attention paid to the results of their research by major policymakers operating at the national or international level. Although both Elinor and Vincent Ostrom did direct some of their work toward those audiences, for the most part they focused on groups and communities of individuals whose own lives were directly affected by policy outcomes. Policy analysts can too easily forget that local communities retain a significant degree of agency even in demanding circumstances.

In a guest editorial in the January 1994 issue of *Research & Creative Activity* (a periodical published by the Indiana University Graduate School), Vincent and Elinor Ostrom succinctly articulated their unique attitude toward policy relevance:

Once we understood the logic of the use of land and water in paddy agriculture, for example, we came to appreciate the marvel of hillside terraces in Nepal and elsewhere that would justify their being considered among the Wonders of the World. In a contrary way, intelligent people can perversely reduce urban landscapes to rubble. How people think of themselves, structure their relationships with others, and pursue the opportunities that they see as available to them may make the difference between a sustainable and meaningful way of life and one reduced to rubble. Working with others to gain mutual advantage under changing conditions of life requires substantial use of knowledge, moral sensitivity, skills, and intelligence in the exercise of self-organizing and self-governing capabilities. (quoted in McGinnis 1999a, 25)

The consequences of their unique perspective are evident throughout their many research projects. In their analysis of metropolitan political systems, OTW (1961) directed analysts to consider the nature of the myriad working relationships with private firms and community leaders who were often most directly involved in the actual production of local public goods. In her PhD dissertation, Elinor Ostrom (1965) focused on the actions of public entrepreneurs serving on local water boards or in community organizations, because their efforts were instrumental in resolving contamination of

groundwater in that part of southern California. The 1970s Workshop project on police services demonstrated the critical importance of coproduction, that is, the positive effects of situations in which citizen recipients of public services actively participate in producing those services (McGinnis 1999b).

In *Governing the Commons* Elinor Ostrom clearly articulated the importance of understanding how local communities manage common resources critical to their own survival. Most of them have minimal support or encouragement from public officials or foreign aid agencies. Although the title of a later work, *The Samaritan's Dilemma* (Gibson et al. 2005), highlights the tensions between the conflicting interests of donor and recipient governments in the distribution of assistance, the bulk of the research by that research team focused on how seemingly mundane patterns of employee rotation and advancement shaped the incentives facing lower-level agents within the Swedish International Development Agency. When they examined how this assistance actually worked out in field settings, they concluded that the core actors in the whole process were contractors (typically Swedish construction firms) hired to build and (perhaps) maintain these projects. In the end, they stressed the need to involve local communities in all aspects of the process from initial proposal to construction and especially to long-term maintenance, to give members of those communities a more meaningful sense of ownership over these projects. Finally, although Elinor Ostrom (2010b, 2012) acknowledged that international agreements can play a positive role in policy responses to global climate change, her recommendations focused instead on encouraging other actors to do whatever they could by direct action, especially local municipalities and individual consumers.

This quick survey of highlights from the Ostrom oeuvre is far from complete, but one consistent message is clear: policy analysts need to pay careful attention to the actual and potential contributions by individuals and groups acting primarily on a local level. To be blunt, this presumption is not a widely shared one within the disciplines of political science or economics.

Strategic Rigor and the Rigor-Relevance Balance in the Bloomington School

To understand the unique balance between analytical rigor and policy relevance that characterizes research and policy analysis in the Bloomington School, we need to look closely at the origins of the IAD framework. The first overview of the IAD framework (Kiser and Ostrom 1982) was published as the concluding chapter in an edited volume, *Strategies of Political Inquiry* (Ostrom 1982). This volume also included Ostrom's introductory essay (with the imposing title "Beyond Positivism") and five colloquium papers or distinguished lectures presented in Bloomington during 1978–81. The concluding chapter was written by Ostrom and Larry Kiser, then a postdoc trainee at the Ostrom Workshop. Although Ostrom describes this chapter as an overview of a book-length manuscript she and Kiser were working on, it took her another two decades to complete a full-length volume on the IAD framework (Ostrom 2005b).

In "Beyond Positivism," Ostrom takes as her point of departure a general malaise among political scientists at the time, namely the noticeable lack of any significant accumulation of empirical knowledge after decades of concentrated applications of state-of-the-art scientific methods. Rather than using this malaise as a tool in an ongoing disciplinary debate between the relative merit of quantitative versus qualitative research methodologies, she viewed this situation from a more fundamental vantage point. She argued that the basic problem was that political scientists were too eager to mimic positivism's success at finding explanations in the natural sciences by using the covering law model. But she thought it was simply not reasonable to seek a comparable level (or type) of rigor from the social sciences. Her justification of this position (1982, 14) is worth quoting in some detail.

Since scholars were trying to find empirical regularities, the major focus for political scientists doing research was on questions of method—of how to operationalize variables adequately and of the proper kind of statistical test to use to assert relationships between variables. These are essential questions of an empirically based political science. But their dominance during the past several decades places the questions of how to describe political relationships in a quantitative manner above how to gain an adequate understanding of the processes involved in the relevant world of inquiry.

In that quotation, Ostrom acknowledges that ensuring valid measurements is an essential prerequisite for the validity of any scientific-based understanding of political processes, but she also points out (1982, 17–18) that too many scholars were too willing to discard traditional wisdom too cavalierly.

During the 1960s many political scientists accepted, for example, the frequently repeated statement that “political structure doesn't matter.” . . . The fact that political variables accounted for a small proportion of the variance in government expenditure levels after economic and social variables had first been entered in multiple regression equations was taken as “proof” that institutional variables did not matter and should not be the subject of a mature science.

Her critique (1982, 18) was based on a sophisticated understanding of both the power and the limitations of any single form of analysis.

The way a process is conceptualized should affect the analytical techniques to be used for estimating statistical parameters in empirical models of that process [references deleted]. Multiple regression techniques were first developed to examine the independent effect of land, labor, and fertilizer in agricultural productivity [references deleted]. Since each of these variables was conceptualized as *independent* and its effect on productivity was *additive*, the general linear model underlying multiple regression was the appropriate theoretical language for stating how these variables would be related to a dependent variable. I seriously doubt that one could find many statements in Hobbes, *The Federalist*, or Tocqueville that conceptualized the effect of institutions in a manner similar to that of fertilizer added to labor and land to produce corn [references deleted].
(italics in original)

Ostrom concludes that more recent researchers, using different kinds of analytical methods, have empirically demonstrated the significant effects of different institutional arrangements in determining outcomes. After encouraging students and scholars to develop familiarity with a wide range of analytical

methods, Ostrom uses examples from the other contributors to demonstrate the effectiveness of nontraditional methods. In particular, Ostrom (1982, 20) draws from Boynton (1982) a general organizing principle for rigorous analysis of social settings:

Boynton's chapter can be viewed as an inquiry into what is the "right type of law" for social scientists. The right type of law, he argues, is highly specific and relates a limited number of variables to each other under stated conditions. The conditions of a theory state the values of other variables that must be closely approximated for the posited theoretical relations to hold among explanatory variables. The "other" variables condition the type of relationships among the explanatory variables stated in the theory. Boynton urges social scientists to try to understand the logic of relatively contained situations where the conditions structuring a situation are specified. His notion, therefore, of theory pertains to the organizing principles used to understand particular types of situations structured in specific ways.

Characteristically, Ostrom concludes her essay on an optimistic note. After admitting that the limited utility of covering laws in social settings will make the accumulation of knowledge in the social sciences a slow and difficult process, she encourages us to accept that "the cumulation we do achieve will be limited in scope to specific types of theoretically defined situations rather than sweeping theories of society as a whole" (Ostrom 1982, 26). She was comfortable with that more limited goal, and the IAD framework she and Kiser introduced in the concluding chapter of that volume was explicitly designed with all these considerations in mind.

I use the phrase "strategic rigor" to encapsulate the balanced combination of rigor and relevance that the Ostroms' work exemplifies. It is rigorous in that researchers should be as systematic as possible in their examination of all factors relevant to a fuller understanding of a particular policy setting. Using *strategic* as a modifier implies that this systematic process must be guided by an overarching goal. As typically understood, the primary goal of scientific research is the accumulation of empirically verified

knowledge, as a step toward a more complete understanding of the phenomenon under study. I am convinced that the Ostroms had a different goal in mind, namely, the identification of effective levers of change that could help enable individuals and groups directly affected by that policy setting to find ways to make improvements in their own condition.

Improved scientific knowledge can be a means toward that end, but should not be the primary consideration. We, as scientists and policy analysts, should never ignore the contributions toward positive change that can be made by the traditional array of policymakers: political leaders, public officials, legislators, judges, and other external stakeholders. But we should always be wary of any claims made by analysts or by partisans that they have found the perfect solution to a policy problem. This is why Vincent Ostrom reacted so strongly against “central planning,” and why Elinor Ostrom so frequently cautioned that “there are no panaceas.”

If the ultimate goal is to learn enough to help communities improve their own circumstances, then we should definitely be interested in learning how that community got into its current situation, as well as what plans it already has discussed for making potential improvements. Thus, we need to investigate the historical background for the current situation and should be open to learning from the people themselves. In addition, we should communicate our conclusions to people in a form they will be able to understand and use. All this may sound simple, but each implication deserves additional explication.

When it comes to history, we will need to understand not just how the current situation has changed over time but also the broader trends or changes in other policy areas that have affected the policy outcomes that concern us. To identify which possible connections to other policy settings we should investigate, we can take clues from the people involved, as well as from our own familiarity with similar kinds of situations in other contexts.

To be able to communicate clearly with the participants affected by the policy we are investigating, we need to remain open to understanding what their goals are, that is, what aspects of the current situation most concern them. Because different stakeholders will emphasize different concerns, we need to take special precautions to make sure that in our efforts to draw out the big picture we do not

rely too heavily on our own ideological biases as we force complex details to fit our own expectations. It's critical to realize that the goal in this process of strategic rigor is not to prove ourselves or our policy allies correct, but instead to select an effective path through the many analytical choices open to us.

As policy analysts, we should never expect that the members of any community will always be able to come to a consensus on their primary goals, nor should we expect them to agree with us on any priority goals we might posit for them. In an earlier volume in this series, Levy and Peart (2018) identify the former consideration as “the endogeneity of group goals,” which they characterize as a foundational principle of the Virginia School of public choice. They also discuss competing interpretations of whether or not economists should see themselves purely as “truth seekers” or as compromised by private interests as any other policy actor. I realize that many policy analysts are driven by strong policy preferences, but I hope that we can all work to limit the effect of our own ideological preconceptions on the implications of our own analyses.

Institutional analysts should never lose sight of the complexity of competing interests that coexist in any vibrant community. Nor should they be surprised if participants in those policy deliberations reach out to seemingly remote levers of policy change. Analysts need to remain open to exploring leads suggested by community members even if those leads do not make sense within the context of their own scholarly disciplines. For example, whereas a social scientist might seek an explanation focused on identifying the underlying power structure of a situation, or seek a better understanding of the foundational structure of the relevant system, participants are likely to be much more interested in identifying practical options for change, even if they require tracing out a convoluted path connecting seemingly disparate policy settings.

One downside of relying so heavily on pursuing many potentially effective levers for policy reform is that different analysts may end up with quite different conclusions. In other words, the process of strategic rigor may itself demonstrate the path dependence so commonly observed in all types of institutional arrangements. But this is just another reason for institutional analysts to remain humble, by offering their conclusions as provisional suggestions, rather than the final word.

In *Governing the Commons*, Elinor Ostrom framed her famous “design principles” explicitly as tentative clues toward improving the prospects for sustainable solutions, rather than as established facts that can be directly generalized to other policy settings. Institutional analysts would all do well to follow her example. In the remainder of this chapter, I suggest guidelines for institutional analysts hoping to follow her example of strategic rigor in a more effective manner.

Linking the IAD Framework and *Governing the Commons*

The IAD framework provided the analytical foundation upon which Elinor Ostrom built a multidisciplinary collaborative research program on community-based management of natural resources for which she was named a corecipient of the 2009 Nobel Prize in Economics. The Nobel committee placed particular emphasis on her research as reported in her highly influential 1990 book, *Governing the Commons*. Although Ostrom makes no explicit use of IAD in that book, she does use an informal discussion of its basic components to frame her overall mode of analysis (Ostrom 1990, 45–57). A closer examination of how the IAD framework shaped her analysis helps illustrate how the IAD framework can be used in practice.

As shown in figure 1.1, the IAD framework represents institutional processes by a series of boxes within which different variables or processes are located. At the heart of the IAD framework is an *action situation*, an abstraction of decision environments in which individuals and corporate actors interact with each other by making choices that jointly determine the outcomes of some particular aspects of a policy question. Individual choices and collective outcomes are influenced by the beliefs and incentives of the relevant individuals, as shaped by the responsibilities and social expectations attached to any official position they may hold, and by the information available to them.

The specific nature of the problem faced by actors within a particular action situation is shaped by a list of preexisting *contextual conditions*, grouped for analytical purposes into three categories: (a) the “nature of the good” under consideration, including all relevant biophysical conditions; (b) the social ties and cultural attributes that characterize the individuals interacting on that policy problem; and (c) the

existing configuration of laws, regulations, rules, norms, and shared understandings held by the participants to be relevant to deliberations on that policy area. Outcomes from an action situation are evaluated by the relevant actors (some of whom may not have been involved in the original decision). Then feedback from these outcomes and evaluations can reinforce or induce changes in these contextual conditions, which in turn sets the stage for the next iteration of that action situation. In sum, the outcomes from one action situation may change the values of the contextual factors relevant for other related action situations. This means that the contextual conditions are *endogenous* to the never-ending cycles of collective action in many interlinked action situations.

<<< FIGURE 1.1 ABOUT HERE >>>

The IAD framework differentiates among three different types (or levels) of action situations, which are referred to as different arenas of choice, or conceptual levels of analysis: (a) *operational-choice* settings in which the choices of the relevant actors directly affect tangible outcomes, (b) policy-making or *collective-choice* settings in which actors shape the rules that constrain actors in operational-choice arenas, and (c) *constitutional-choice* settings 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 2005b, 58–62). In all types of action situations, bio-physical, legal-institutional, and socio-cultural factors interact in complex ways to shape patterns of interactions and outcomes.

Each action situation denotes a nexus where decision makers jointly confront important decisions about a particular policy concern. As is typical in strategic interactions, potential outcomes are differentially valued by actors with only partial control over the final determination of results. Ostrom (1986, 2005b) explicitly frames an action situation as a generalization of standard game models. To define a game, modelers must specify the actors involved, the information available to them, their options for choice, and how these individual choices jointly generate various outcomes. Similarly, an action situation is configured by interlocking “working components,” which she relates (2005b, 188) 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. (italics added)

The specific nature of each italicized component will have been determined by processes occurring in other settings for strategic interaction, that is, in other action situations, which may be occurring at the same or different levels of choice. Although published descriptions of most applications of the IAD framework include a version of figure 1.1, which can convey the sense of a single action situation existing by itself, the analysis contained in that research tradition has always relied on making connections to other, related action situations (McGinnis 2011b).

Concurrent action situations interact in subtle ways. In particular, the contextual factors that define any given action situation will themselves have been determined by outcomes generated by other action situations. Ostrom and Ostrom (2004, 134) illustrate how processes of constitutional choice can shape the general context under which collective policy decisions are made, and the outcomes generated by action situations at the collective-choice level can determine the specific conditions under which operational choices are implemented. Individual and collective processes of evaluation are also very important in connecting outcomes to the conditions that will be in place for later decision points. Although evaluative criteria are placed in a box off to the side of figure 1.1, a more complete representation would show that these criteria were determined by processes of collective or constitutional choice occurring in other action situations, and that those criteria are themselves subject to revision in light of experience.

Elsewhere (McGinnis 2011b, 54), I offered a revised representation of the IAD framework in which different kinds of collective- or constitutional-choice processes can influence the working components that constitute an action situation at the operational level. Figure 1.2 shows how a single action situation (including the internal working components as described earlier) may be connected to a series of “adjacent” action situations, each of which has the effect of setting the values for one or more of

those working components. I am pleased to say that Elinor Ostrom liked this concept of action situation adjacency so well that she took it into account by revising the representation of the action situations located in the center of the figures she adopted for later versions of the SES framework (Ostrom and Cox 2010; McGinnis and Ostrom 2014).

<<< FIGURE 1.2 ABOUT HERE >>>

Each action situation denotes a nexus of strategic interaction in which a group of decision makers jointly confronts important decisions related to some particular policy concern. To use the IAD framework, analysts need to give separate consideration to each of these critical decision nodes. They face the difficult challenge of understanding how multiple action situations interact to jointly produce policy outcomes.

The following sentences from Ostrom (2005b) demonstrate just how profound the implications of this conceptualization of multiply interconnected action situations are for institutional analysis:

- 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).

Because no action situation sits in isolation but is instead embedded in complex networks of adjacent action situations, there is no such thing as an institution-free context (Cole, Epstein, and McGinnis 2014).

Thus, no policy reform can be applied to a completely blank slate. Policy advocates necessarily introduce purposeful interventions into an already complex ecosystem of institutional arrangements.

Inevitably, the resulting networks of adjacent action situations are complex. Even so, this complexity does not prevent participants from engaging in efforts to change the conditions under which they are interacting. For example, actors dissatisfied with the outcome of any particular action situation could engage in “level-shifting strategies” (Ostrom 2005b, 62–64) to seek to influence the outcomes of the collective- or constitutional-choice processes where the basic contours of the focal action situation were established. Because there may be no logical limit to deployment of this strategy, and because 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 any one specific thing. Thus, 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 primary value to researchers of the IAD framework is the guidance it provides concerning the kinds of factors that need to be examined in situations of pervasive endogeneity, by structuring the types of questions researchers should ask as they work their way through the complexities of those policy settings (Cole and McGinnis 2017). In a self-organized community of resource users who live in a remote area and rarely experience interference from outside actors, the relevant network of adjacent action situations could distill down to a small number of tightly interwoven action situations. It is one reason why this mode of analysis has proven so useful for analysts studying community management of common resources and other forms of self-governance.

By highlighting the configural nature of causal relationships in social settings, this framework implies that the effects of any policy intervention will ramify throughout complex institutional ecologies in ways unlikely to be immediately apparent. In that way, IAD forces policy analysts to dig deeper into the underlying nature of the problem. IAD also sensitizes analysts to follow through the likely consequences of any policy intervention on the subsequent incentives facing relevant actors and institutional processes.

Although Elinor Ostrom intended IAD to be generally applicable, in practice it tends to be most frequently used for certain kinds of policy settings (Heikkila and Caine 2017). Individuals who find themselves in situations in which they have the capacity to work together to meaningfully shape the conditions under which they interact are likely to find it easier to move from operational decisions to reconsideration of collective choices or to renegotiation of fundamental questions concerning their own societies, and back again. As a consequence, analysts working within this tradition tend to focus on the problem-solving aspect of policy problems and downplay the extent to which policy outcomes are driven by external actors with sufficient power to get strict constraints on feasible policy outcomes. However, Clement (2010) has expanded the IAD framework in a natural manner by adding two categories of contextual variables to highlight the consequences of the social-economic foundations for political power and the ways in which public discourse can be shaped to favor the interests of influential actors.

It should be obvious by now that anyone who thinks the IAD framework is a method as clearly defined, demarcated, and rigorously established as the interpretation of statistical regression is sure to be disappointed. Frameworks offer only a starting point for analysis, and each analyst has to make many decisions along the way to put this framework to use.

To help acquaint new students or others not yet familiar with the concepts and terminology introduced into the field of institutional analysis by the Ostroms and their colleagues, I put together a glossary or guide that provided brief explanations or definitions of these terms, and some sense of how more complex concepts might be applied in practice (McGinnis 2011a). To serve the particular needs of graduate students taking the first-year introductory seminar in institutional analysis, which required

students to prepare a term paper applying these methods to a subject matter of their own choosing, I prepared a guide to the steps of analysis that need to be involved. Even in this short overview, the problem remained that the whole thing often seemed overwhelming, with too much needing to be considered from the beginning, before any real progress could be made on better understanding the nature of that policy setting.

To help make the steps more concrete, I wrote a version of that research guide as it might have been applied to the design principles that Ostrom used to summarize her findings in *Governing the Commons* (McGinnis 2017). I'd like to draw upon a few observations from that guide.

The IAD framework directs analysts to focus their attention on a small number of key action situations in which resources, rules, and communities mutually influence each other. In the IAD figure it looks like an exogenous set of contextual variables determines the values of the working components of an action situation, which then generates patterns of interactions and outcomes. I think a more appropriate interpretation would be to emphasize that the IAD is directed toward identifying a common set of *processes*, rather than variables.

Ostrom was rigorous in her collection of data for the many case studies that she and her collaborators investigated in many pieces of research. But there came a point in *Governing the Commons* when she admits that she simply had to adopt a less rigorous mode of analysis, more integrative and intuitive in nature. I argue that when Ostrom was working her way toward her famous list of design principles for sustainable community-based management of natural resources, she concentrated her attention on four critical, or *focal*, action situations in her case studies: (a) appropriation, (b) provision, (c) rulemaking, and (d) monitoring and sanctioning. Other related action situations were treated more superficially, such as the processes through which new organizations are constructed (or constitution-making; see Ostrom 1989), dispute resolution, evaluative processes, and the slow accumulation of indigenous knowledge. By framing her analyses of these cases through the lens of her IAD-based mindset, she was able to peer deeply into the underlying structure of these interwoven processes.

Further, the IAD framing worked so well in this analysis because, in most of the cases she examined, the same actors were directly involved in all four focal action situations, as well as most of these supplementary (or adjacent) action situations. Each of the design principles specify attributes of one or more of these action situations, attributes that were exhibited by some cases and not others. Also, this range of focal and supplemental action situations covers arenas of choice at each of the operational, collective, and constitutional levels. Finally, each design principle explicitly connects to factors from one or more of the three categories of contextual variables.

Consider what might be the case if the core processes of rulemaking, monitoring, and sanctioning are dominated by different agencies within a national government. Several problems can be expected: the rules may be poor fits to local circumstances, monitors may be easily bribed by those seeking to violate the rules, and sanctioning may be implemented so harshly that it deepens distrust between local community members and government officials. On the other hand, if all three of those processes point to an array of activities through which local community members are able to participate directly in rulemaking, monitoring, and sanctioning, then several of Ostrom's design principles are likely to be satisfied. To take one example, if the magnitude of a sanction is determined by people from the local community, they are more likely to show mercy toward fellow citizens who went outside the rules because they found themselves under extreme pressure to do so, but who would like to remain a valued member of that community. If sanctioning is done remotely, then there is likely to be little, if any, consideration of the need to maintain a viable sense of community.

Typically, comparative case studies result in conclusions concerning which explanatory variables can be inferred to have the strongest influence on the outcomes of those cases. In *Governing the Commons*, the primary outcome variable concerned the long-term sustainability of institutional arrangements for managing those resources. Other researchers, in related projects, identify a relatively small number of variables that proved especially important as determinants of stable regimes of resource management. To take a frequently cited example, Agrawal (2001) lists 30 variables as being the "key enabling conditions" for the successful operation of common property institutions. More recently, in the

Social-Ecological System Meta-Analysis Database (SESMAD) project, resource management, and international relations researchers worked together to identify the factors most conducive to successful collective action among actors engaged in local or global policy settings (Cox 2014; Epstein et al. 2014; Fleischman et al. 2014).³

For Elinor Ostrom, the critical factor was not the values of the variables per se. Rather, it was the extent to which the overall configuration of institutional arrangements satisfied conditions in what she described as design principles (Ostrom 1990; Cox, Arnold, Villamayor- Tomás 2010). For her, the essence of institutional analysis lies in appreciating the configural nature of the effects of what may seem to be isolated variables, but whose effects cannot be understood without understanding the configuration of their interactions.

Revealing Ecologies of Governance with the SES Framework

In collaboration with colleagues from different disciplines, Elinor Ostrom (2007, 2009) led the development of a complex analytical framework intended to provide a more comprehensive approach to the study of closely coupled systems of complex human-environment interactions, or social-ecological systems. This Social-Ecological System (SES) framework was designed to give equal weight to both the social and ecological sides, whereas the IAD framework focused its attention on the social-institutional side of policy problems.⁴

The SES framework was originally optimized for application to a relatively well-defined domain of common-pool resource management situations in which *resource users* extract *resource units* from a *resource system*. The resource users also provide for the maintenance of the resource system according to rules and procedures determined by an overarching *governance system* and in the context of *related ecological systems* and *broader social-political-economic settings*. The processes of extraction and maintenance were identified as among the most important forms of *interactions and outcomes* that were located in the very center of this framework.

The IAD and SES frameworks are closely related, but it's safe to say that the SES framework has been having a much broader effect. One critical contribution of the IAD framework is its insistence that no action situation occurs in isolation; instead, each action situation points outward to other action situations in which the defining components of that focal action situation have been determined (McGinnis 2011b). A graphical representation of this recognition of the concurrent operation of multiple, overlapping action situations lies at the very center of the SES framework as Elinor Ostrom presented it during her Nobel Prize in Economics lecture (Ostrom 2010a), reproduced as figure 1.3 in this chapter.

<<< FIGURE 1.3 ABOUT HERE >>>

In practice, however, most researchers have tended to focus on identifying lists of variables to be included in the first-tier categories of resource users, resource units, resource systems, and governance systems (Partelow 2018). The action-situation-based category of interactions and outcomes has received considerably less attention, despite its central location in all SES figures. Too few analysts using the SES framework follow the lead of the IAD framework by carefully identifying the small number of critical processes that should serve as the focal points of their analysis, and then building outward from that foundation.

Many researchers rely on the SES framework to help them generate a list of variables as the end product for their analysis, but these lists should be seen as only an initial step in a longer process of investigation. It is those later steps that could make the difference in efforts to improve both the rigor and the relevance of this mode of analysis.

Variables identified as critical contextual determinants of a focal action situation should be understood as *pointers* to *other* adjacent action situations, specifically to those action situations in which the values of those variables have been determined. Each contextual variable may point to a distinct action situation that determined its current value, or several variables may have been determined in the same action situation (or within densely interconnected ones). In either case, following these variables to their sources will force analysts to address the deeper foundations of the policy setting to which their attention was first drawn.

Once an institutional analyst has identified the dynamic processes through which the key elements of a policy setting have been shaped, that analyst can also begin to identify a range of opportunities for policy intervention. Further pursuit of this same mode of analysis will reveal other layers of action situations that shape the likely outcomes of any attempted intervention, thus providing the basis for explicit comparisons among the relative merits of alternative pathways toward meaningful change to the focal action situations.

These comparisons will themselves require the application of systematic analysis, and this analysis constitutes an action situation in its own right, one that is focused on individual and collective processes of evaluation. Among the critical factors to be considered when evaluating each candidate for policy intervention are (a) the collective action and other transaction costs that would be involved in inducing the desired change at the point of intervention, and (b) the likely effect of those particular changes on the policy outcomes of primary interest. One would also have to consider the possible consequences of coordinated interventions at different points, but the critical point is that all these factors can be understood as further applications of the same analytical process.

I want to push this idea of “treating variables as pointers” a bit further. Many of the variables included in SES analyses relate to certain attributes of actors or collective processes. Those variables, in effect, point toward the collective-choice situations that assigned specific individuals to fill roles in that organization or toward the constitutional-choice situations that those organizations established. For individual attributes, long-term, often-hidden processes of socialization and professional training have shaped an individual’s perceptions and preferences, indeed his or her basic identity. When the attributes refer to organizational actors, then attention should be directed to constitutive processes of the establishment and evaluation of organizations. In sum, *actor attributes* should also be treated as *pointers* that direct our attention toward those sites of collective action in which the values of those attributes were determined, and thus to sites where those attributes might be changed.

For many institutional analysts, the primary attribute of concern is each actor’s incentives to prefer some outcomes or actions over others. It’s often said to be important to “get the incentives right,”

which in this context I interpret as a realization of the need to investigate where those actor incentives came from in the first place. In other situations, it's even more critical to "get the institutions right." Although many others have drawn this same distinction among incentives, institutions, and outcomes, I think a case can be made that the mode of institutional analysis pioneered by Elinor Ostrom brings a logical coherence to understanding both the process of research through which institutional analysts can best ply their trade and the most effective processes of political practice that the actors they study are most likely to employ.

I'm suggesting a shift of worldview under which social scientists seeking to understand some puzzling aspect of human behavior, or policy advocates seeking reforms that could improve policy outcomes, are both understood as looking out upon a complex, multidimensional, multilayered landscape of interconnected sites of interaction among humans and their environment. Although scientists or advocates may initially be focused on concerns about understanding or changing some of the outcomes they observe, their gaze must necessarily move both deeper within critical sites of interaction to trace out the connections that shape those outcomes, and outward to related and interconnected sites of interaction. The conditions of those focal action situations were determined by those sites of interaction and might be changed by concerted action.

Fischer (2018, 138) summarizes the nature of a social-ecological system in a compellingly succinct phrase: "nested sets of coevolving social and natural subsystems connected through feedbacks, time lags, and cross-level interactions." This definition highlights the primary importance of dynamic change in establishing, maintaining, or changing the outcomes that emerge from the operation of an SES.

Although Fischer's analysis was explicitly focused on actual forest landscapes, I think exactly the same interpretation could be applied to analytical landscapes as a much broader concept. The systems analysis literature uses the term *analytical landscape* to denote an abstract multidimensional parameter space that exhibits an array of peaks and valleys. States within a given region (or valley) will tend toward a local equilibrium (the equivalent of the lowest point in a physical valley), and effort will need to be

exerted (in this case, changes made in the values of some parameters) to move the state into a different region, after which the process will reach a new local equilibrium.

For my conceptualization of an *institutional landscape* defined by interconnected action situations of operational, collective, and constitutional choice, a valley corresponds to the operation of an action situation when all changes in its parameters are being driven endogenously. Also, the outcome from that action situation will eventually reach an equilibrium that may be dynamic rather than resting in any single point, or state. Within that range of the underlying space of parameters, the focal action situations may exhibit such a regularity of behavior that they may come to be seen as a mechanism pushing policy deliberations toward expected outcomes. For example, under some circumstances we should indeed expect to see a common resource degenerate into what Hardin (1968) famously labeled the “tragedy of the commons.” However, under different circumstances (that is, under different values for working components in the focal action situations), a quite different mechanism would seem to be in operation, resulting in, for example, the sustainable regimes of community-based management of common pool resources that Elinor Ostrom’s research has enabled us to understand.

Moving from one focal action situation to an adjacent one, as would be the case for communities pausing to collectively reevaluate their current operational processes in hopes of reaching a mutually desirable improvement in those outcomes, would be analogous to pushing a ball up a hill and seeing where it ends up. In this case the outcome of that second (adjacent) action situation might move the associated operational-level action situation (the initial focal point of interest) into a different region of the parameter space where its subsequent dynamics may differ significantly from before. But it took effort to change the relevant parameters, or in this case to engage in the deliberation or other forms of collective action to accomplish that goal. For action situations stuck in a particular valley, there may be different hills that might be climbed in this institutional landscape in hopes of arriving at a new outcome, and these hills may differ significantly in the transaction costs entailed in such analytical trips. This view could lead to a more realistic evaluation of the extent to which communities are able to revise the conditions of their own governance, under different sets of circumstances.

An institutional analyst of the Bloomington School must navigate through this landscape of interconnected action situations when embarking upon a journey of discovery or reform. The IAD and SES frameworks were designed to help analysts choose their path to most effectively navigate their way through the institutional landscape to their desired end. That end could be an improved scientific understanding of the relevant social and ecological phenomena or practical proposals for effecting desired changes in the outcomes of these interconnected processes.

Admittedly, the guidance provided by these frameworks tends to be rather vague and unspecified, leaving the quality of the outcome at the mercy of the skill and discernment of those analysts directly involved in directing this analytical journey. Elinor Ostrom has given analysts compelling examples of the outcomes that such a journey can generate, most memorably in *Governing the Commons*. In other works, especially *Understanding Institutional Diversity* and her coauthored volume *Working Together*, she tried to explain how the IAD and SES frameworks helped her see her own way to a deeper understanding of the ability of communities to manage resources critical to their own survival.

The key to understanding how this mode of analysis works is, first, to realize that any one action situation is necessarily embedded within a complex network or system of intertwined action situations (McGinnis 2011b). Second, we need to understand how an institutional analyst primarily concerned with understanding the dynamics within a focal action situation chooses which other action situations are so closely intertwined as to constitute an equally important status as co-focal action situations. We also need to understand which secondary (or adjacent) action situations are worthy of further investigation so we can better understand the sources of the context within which these focal situations occur, or to most effectively intervene to improve the policy outcomes those focal action situations generate. In effect, institutional analysts are faced with a wide range of paths through these landscapes, and in the next section I suggest one way of understanding the nature of those choices.

Navigating Institutional Landscapes in a Polycentric System

Workshop students and visiting scholars often ask me how they might use the IAD framework in their seminar articles. I would encourage them to ask questions like the following: If the current procedure biases the process toward undesirable outcomes, what changes in collective-choice procedures might give participants access to more effective policy responses? What changes in constitutional-choice procedures might result in a better fit between those making policy decisions and those affected by their decisions? Which actor positions (or roles) have incentives that generate perverse effects, and where in the system could reformers intervene to help change those incentives? Is it a question of understanding the nature of the good or the relevant resources in a new way? Or how might we help participants incorporate other normative criteria in their evaluative processes?

In short, they should start their analysis by identifying a focal action situation (or at most a few of them), learn how the relevant collective- and constitutional-choice arenas shaped that action situation, and then think deeply about the processes through which those conditions might be changed. To me, this process of zooming in and out of interrelated action situations is the way institutional analysis should be done.

In my guide to the terminology and analytical concepts used in the Bloomington School (McGinnis 2011a), I argue that the concepts of the IAD framework, the SES framework, and polycentric systems of governance all tie together as a single coherent worldview, or mode of thinking, or analytical perspective. Yet each highlights different aspects of the overall picture.

The IAD framework is focused on the physical, social, and institutional context within which collective action occurs and policy outcomes are realized. It presumes that no one action situation exists in isolation and insists that policies live within a complex ecology of strategic interactions.⁵ The SES framework explicitly incorporates the nested, multilevel complexity of ecological systems and suggests that, to be sustainable, institutional arrangements must somehow match that complexity in a productive manner. As scientific knowledge expands, so does the range of potentially policy-relevant concerns. Also, as public entrepreneurs bring to the political agenda new issues and concerns related to the environment

and the sustainability of access to needed resources, then the demands on scientific knowledge expand ever further. In effect, biophysical conditions, scientific knowledge about those conditions, human communities, and the range of public policy are complexly coevolving.

The IAD and SES frameworks are naturally congruent with a particular understanding of governance, namely, *polycentric governance*. Originally introduced by Ostrom, Tiebout, and Warren (1961) as a vision that embraced the potentially positive consequences of governmental fragmentation in U.S. metropolitan areas, this conceptualization inspired empirical analyses of police services and other aspects of metropolitan governance (McGinnis 1999; Oakerson 1999; Oakerson and Parks 2011). The most widely known application of polycentricity to real-world settings remains the work of Elinor Ostrom (1990, 2010a), who concluded that community-based commons management was likely to be sustainable only if its rules were nested within a broader system of polycentric governance that allowed for alternative mechanisms of collective decision-making and conflict resolution at all levels of aggregation.

Elsewhere, I define *governance* as the “process by which the repertoire of rules, norms, and strategies that guide behavior within a given realm of policy interactions are formed, applied, interpreted, and reformed” (McGinnis 2011a, 171). My basic point is that governance should be understood as a *process*, and that both government officials and nongovernmental actors can play critical roles in that process. In an ideal-typical system of polycentric governance, a diverse array of public and private authorities with overlapping domains of responsibility interact in complex and ever-changing ways. Each decision center typically addresses only a few pivotal action situations, but uncoordinated processes of mutual adjustment among related action situation/decision centers can, in some circumstances, generate the resilient patterns of social ordering that can support and sustain capacities for self-governance (Cole and McGinnis 2015a, 2015b; Blomquist, Thiel, and Garrick 2019).

The mainstream literature on public policy is all about the strategic choices made by political leaders. For me, much of politics is driven by strategic calculations by political actors that follow, loosely, the process of strategic rigor I introduced earlier in this chapter. Applying the IAD or SES frameworks to an empirical setting is all about searching for places where policy interventions could be most effective,

or to identify those critical junctures that can contribute the most to deepening our understanding of the relevant processes. Participants in policy settings do much the same thing, but in a more informal manner.

For the Ostroms, institutional analysis and governance are not done only by outside experts. In many settings, members of a community are personally engaged in analytical self-reflection on the institutional context within which they find themselves, and actively participate in the co-production of governance. The analytical path through the complex landscape of interconnected action situations that I have outlined is a path that has always been, and will continue to be, trod by those individuals whose lives are most directly affected by the outcomes of these interconnected processes. They know that they can either attack a problem directly or instead adopt a more indirect approach.

For example, rather than making a rule that prohibits actions with collectively undesirable outcomes, it may be more effective to find a way to convince a recalcitrant individual that it would be in his or her own self-interest to make a minor sacrifice to serve the common good. And then it might be useful to set up a way to monitor that person's behavior and to establish a schedule of graduated sanctions as well as some mechanisms to resolve the disputes that will inevitably arise. In some circumstances, the path through this institutional landscape will lead to conditions that satisfy Ostrom's design principles. In other cases, more tragic results may be observed. Success in collective action may always be possible, but it is never inevitable.

Many action situations were created by groups seeking to cope with newly emerging challenges or those that recur on a regular basis. And these actors can strategically link action situations together in chains of decisions, some of which are repeated so frequently that they come to be seen as quasi-automatic mechanisms that can set constraints within which policy participants operate, as well as open up new opportunities for them to realize joint aspirations. For example, some sequences of action situations take the form of legally required processes or standard operating procedures found in any formal organization.

For analytical purposes, researchers and policy analysts can think of 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 from subsequent decision nodes. Some action situations will have only trivial consequences, but for many decisions of interest any one action situation may have 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.

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 set values on the factors that shape which outcomes are generated by that focal action situation. Many interventions are intended to change the beliefs, identities, incentives, or behavior of the actors making decisions in a focal action situation or ones closely adjacent to it.

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. When we as analysts study how a particular community attempted to address some difficult problem, we need to identify the sources of the contextual conditions that defined the focal action situation(s) that generated that unfortunate outcome. Some path of decisions must have led that community into that conundrum, and other paths might enable them to secure a more satisfactory future. Some important decisions may lie too far in the past to be remediable at this late date, but more recent critical junctures should be more easily identifiable. We should be able to imagine how some of those decisions might have come out differently, and how to see a path towards a more preferred outcome, one that could be realized through concerted action.

What the Ostroms have provided us, and what I am trying to clarify in this chapter, is that this analytical process of finding one's way through complex landscapes of adjacent action situations can be understood as a systematic process of search for more effective points of intervention, as well as for more fundamental determinants of policy outcomes. But is it sufficiently systematic to count as being rigorous?

I claim that this strategically rigorous process of analytical path-finding may be the most rigorous method available when we confront the deep complexity of social settings, and especially those found in closely coupled social-ecological systems.

One common problem with Bloomington School institutional analyses is that they can generate a long list of potentially relevant variables. There may be no limit to the extent of complications, because more than one participant (and often multiple potential interveners) are traversing analytical paths of this same type, coming up with competing interventions that may counteract each other or interact to generate totally unexpected or unintended outcomes. But if we treat these variables as pointers toward the sites of interaction where those values were determined, and actor attributes as pointers toward sites where those attributes were shaped, then we have identified a potentially manageable set of options for policy intervention, along with a mode of analysis that can be used to compare their likely consequences. It's not as rigorous as a computer programmed to calculate the values of specific metrics, but it is systematic in the sense of moving forward toward better outcomes and deeper understanding.

To fully realize the potential in this approach, we need to say something more specific about the *process* through which groups shift gears from operational-level to collective- or constitutional-level choices, or choose to direct their attention to institutional, physical, or social changes. It's important to directly acknowledge the strategic nature of the way participants and reformers move through the complex landscape of interconnected action situations at all levels of analysis. Most importantly, we need to be able to make judgments concerning which paths through the institutional landscape are easier to follow or more effective in realizing change.

In hopes of clarifying my recommendations, here is an example of how a process of strategic rigor might work, in outline form:

1. Institutional analysts and/or participants in policy processes begin their efforts by using the IAD-SES frameworks to lay out the general structure of the broader institutional and biophysical landscape of interconnected action situations and other determinants of relevant contextual factors. They should identify a few focal action situations with direct influence on the policy

outcomes of primary concern to them, and then work their way through the relevant institutional landscape (that is, the network of adjacent action situations) to find effective points of potential intervention, for improving policy outcomes or increasing our understanding of the relevant dynamic processes in play.

2. As institutional analysts, we should be able to make a preliminary determination of which actors are likely to be the most dissatisfied with current outcomes, as well as those actors with leverage over promising levers for change. As dissatisfied public entrepreneurs look around to identify effective targets, they may need to insert themselves into ongoing action situations or develop new ones of their own design to try to change the conditions that have been generating the problem, as they see it.
3. By knowing the relative manipulability of alternative points of leverage, we should be able to compare, in general terms, the magnitude of the costs of collective action that disenchanted public entrepreneurs would face in any effort to move different policy levers. In other words, we should be able to say something meaningful about the menu of strategic choice options available to participants in these policy settings, and about the relative magnitude of the transaction costs facing different actors or coalitions contemplating concerted manipulation of different combinations of targeted action situations.
4. In effect, we would be making probabilistic claims about the results that public entrepreneurs are likely to arrive at through their own processes of observation and diagnosis of the strategic situation at hand. If their efforts are successful, then we could start over again, by identifying those relevant actors who are likely to be most dissatisfied by the newly established equilibrium outcome. We could then evaluate the likely choices and possible rates of success of alternative entrepreneurs or interest coalitions, that is, those who are going to be left unsatisfied by the new equilibrium.
5. Meanwhile, other processes will also be at work, including natural dynamics of ecological change, as well as global markets and other exogenous processes. We need to remember that it's

not all about choice, and that some factors will change for reasons not directly attributable to human action, or for reasons that were not intended by those actors.

For comparative purposes, analysts might peruse the event sequences that occurred in different settings, to check if the path historically traced out in those cases seems reasonable, based on their analysis of the relative appeal of alternatives. At best, this process could generate a rough estimate of equilibrium distributions over outcomes likely to occur for a given set of parameters, with the specific outcomes determined by some randomized process. Some of these parameter values may adjust automatically, especially on the ecological side of the SES ledger, but major changes are likely to require conscious collective action by interested parties.

This process may seem to leave us with an unreasonably open-ended form of analysis, but that seems to me to be an inevitable consequence of the radical extent of endogeneity and breadth of agency presumed in the basic structures of the IAD and SES frameworks.

Exploring New Ways Forward

Both the IAD and SES frameworks continue to inspire applications to new policy settings (Cole and McGinnis 2017; Heikkila and Cainey 2017; Schlager and Cox 2017; Gari et al. 2018; Partelow 2018). As I suggested at the beginning of this chapter, there remain, within the conceptual and analytical tool kit of the Bloomington School, unrealized opportunities to improve both the scientific rigor and the policy relevance of the conceptual apparatus built into these two frameworks.

Consider, for example, a comment from Elinor Ostrom's introduction to her 1976 edited volume *The Delivery of Urban Services* that Vlad Tarko (2017, 32 and 108) deemed sufficiently important to quote twice in his intellectual biography of her: "Failure, in many cases, leads to adoption of another program—one often based, as was the first, on inadequate analysis of the strategic behavior of the different actors. Failure seems to breed failure" (Ostrom 1976, 7).

This sequential compounding of policy failures can too easily be taken as an ideologically grounded dismissal of the potentially beneficial consequences of policy reform or other forms of

planning. Alternatively, this “failure” could be framed as encouraging institutional analysts to develop a carefully specified model of the circumstances under which this kind of compounding would occur, which could then serve as the basis for evaluating the range of remedies available to those trying to break out of this vicious cycle. To my knowledge, no researcher working within the Bloomington School tradition has examined in any detail the conditions under which such a compounding of policy failures would most likely occur.

Why not? Presumably, the IAD framework could have been used to help explain why the road from the good intentions of public entrepreneurs so often leads to compounded policy dilemmas. Why has the Ostrom tradition never fully engaged with the mainstream literature on public policy to a sufficient extent to be able to ask that kind of question, or to engage in a full-fledged interrogation of the types of arrangements among action situations that could generate such perverse effects?

In *The Samaritan’s Dilemma* (Gibson et al. 2005), Elinor Ostrom and her collaborators did identify examples of this kind of cascading failure in their interviews with policymakers at the national and local levels. In this case, the researchers used the IAD framework primarily to organize the set of questions they asked participants and to clarify what would be required for local communities to truly take over ownership of a development project from the international donors. This effort represents a promising start on one way to enhance both the rigor and the relevance of research in the tradition of the Bloomington School. I discuss several other promising leads below.

By strategically exploring the relevant institutional landscapes, institutional analysts may find that the IAD and SES frameworks can offer a secure foundation for further development of some of the most interesting recent developments within the Bloomington School. Consider, for example, Elinor Ostrom’s work with Sue Crawford to include a delta parameter in a rational actor’s utility function, to represent the intrinsic benefits or costs of following or violating some normative rule. The institutional grammar that Elinor Ostrom and Sue Crawford first introduced in the mid-1990s is finally starting to bear some fruit. Initial investigations, such as Basurto et al. (2010) and Siddiki et al. (2011), analyzed single institutional statements, but were not able to aggregate these results into useful characterizations of rule clusters.

So far, in the literature using these tools there has been little attention paid to actors responsible for the socialization processes through which those normative values had been internalized by the individual actors. This kind of socialization played a critical role in Tocqueville's understanding of the foundations of a sustainable democracy, but not so much in applications of the IAD framework. Closer examination of the action situations in which agents of socialization operate (and are themselves socialized into playing those roles) might provide the basis for a more natural formal representation of the critical role of organizations as actors within action situations. Technically, organizations can act only through the choices of their agents, but if agents in any long-lasting organization are regularly socialized into the worldview widely shared within that organization and are responsive to the incentives attached to that position, no matter who fills it, then the behavior of that organization can, for many analytical purposes, be treated as if it is a long-lived actor pursuing a relatively consistent set of goals. The extent to which a specific individual's own values or interests deviate from that positional norm could, at least conceivably, be measured and the implications of increased deviations could be derived.

More recent work, such as the analysis of different forms of payment for ecosystem services in Lien, Schlager, and Lona (2018), is showing potential of drawing useful connections to the broader literature on policy tools or instruments. The landscape navigation mode of analysis within the context of the IAD and SES frameworks suggested here might help make that connection. If attributes of the specific components of particular rules are treated not merely as variables, but as pointers toward the collective- and operational-level arenas of choice in which those attributes were first determined or subsequently modified, that might provide one way to begin knitting together individual rules into broader systems of interlocking action situations. That is, detailed analyses of the attributes of specific rules might serve as clues leading to a better understanding of the collective-choice action situations in which multiple rules are clustered together to support a new form of policy instrument.

I consider it promising that the analytical perspective I lay out in this chapter shares a great deal in common with the work of other scholars, some of whom have been directly associated with the Ostrom Workshop and others who, to the best of my knowledge, have not. For examples, consider Kimmich and

Villamayor-Tomas (2019) and Oberlack et al. (2016, 2018). In each of these articles, the authors identify a few core processes at work in the substantive area of policy they are studying and then step back to examine the factors that are most influential in determining the nature of those processes. Oberlack et al. (2016) set up a three-step sequence with core processes, the primary outcomes of those processes, and the “activating factors and facilitating processes” that shape both core processes and outcomes. The labels may be different, but the underlying logic is remarkably congruent with both the IAD and SES frameworks.

Consider also the diagnostic approach to the study of institutions for water governance advocated by de Loë and Patterson (2018, 567): “A *diagnostic approach* is a structured process of context-specific inquiry into both the biophysical and human aspects of a problem situation. Diagnostic approaches should provide systemic but strategic ways of identifying and evaluating external factors in particular situations.” They advocate explicit adoption of a “*user-oriented perspective* (i.e., thinking [as] an analyst, who could be a research, policymaker, or practitioner), and give specific regard to the challenge of suitably capturing relevant external factors” (de Loë and Patterson 2018, 568). Their approach to institutional analysis is especially pertinent to Bloomington School concerns in their explicit focus on the critical problem of determining the appropriate scale at which a given policy setting should be understood, and more specifically, on the problem of where to draw the boundary between core elements of a social-ecological system and exogenous effects from outside that system. They use the term “action situation” to refer to the relatively coherent whole that encompasses the primary components of the empirical setting under investigation.

As de Loë and Patterson (2018) acknowledge, there are no clear and fast rules to make these boundary choices. They recommend that the problem should initially be framed as “tightly” as possible, and then go on to encourage analysts to “critically reflect” on the boundaries they are provisionally considering. They posit a process of sequential consideration of potential extensions by first “looking inward” to more fully understand the internal structure of that action situation and “spiraling outwards” to consider social and environmental factors that are closely tied to those core components, and encourage

repetition of movements in both directions. They assert that “This spiraling approach is important because it allows for progressively expanding the scope of analysis while continuing to re-visit each key SES variable category in light of previous reasoning” (de Loë and Patterson 2018, 571).

In another recent work, Heikkila and Andersson (2018) emphasize the importance of taking a diagnostic approach to contextually specific institutional design. They make the important point that even though the possibility of sustainable self-governance is more viable than generally realized, it is not always the best solution. In short, they encourage other scholars to use the IAD framework as a basis for diagnosis, and to focus their attention on design considerations that are particularly crucial for the relevant contexts.

Villamayor-Tomas et al. (2015), Webster (2015), and Fischer (2018) devise more explicitly dynamic frameworks for the study of social-ecological systems, in ways that suggest potential extension of a dynamic variant of the SES framework to incorporate important aspects of the policy stages heuristic that remains so influential among public policy scholars. Webster introduces an “action cycle” as a simplified generic version of a policy cycle, in which a problem generates signals that may or may not trigger a response on the part of the policymakers. Villamayor-Tomas et al. (2018) represent food and energy production processes as “value chains” that effectively consist of sequences of action situations of resource extraction, production, distribution, and consumption.

Fisher (2018, 139 and 141) treats “feedbacks, time lags, and cross-level interactions” as the “core processes that govern forest landscapes” and offers a succinct statement of the crucial importance of considering time lags, because “society’s governing institutions often function on different spatial and temporal scales than natural systems.” This concern with the process of finding the right spatial and temporary boundary for an action situation (see de Loë and Patterson 2018) ties in nicely with broader concerns about the importance of institutional fit to effective forms of adaptive governance.

Frankly, I find the degree of correspondence among the basic logics of these separate approaches to research to be quite remarkable, and a reminder of just how many diverse forms of inspiration scholars may draw from the work of a single Nobel Laureate.

These papers and articles inspired me to propose that a “policy cycle” (broadly understood as including stages of problem definition, agenda setting, policy selection, implementation, and evaluation) might be represented as a sequence of relatively distinct action situations, one for each of these stages, which typically operate in something like a linear progression, but with the important caveat that stages can be skipped and reversions to earlier stages may occur at any time. In effect, a policy cycle would consist of multiple sites of interaction (or action situations) arranged in an overlapping manner, with each of them consisting of a series of sequential action situations, some of which (especially at the operational level) occur over a regular time sequence (like quarterly business reports or seasonal changes throughout a year), others (collective level) occur at regular intervals (fixed election cycles, for example), and still other combinations of action situations are formed and dissolved in a very irregular manner. The regular repetition of foundational operational-level choices and fixed points for policy implementation or evaluation would be supplemented by irregularly timed creative efforts by participants to resuscitate long-dormant decision arenas or to invent new ones.

In *Understanding Institutional Diversity* Ostrom (2005b) details an analytical perspective meant for application to all forms of institutional arrangements. This ambitious goal required her to suggest ways to identify the core foundational components of the action arenas or action situations that occur within all sites of collective action, and to develop distinctions between the closely inter-related concepts of norms, rules, and strategies, and to offer a taxonomy of how those concepts might be categorized into distinct types. Not surprisingly, the resulting framework was very complex. Elinor Ostrom (2005b, 256-7) realized this complexity required justification:

This complexity of language has not been introduced lightly. A scholar should also keep analysis as simple as possible—given the problem 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. When one is analyzing what is operationally a relatively simple system using a relatively simple

language for analysis, one may not need the full language system developed in this volume. Most common-pool resources, and many other policy fields, however, are complex systems and not simple systems. Thus, we need a consistent, nested set of concepts that can be used in our analysis, research, and policy advice in a cumulative manner.

In short, these frameworks should be as complex as they need to be to find an effective balance between the cognitive requirements of analytical simplicity and the need to accept the reality of the overwhelming complexity of institutional diversity found in the real world (Ostrom 2005a). Ideally, these frameworks are both simple and complex enough to deliver suitable rewards in terms of both analytical rigor and policy relevance.

In my opinion, the single most important contribution made by the Ostroms and others working within the Bloomington School tradition has been to demonstrate the remarkable ability of local communities to creatively craft solutions to practical problems. Ostrom was fond of saying that, in contrast to the lesson conveyed by Hardin's "tragedy of the commons," she preferred to presume that communities are rarely trapped within social dilemmas from which they cannot escape but are typically positioned to take action to improve their own situation. The Ostroms never claimed that this capacity was limitless, and yet the most common line of criticism has been 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. I admit this criticism may be a fair one, but I would counter with the point that some minimal degree of optimism may be required to accomplish difficult tasks of collective action. 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 social movement or a scientific discipline.

As public entrepreneurs navigate through multidimensional landscapes of potential institutional change, they will sometimes run up against barriers they can't break through. Those actors who control access to the sites of constitutional deliberation that determine the distributional consequences of

collective decisions may not be willing to listen to new voices, or to consider adopting new modes of decision-making. Scholars from the Bloomington School have often been accused of not realistically taking into account the inequities imposed by asymmetric power relations, but there is no reason such inequities need to be neglected (see Clement 2010). Because, in practice, the range of possibilities for community-based action is not unlimited, the IAD framework needs to be able to incorporate these limits in some fashion.

The IAD framework forces institutional analysts to think creatively while searching through the entire framework to identify potentially relevant factors before they settle on a particular theoretical perspective or build a specific formal model. Once we realize that participants in any social dilemma game are simultaneously participating in adjacent action situations, and that they may draw upon resources and capabilities developed or reinforced in those adjacent games for use in addressing their core problem, then game players (or action situation participants) may be able to find some way out of their dilemma.

I'd like to finish this chapter with an observation of the fundamental similarity facing institutional analysts and the problem-solving individuals they study: both must navigate complex institutional landscapes as they simultaneously use and revise the ever-changing polycentric settings within which they live. The analytical perspective on institutions provided by scholars from the Bloomington School can help us, whether we are citizens seeking better access to public goods, active participants in policy processes, or anyone engaged in evaluation of those processes, to more fully appreciate the foundational connection between self-governance and the forms of institutional analysis that the Ostroms exemplified in their own lives. They were pioneers who blazed new paths through polycentric institutional landscapes and who encouraged others to follow them in that ennobling journey.

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NOTES

¹ For overviews, see V. Ostrom, Tiebout, and Warren (1961); Mitchell (1988); McGinnis (1996, 1999a, 1999b, 2000, 2011a, 2011c); Ostrom (1990, 2005b, 2010a); Aligica and Boettke (2009); Poteete, Janssen, and Ostrom (2010); McGinnis and Walker (2010); V. Ostrom (2011, 2012); Aligica (2014); Sabetti and Aligica (2014); Cole and McGinnis (2015a, 2015b, 2017, 2018); and Tarko (2017).

² For a range of perspectives on the question of rigor in political science, see Easton 1969; Singer 1972; Boynton 1982; Putnam 2003; Stoker, Peters, and Pierre 2015. Also, Jacobs and Skocpol (2006) offer a different way of integrating rigor and relevance, focused on doing rigorous research that could contribute to partisan debates on public policy at the national level.

³ Other efforts more directly focused on formalizing or testing the distribution of research inspired by Ostrom's design principles including Frey (2017) and Gari et al. (2018).

⁴ Although the IAD and SES frameworks tend to be considered separately, Cole, Epstein, and McGinnis (2019) argue that these two frameworks should be seen as special cases of a broader integrative framework. For a different perspective on the relationship between these two frameworks, see Schlager and Cox (2017).

⁵ For the closely related concept of an ecology of games, see Long 1958; Lubell 2013; Lubell, Robins, and Wang 2014; Berardo and Lubell 2019. The latter is an introduction to a special issue of *Policy Studies Journal* in which contributors explicitly connect that research tradition to the concept of polycentricity, which lies at the very heart of the Bloomington School.

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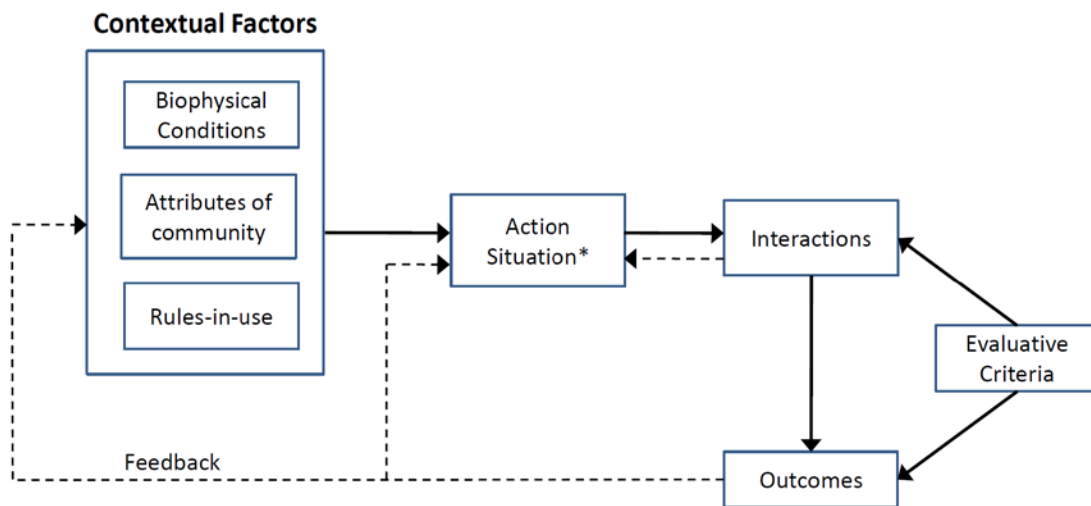
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Table 1.1: Distinguishing Characteristics of Scientific Rigor and Policy Relevance

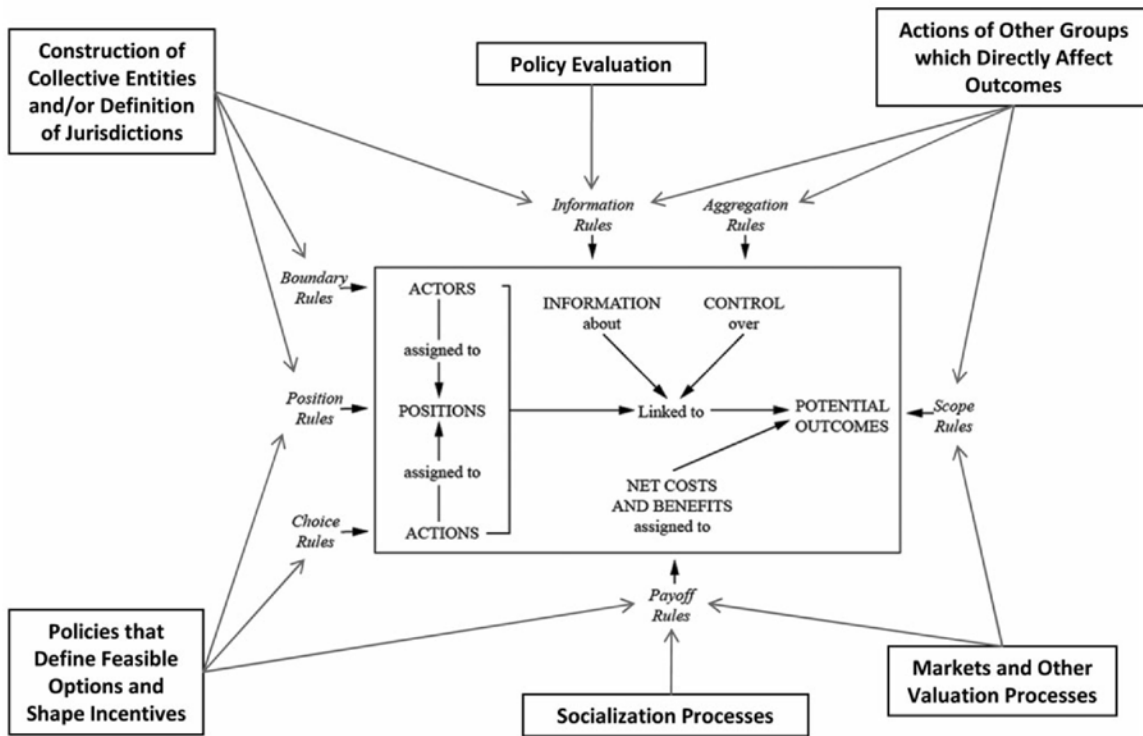
<i>Scientific Rigor</i>	<i>Policy Relevance</i>
Seeks to make new contributions to the existing body of scientific knowledge	Seeks practical suggestions for improvement of existing conditions
Pursues general explanations, which may be based on simplified models or generalizations	Provides contextually rich descriptions, which may be overly detailed or presumed unique
Follows a systematic mode of analysis that should be easily replicable	Clearly communicates conclusions to relevant publics and other audiences
Clearly defines concepts and specific measures and indicators used	Clearly states goals and recommends particular plan of action
May overemphasize technical detail at cost of broader communication	May reinforce biases and undermine more productive open discourse
Ideally, uses all appropriate methods; in practice, relies on a more limited range	Relies on familiar forms of public discourse, political organization, and policy tools
Uses research design to select cases in ways that support valid inference	Selects examples and emphasizes aspects that support policy recommendations
Ideally, investigates full logical implications; in practice, avoids unneeded complexity	Ideally, engages with all parties affected; in practice, tends to adopt one point of view

Figure 1.1: Institutional Analysis and Development (IAD) Framework



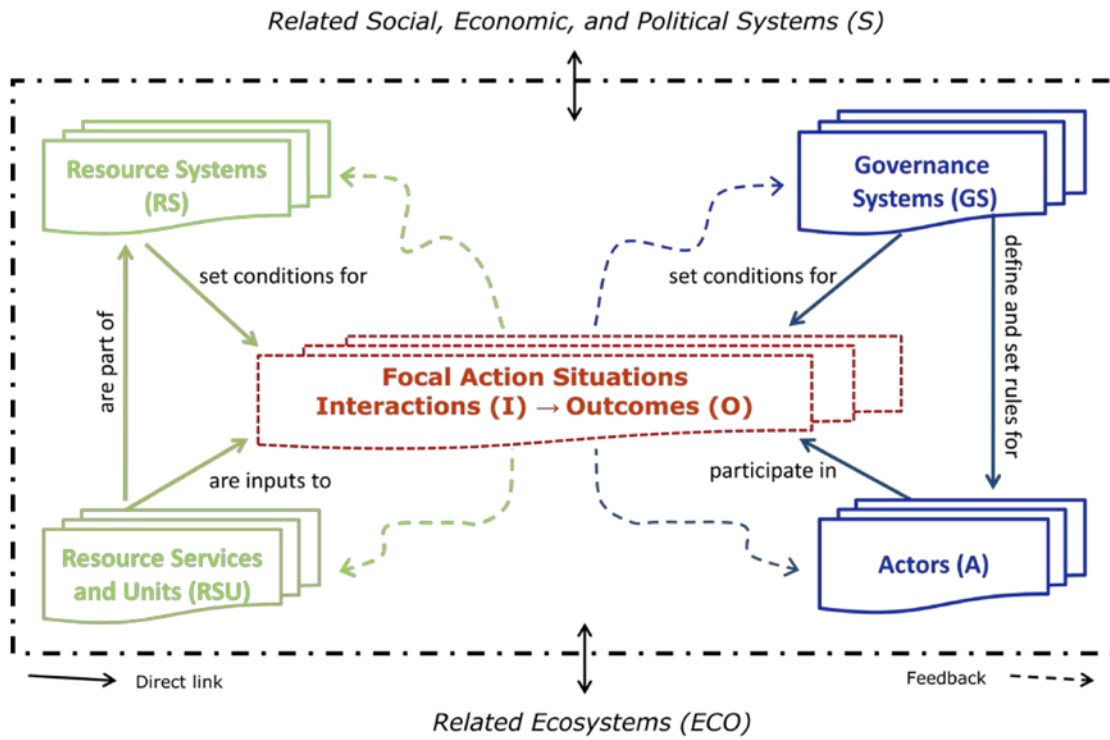
*Earlier versions separated an action situation into actors and an action arena.
Source: Adapted from Ostrom (2010a, 646).

Figure 1.2: A Network of Adjacent Action Situations



Source: McGinnis (2011b, 54) and interior figure taken from Ostrom (2005b, 189).

Figure 1.3: Social and Ecological System (SES) Framework



Source: Adapted from McGinnis and Ostrom (2014).