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The Ostrom Workshop: Artisanry and Knowledge Commons

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Abstract

This paper analyzes the Ostrom Workshop as a site of interdisciplinary collective knowledge production. We provide an overview of the history of the Workshop and its most important outputs in terms of ideas, artifacts, and facilities for research. We argue that the Workshop's contributions to social sciences came about by way of three types of collective knowledge production: team production, co-production and joint production. Team production, the collaboration on research projects is well recognized in the literature, but we demonstrate how the extra-departmental position of the Workshop and its ethos of artisanry greatly facilitated it. Co-production of knowledge was achieved through the active engagement with self-governing communities and the agencies governing the provision of public goods. In these exchanges the goal was not merely the study of governance, but also the crafting of good governance with the relevant communities which was congruent with the idea of co-production of public services emphasized by scholars of the Ostrom Workshop. Finally joint production of complementary outputs took place by way of individual research projects on governance and institutions, and led to the gradual emergence of conceptual language and framework for the analysis of institutions, the Institutional Analysis and Development framework.

Keywords: The Ostrom Workshop, Co-Production, Joint Production, Knowledge Commons, Institutional Analysis, Elinor Ostrom

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Introduction

The history of economics has a tendency to focus on particular individuals, but recently historians of economics have been paying more attention to knowledge communities and scholarly groups (Forget and Goodwin, 2011; Dekker, 2014; Svorenčik, 2018). This study of intellectual communities can be greatly facilitated by studying the sites at which these individuals meet, such as conferences, seminars, circles, policy institutes, academic departments, workshops or experimental labs. At the most basic level we can say that these are sites of collective knowledge production. The production of knowledge has been studied in a number of ways in economics, in human capital theory for example (Schultz, 1961; see also Teixeira in this volume), or as an entrepreneurial discovery procedure (Hayek, 1945; Kirzner, 1997). But these approaches are as individualistic as the study of individuals in the history of economics.

An important exception to this focus on individual knowledge production is a study of the knowledge commons by Elinor Ostrom and Charlotte Hess (2011). More recently Jason Potts (2019) suggested that communal knowledge production is more generally at the basis of innovation and knowledge production in the economy. In Potts's account different individuals come together with disparate pieces of knowledge and skills but given the pervasive uncertainty without a well-defined goal. In that process active participation in communal knowledge production is crucial. For an individual to be able to use this knowledge he needs to be member of the knowledge community (Kuhn, 1970). In order to have access to this knowledge it is also often required that an individual makes active contributions to the knowledge practices, which is why some have called science a 'contribution good' (Kealey and Ricketts, 2014). This paper investigates the institutional structure that made possible one of the more innovative approaches in modern political economy, sometimes known as the Bloomington School, or simply as the Ostrom Workshop. We argue that the Bloomington School of Political Economy, and the Ostrom Workshop in particular, facilitated the collective knowledge production at three levels, in terms of team production, co-production and joint production. With team production we refer to the process of individual contributions to a team project, where the contribution of each individual to the total output is not easily determined (Alchian and Demsetz, 1972). By co-production we mean the production of knowledge together with the research 'subjects', that is those facing governance problems (Parks et al., 1981; see also Jasanoff, 2004). Joint production refers to the process by which individual projects and exchanges lead to byproducts (not directly intended outputs) which provide important complementary inputs to future knowledge production.

The Workshop in Political Theory and Policy was founded by Vincent and Elinor Ostrom in 1973 at Indiana University. Since the early 1970s the Ostrom Workshop provided space for scholars, students, and researchers who produced research focusing on governance solutions. Initially most of the

work focused on the (local) provision of public goods through the perspective of *polycentricity*: the complex interaction of many partially overlapping decision centers (Aligica and Tarko, 2012). Later work focused both on the political theory of federalism and active citizenship, as well as the governance of common-pool resources for which Elinor Ostrom was awarded the Nobel Prize in Economics in 2009. Perhaps the centerpiece of the intellectual output of the Workshop was the framework for Institutional Analysis and Development (IAD). The Workshop actively aimed at improving existing institutions and governance solutions, and was therefore practice-oriented, one of the reasons why the research center was called a *Workshop*.

Our paper analyzes the Ostrom Workshop as a site of collective knowledge production and it demonstrates how the Workshop functioned as a self-governing community within the University of Indiana. The analysis in our paper is in part reflective, because we use some of the intellectual tools for the analysis of institutions developed at the Workshop. We believe that to be in the spirit of Ostrom, who argued that: “we attempt to take the very understanding that we get from our research and build it into the way we operate the Workshop” (quoted in Tierney, 1994, p. 5). The first section sketches the history of the Workshop. The second section provides an overview of the most important outputs of the Workshop. In the third section we analyze the Workshop as a site of collective knowledge production.

1 History of the Workshop

1.1 The prehistory

Vincent and Elinor Ostrom got married in 1963, and two years later together moved to Indiana University. While Vincent was offered a full professorship in the Department of Political Science, Elinor Ostrom struggled to get a respectable position. She recalled: “I had the good luck to be offered a visiting assistant professor position since they needed someone to teach political science at 7:30 a.m. on Tuesday, Thursday and Saturday, and I was willing to do that. I became graduate adviser during the Vietnam War because they needed someone who had experience and age – I was in my thirties – and they appointed me on a real line.”¹ It was only after a decade in Indiana that the Workshop was founded.

Before formally setting up the Workshop, the Ostroms would run a regular Monday Colloquium to give a chance to faculty and graduate students in anthropology, business, economics, geography, law, political science to discuss the diverse structures of political economies. From the start the goal was to have an interdisciplinary discussion about political economy. In a 1972 memo to the head of

¹Sarah Auffret, “Collective Action, Singular Accomplishment: ASU Magazine Interviews 2009 Nobel Laureate Elinor Ostrom,” box 115, folder “Writings-EO-Publicity-Writings about EO 2010,” Elinor Ostrom Papers.

the Political Science Department, Vincent Ostrom proposed founding a Workshop in Political Theory and Policy Analysis:

For the past several years we have been concerned with educational and research efforts to develop political theory as an analytical tool which can also be used to guide empirical research and policy analysis. We assume that research is not very productive unless informed by theory and that theory is not very useful unless it can stand the test of experience.²

The motion was approved in 1973 and in 1975, “the Workshop was extended the status of ‘Center’ by the Office of Research and Graduate Development” (V. Ostrom, E. Ostrom, and Herzberg, 1992, p. 36). That was the formal denomination, but Vincent and Elinor Ostrom insisted on calling it a Workshop, with which they had something quite specific in mind.

At the same time, they were literally building a home for which Elinor made the architectural drawings and which would contain a room full of Native American art. A little further away, they: “designed and built their two-story cabin on the Manitoulin Island in Lake Huron. Again, Lin drafted the architectural drawings, and Vincent, with friends on the Manitoulin, felled the trees, planed the timbers, and built the structure, which served for nearly fifty years as their summer writing retreat” (Allen, 2013).

The origin story shared among the Workshoppers was that the Ostroms were never quite sure whether they would ultimately be accepted and make it in academia. Consequently, having a plan B was prudent not just for the Ostroms but for all the Workshoppers. Paul Dragos-Aligica, one of the Workshop-affiliated scholars, explained:

They decided they [needed an] additional skill [or] tool to make it in this world, so they started to be interested in carpentry and building furniture. So, it looks like that they are very skillful in this respect. So, they were apprentices to somebody who was very good, in terms of furniture making here in Indiana. And here you are at the point, they were sure they would be able to [make a] living and surviving even if their careers in academia did not make it. So they have this backup thing. . . (Clark, 2019, p. 69)

The artisan who taught the Ostroms how to make furniture was Paul Goodman. He would help them see research “problems through the eyes of a master craftsman” (Tierney, 1994). As Elinor explained:

One of the reasons we called this place a workshop instead of a center was because of working with Paul and understanding what artisanship was. You might be working on

²E. Ostrom and V. Ostrom to L.N. Rieselbach, 1 November 1972, box 109, folder “Interdepartmental Communication TO: L.N. Rieselbach, Chairman From: EO & VO November 1, 1972,” Elinor Ostrom Papers. See Clark (2019) for a more detailed narrative of the context in which the Workshop was born.

something like a cabinet and thinking about the design of it, and thinking this idea versus that idea, and then Paul could pick up a board and say, oh, you shouldn't use this one because it will split. He could see things in wood that we couldn't. So the whole idea of artisans and apprentices and the structure of a good workshop really made an impression on us.³

The Workshop would eventually become a self-governing organization which gave the Ostroms some autonomy from the constraints present within the Department of Political Science. At the Workshop they created a space for “apprenticeship” as a relationship between the students and the faculty that genuinely reflected collaboration among equals. Roger Parks, a student and colleague of Elinor Ostrom, recalled that during

meetings to discuss topics or issues, everybody wants to raise items of significance to equal footing. Everybody does. Each argues their point-of-view, oftentimes quite rigorous arguments, and it really makes you feel like you were part of the team. But also, at the Workshop you felt like you were part of a family. (Clark, 2019, p. 70)

The self-governance did not mean completely horizontal relationships, the Ostroms remained central and ultimately directed the line of research, they were the master craftsmen. But participants were constantly invited to engage. The collective knowledge production did not only result from interactions between the members of the Workshop, as one might expect in any well-functioning seminar, but also from interactions between the Workshoppers and those ‘in the field’. Vincent Ostrom explained in a letter to a friend:

As political scientists, for example, we should be the source of ideas and inspiration relevant to the design of political institutions. If we fail to contribute to the imagination and sense of design among people in our own immediate political community, perhaps we run a serious risk that they may not be able to appreciate and sustain our efforts to design and build a great university.⁴

Earlier in the letter Vincent had drawn an explicit analogy between how craftsmen require design principles next to their knowledge of the material. He extended that analogy in his “Artisanship and Artifact” (V. Ostrom, 1980) which treats organizations like artifacts in which artisans are busy shaping the running of the organization. Governance more generally, they believed, was a process of artisanship and therefore much could be learned from the people doing ‘the governing’.

³‘What a prize: Nobel winner Elinor Ostrom is a gregarious teacher who loves to solve problems’, Herald Times, 6 December 2009.

⁴V. Ostrom to Joseph Sutton, 14 December 1965, box 281, folder “Personnel Files Indiana University Dept. of Government Position,” Elinor Ostrom Papers.

1.2 The Early Years

Initially the research centered on the analysis of police-work that had also been the subject of Vincent's earlier writings on polycentricity. Elinor and many of her students such as Gordon Whitaker, Roger Parks, and Dennis C. Smith, engaged in participatory field-work to analyze policing practices (E. Ostrom et al. 1973). This led to a new focus on governance on the ground, in which one of the leading questions was whether smaller decentralized departments functioned better than bigger a centralized one (Boettke, Palagashvili, and Lemke, 2013).

The early work on policing and community control was not particularly well received within the political science profession, in part because the studies relied on surveys with citizens. Many academics and city officials were skeptical that citizens could judge the quality of policing services well. The hands-on researchers were not deterred, however, and supplemented the surveys with alternative data. They developed a methodology and an instrument to measure the amount of street lighting in a neighborhood, a 'light-o-meter', as well as the smoothness of the roads with a 'rough-o-meter' (Tarko, 2017, p. 34). At the same time, Elinor and Vincent Ostrom started developing graduate seminars focusing on the analysis of institutional design. This institutional innovation did not remain unnoticed either: "Our seminars were offered in the Political Science Department, but our colleagues did not like our approach because we drew on economic theory as well as political thought. Graduate students were frequently advised against taking our seminars" (E. Ostrom quoted in Clark, 2019, p. 89).

Nonetheless, the overall output of the Workshop had already begun to take off. Close to twenty dissertations were successfully defended during the 1970s mostly dealing with governance or the police services. The artisan ethos was clear from the way they sought to improve governance while studying it. The students would conduct fieldwork in Indianapolis and elsewhere by way of interviews, field notes, and observations of the work of police officers, but most of all in continuous conversation with the communities being policed. A 1975 report that summarized the first three years of the Workshop highlighted the following outcomes of the enterprise as follows: "data collection for the Police Services Study, preparation of eleven book-length manuscripts, the beginning of 'a newsletter to public officials and citizens interested in our Police Services Study,' five proposals out for review at external funding agencies, nomination to the American Political Science Association for success in undergraduate teaching, and continued weekly colloquia meetings on Mondays."⁵

Establishing a burgeoning research center did not free Elinor Ostrom from academic commitments. On the one hand, she struggled to secure the position of the Workshop in relation to the Department of Political Science. On the other hand, she decided to assume – grudgingly, and after

⁵Workshop in Political Theory and Policy Analysis, "The Third Year," 1976, box 84, folder "Workshop 1972-1975," Elinor Ostrom Papers.

some tough negotiations – a position as department chair. As a head of the department, Elinor Ostrom managed to successfully recruit Roberta (Bobbie) Herzberg from Washington University in St. Louis to join the Department of Political Science at the Indiana University in 1984 and support the Workshop:

We plan to examine our long-standing interest in the effects of institutional arrangement on public sector performance utilizing experimental methods to supplement our previous reliance on field research. Bobbie Herzberg and I plan to offer a joint graduate research seminar in the spring of 1984. This will be a study of institutional arrangements. (Clark, 2019, p. 83)

The fact that the head of department was also a central figure of the Workshop caused some resentment among the faculty not affiliated with the Workshop who questioned the impartiality of the new chair (Clark, 2019, p. 84). Both Vincent and Elinor Ostrom in turn felt that the recognition of their contributions to the Workshop, the Department, and the University were not sufficiently appreciated. But despite some tensions, the early 1980s was a period of consolidation for the Workshop. After the metropolitan studies had run their course a strong need was felt to develop a coherent framework for the analysis of governance institutions. The focus was on institutions and hence it transcended most social science fields.

This synthetic work received an important impulse in the early 1980s through repeated stays of both Elinor and Vincent at the Center for Interdisciplinary Research (ZiF) at Bielefeld University in Germany (Kolev, 2019). The experience at Bielefeld convinced them of the importance of inviting visiting scholars, a practice they would afterwards introduce at the Workshop. As Vincent recalled: “if we were to understand anything about the different areas of the world, we had to have people from those areas sitting around the table in our regular conversations” (quoted in Tierney 1994, p. 7). The Ostroms returned to their Workshop in Indiana equipped with an international network of connections that allowed them to welcome international postdoctoral students and explicitly start defining their research as both interdisciplinary and comparative.

During the mid-1980s there was a growing realization that the Workshop had become a scholarly center with its own reputation and research agenda. At the micro-level the Workshop studied the self-governance of common-pool resources in relatively small communities. At the macro-level it studied international and national political systems, often with the purpose of demonstrating the disastrous outcomes of ‘grand experiments’. And at the intermediate level were studies of the provision of (local) public goods such as policing services or water. The micro, macro, and intermediate levels of analysis were tied together by the overarching concept of polycentricity.⁶

⁶Inspired by Michael Polanyi’s “The Logic of Liberty” (1951), Vincent Ostrom (1972, p. 6) defined a polycentric order

1.3 The Flourishing

If the 1980s were a decade of intellectual development, then the 1990s marked the glory years for the Workshop. In 1984 a Common Property Network was founded, which led to the establishment of the International Association for the Study of Common Property in 1989 (since 2006 called the International Association for the Study of the Commons). From 1991 there was a yearly conference on the commons which attracted from the start at least 40 contributions. And in 1994 a first so-called Workshop on the Workshop (WOW) was held. This expansion of the Workshop was further strengthened by the fact the Workshop had become financially independent. Initially the Workshop was mostly funded through funds from within the University supplemented by grant money from the NSF (Levi, 2010). This changed in 1984 when the Workshop managed to establish the Tocqueville Endowment which was mostly filled by donations from those directly associated with the Workshop (Tierney, 1994).⁷

The Workshop also branched out. In 1996 a Center for the Study of Institutions, Population and Environmental Change (CIPEC) was founded in collaboration with the University of Arizona. It was located both in Arizona and at the Indiana campus, where it was closely associated with the Workshop. CIPEC was led by Elinor Ostrom and Catherine Tucker, and more than the Workshop it was directly focused on the governance of natural resources. Cooperation with local communities (such as the Zapotecs in Mexico) was crucial to the projects, and further variations of the creative research methods employed in the police studies were developed. An example was the International Forestry Resources and Institutions (IFRI) protocols that developed standardized measures of forest density, tree frequency, and dominance of tree species. These protocols were later used all across Central and South America (Clark, 2019, pp. 125–27).

Elinor Ostrom received increasing academic recognition. She served as president of the American Political Science Association, the second woman to do so. In 1999 she was awarded the Johan Skytte Prize in Political Science, sometimes referred to as the Nobel Prize in Political Science. The prize money was reinvested in the Tocqueville Endowment. The crowning achievement came with the Nobel Prize in Economics in 2009. Nonetheless, she would insist that ‘we won’ by which she referred to her partner, Vincent, but also to the Workshop as a whole. Around that time, she also started planning her succession as director of the Workshop which would be taken up by Michael McGinnis and James Walker in 2009 (Clark, 2019, p. 137). Elinor Ostrom had been its entrepreneurial and social leader for a nearly four decades by then.

as one where “many elements are capable of making mutual adjustments for ordering their relationships with one another within a general system of rules where each element acts with independence of other elements.” Below we discuss the concept of polycentricity in greater detail.

⁷The endowment was worth \$500,000 in 1992 (V. Ostrom et al., 1992, p. 4) and \$2.3 million in October 2000 (Clark, 2019, p.125).

2 Outputs

Charlotte Hess and Elinor Ostrom (2004, p. 3) suggested that systems of scholarly communication generate several kinds of outputs. At the most general level these are artifacts (articles, books, databases), facilities (libraries, archives), and ideas (intangible content, creative vision, information, knowledge). These outputs constitute the scholarly ecosystem of knowledge production and, as a part of this ecosystem, tend to be largely complementary. The later work of Hess and Ostrom on the knowledge commons looked at how such knowledge systems could be effectively governed. This was not merely of scholarly interest since the Ostroms were convinced that knowledge itself could also have an emancipatory role and could enhance the functioning of democracy through better informed citizenship and more effective forms of self-governance (V. Ostrom, 1997).⁸ In the next sections we follow Hess and Ostrom in categorizing the outputs of scholarly communication into ideas, artifacts, and facilities to closely examine the products of scholarly communication generated at the Workshop.

2.1 Ideas

Advancing scientific knowledge has been one of the most salient values that the Ostroms emphasized. One of the challenges of advancing knowledge is “sorting out claims to knowledge from knowledge” (Hess and E. Ostrom, 2004, p. 19). The practice of contestation, that is, the need for all claims “to be challenged in an open, competitive process that is also fair to new ideas” (p. 19) was central in the way the Ostroms approached scholarly communication. Below we discuss three key ideas developed at the Workshop – the concept of common-pool resources (CPR), the framework for Institutional Analysis and Development (IAD), and the concept of polycentricity – while illustrating the process through which they were crafted by the Workshop-affiliated scholars.

Common-Pool Resources

When Garrett Hardin published “The Tragedy of the Commons” (1968) in *Science*, he famously argued that as population increases common resources will tend to be depleted. The maximizing logic into which rational economic agents are locked compels them to “increase their herd without limit—in a world that is limited” (1968, p. 162). The only way out was to institute a centralized form of governance, or to privatize the property. The Ostroms contested Hardin’s thesis by suggesting that people’s

⁸Knowledge was central to Vincent Ostrom’s idea of governance, as he wrote in 1964: “Knowledge is [to be] viewed as a product, and the various agencies concerned with its production and distribution are viewed as a part of the knowledge industry . . . which includes such components as education, research and development, media of communication, information machines, and information services.” (V. Ostrom, 1964).

capacity to self-govern should not be underestimated and pointed to the wide empirical variety of institutional arrangements that lie in between the extreme cases of top down and bottom up governance.

The debate with Hardin was productive in the sense that it led to a better understanding of the provision of public goods and the different possible types of governance. The perspectives of Elinor and Vincent Ostrom became respected enough that an edited volume entitled *Managing the Commons* (1977) edited by Hardin together with Ostroms' former student, John Baden, included their contributions on "A Theory for Institutional Analysis of Common Pool Problems" and on "Collective Action and the Tragedy of the Commons". Barbara Allen, who graduated in the 1980s, recalled that

Lin and Garrett Hardin had a long correspondence that was a no-holds barred conversation about the commons ... yet she felt perfectly comfortable welcoming him to their home for dinner. That's because both Vincent and Elinor believed in the creativity of contestation. They argued things out, even among themselves—and out of that sometimes came new ideas they had never thought about. (Allen quoted in Walljasper, 2014)

Instead of the Samuelsonian dichotomy between public and private goods on which Hardin built, Elinor and Vincent Ostrom proposed a graded scale of a goods in terms the level of rivalry and excludability – or, as the Ostroms put it, in terms of degrees of joint usage and the feasibility of exclusion. Later on, William Blomquist, Elinor Ostrom's doctoral student and Workshop-affiliated scholar, would continue the work she started with her dissertation on California groundwater basin (E. Ostrom, 1965) and together they contested Hardin:

Not every common-pool resource will necessarily produce a commons dilemma. ... Whether or not a commons dilemma arises in a particular case of a common-pool resource depends upon the behavior or users, which in turn depends upon the structure of their situation and the incentives they face. (Blomquist and E. Ostrom, 1985)

By introducing a novel category of CPR – a resource that has (unlike public goods) alternative uses to which the users cannot be denied access – the Ostroms contributed to advancing the language of the debate. The analysis of the management (and mismanagement) of CPRs became a specialty of the Workshop. Under the direct guidance of Elinor Ostrom, and later also inspired by her work a research team to compile a database of more than 5,000 case studies of CPR around the world. That team included William Blomquist, James Wunsch, Edella Schlager, Sharon Huckfeldt, and Shui-Yan Tang, who were all apprentices of the Workshop for longer periods of time. The CPR database was an attempt to assemble a reliable data set compiling information about fisheries, forests, irrigation systems and other resources (E. Ostrom 2010a, pp. 14-15).

The IAD Framework

One challenge of assembling such a sizeable data set stemmed from the multidisciplinary origins of the case studies in question. Elinor Ostrom recalled that scholars “from different disciplines recorded information about variables that were thought to be important in their discipline, but ignored other variables that were not perceived as relevant” (E. Ostrom, 2005, p. 23). To make sense of the information about the elements that affect the actions and interactions of users of a resource, a shared framework was required. This framework would eventually come to be known as the Institutional Analysis and Development (IAD). Here we briefly reconstruct the intellectual history of the IAD framework.

In 1985 a National Research Council put together a panel to study diverse common-pool resources. Elinor Ostrom recalled: “By the time I was asked to join the National Research Council Committee on Common Property Institutions, I was ready to turn to the challenge of trying to understand why some users overcame the tragedy of the commons that they faced, while other let themselves be dragged down and destroyed valuable resources” (E. Ostrom, 2010a, p. 14). The Committee on Common Property Institutions initially asked Ronald Oakerson, a former Workshop apprentice, to present the framework for institutional analysis and “lead the planning sessions to enable scholars to discuss their cases using the same framework” (E. Ostrom, 2010a, p. 14). Oakerson’s framework built directly on Vincent Ostrom’s original characterization of the coordination problem formulated in *The Intellectual Crisis in American Public Administration* (1973). Following Vincent Ostrom, Oakerson suggested that difficulties in governing the commons usually stemmed from “a mismatch between the technical and physical nature of a commons and the decision-making arrangements used to govern its use” (Oakerson, 1986, p. 25).

While Oakerson’s discussion of Vincent Ostrom’s original argument contains one of the original seeds of what would eventually become the IAD framework, the subsequent developments of the framework would come to emphasize that individuals choose “their optimizing strategies within the structure of a situation”, and they do so within “some shared community of understanding” (V. Ostrom, [1973] 1989, p. 164).

In parallel to Oakerson’s and Vincent Ostrom’s work on the elements of the framework for institutional analysis, Elinor Ostrom and Larry Kiser had made another promising inroad in their essay “The Three Worlds of Action: A Metatheoretical Synthesis of Institutional Approaches” (1982) in which they distinguished between three levels of rules, the operational level which explains individual actions, the collective level which explains the world of authoritative decision-making, and the constitutional level which explains the design of collective decision-making. While these different levels of analysis would provide another building block for the IAD framework, Elinor Ostrom’s

central contributions to the IAD framework emphasized the subjective understanding of governance rules. And even more than her theoretically inclined husband, she emphasized the bottom-up perspective. Changes in the “organizational arrangements” do not directly map into changing the behavior of the individual, she argued. This is because “rules are stated in words,” and the analyst must take into the account that “for participants to use them in complex chains of actions,” these rules “must be understood (at least implicitly)” (Ostrom, 1986, p. 7).

As we mentioned previously, during the 1981-1982 academic year, Elinor and Vincent took part in a year-long research group on “Guidance, Control, and Performance Evaluation in the Public Sector” at the Center for Interdisciplinary Research (ZiF), Bielefeld University, Germany. It was around this time that Elinor began to see the centrality of what she called the “Action Situation” for operationalizing the IAD framework. The opportunity to participate in the Bielefeld research group organized by Reinhard Selten was important for the Ostroms in helping them connect their institutional analysis with a rigorous game theoretical treatment while developing an interdisciplinary approach to guidance, control, and performance evaluation in the public sector.

With her characteristic generosity, Elinor Ostrom recalls: “I was fortunate that Reinhard Selten invited me to join his game theory seminar on the Bielefeld campus. During long walks in the woods behind the campus, Reinhard and I discussed an evolving framework for institutional analysis and the centrality of game theory to its development” (E. Ostrom, 2010a, p. 12). Some participants at the ZiF in Bielefeld such as Selten or a German political economist Hans-Günter Krüselberg would in turn later become participants in the Ostrom Workshop thus helping internationalize the Ostroms’ network while connecting their emerging IAD framework closely with the German tradition of *Ordnungstheorie* (theory of order) laid down by Walter Eucken in his *Foundations of Economics* ([1941] 1950).

The building blocks of the IAD framework were collectively produced by a community of users at the Workshop. The community would come to employ the framework as a focal device that helped them organize their thoughts and analytical concepts, and, most importantly, used it to successfully communicate while overcoming the obstacles of interdisciplinary terminology.⁹

Self-governance and Polycentricity

While the IAD framework provided the shared language for micro-studies, the idea of polycentricity formed a kind of overarching philosophy for the Workshop (Aligica, 2014, p. 42). The social phi-

⁹Our brief intellectual history of the framework can illustrate some of the contributions, but not to do full justice to the many conversations and smaller contributions and adjustments through which it came about. Filippo Sabetti (2011, p. 76), for instance, explains that Workshop apprentices like Marks Sproule-Jones and Susan Wynne also made distinct contributions to the framework.

osophy of a polycentric social order was motivated by the fact that “[t]he illusion of chaos or the appearance of disorder is a phenomenon which has characterized American public life for a very long time” (V. Ostrom, 1972, p. 25), but to see disorder was a mistake. The Workshop’s philosophy and Vincent Ostrom’s work in particular was inspired by Tocqueville’s observation that “[t]he appearance of disorder which prevails on the surface leads one at first to imagine that society is in a state of anarchy; nor does one perceive one’s mistake till one has gone deeper into the subject” (Tocqueville cited in V. Ostrom 1972, p. 25).

“The basic idea” behind the concept of polycentricity, explained McGinnis and Walker (2010, p. 294), “is that any group of individuals facing collective problems should be able to address that problem in whatever way they best see fit.” This seemingly common-sense statement implies that “not all problems must be addressed by a single central government,” rather, as Bobbie Herzberg pointed out, “[p]olycentric forms imply finding the right level of addressing diverse social problems without the need for a one size fits all solution” (2005, pp. 13-14).

The perceived need to go deeper into the subject of polycentric self-governance which on the surface may appear chaotic, inefficient, and redundant motivated the work of the Ostroms from the very beginning of their careers (V. Ostrom et al., 1961; E. Ostrom, 1965) and materialized in the research that addressed the debate about the centralization and rationalization of the provision of public services such as policing in metropolitan areas (“the metropolitan debate”). Elinor Ostrom summed it up effectively: “the widely held belief that a multiplicity of departments in a metropolitan area was less efficient was not found” (2010b, p. 644). The early findings on the implications of polycentric governance put forward by the team of Workshop-affiliated scholars “carried forth as we have undertaken further empirical studies of polycentric governance of resource and infrastructure systems across the world” (E. Ostrom 2010b, p. 644).

While important for empirical studies, the concept of polycentricity remained primarily a guiding ideal at a more abstract level. It united the various projects and provided an umbrella under which the different projects could be placed. It moreover structured the contributions, they could be understood as part of a unified project.

2.2 Artifacts

The main ideas crafted at the Workshop came about in many research projects, books, and perhaps most of all in the great number of dissertations. And they would also lead to one of the most important artifacts of the Ostrom Workshop, the year-long seminar “Institutional Analysis and Development.” We proceed to examine these artifacts below.

Dissertations

The Ostrom Workshop was home to a large number of graduate students. Surveying different repositories, we located 135 Workshop-related PhD. theses defended between 1968 and 2019.¹⁰ The first two students who wrote their dissertations under the guidance of the Ostroms at Indiana University were Robert Bish (1968) and John Baden (1969); during the following two decades 37 Workshop-related dissertations were defended (18 in 1970s and 19 in 1980s). In these first two decades research on social organization and on theoretical issues of polycentricity and self-governance had the upper hand. It took longer before the applied work on various CPRs would become more prominent. These studies took over ‘the lead’ from the more conceptual dissertations during the 1990s (when 29 dissertations were defended). The applied studies then dominated theoretical and social organization dissertations in the 2000s and 2010s.¹¹ In 2000s the number of PhD. students at the Workshop reached its peak (with 54 dissertations defended) and declined in 2010s after Elinor and Vincent passed away in 2012.

The dissertations allow us to analyze the involvement of Vincent and Elinor Ostrom in supporting graduate students. We also observe the growing importance of the Workshop in the intellectual and personal lives of the graduate apprentices as well as the increasingly interdisciplinary focus of the research that Workshop related graduate students undertook.¹² While initially the involvement of Vincent and Elinor on the dissertation committees was about equal, since the 1980s Vincent appeared on far less committees. Elinor would sit at approximately 90% of dissertation defenses throughout 1980s and 1990s (and in the majority of cases, she was dissertation chair). This was a remarkably diligent form “quality control.” And indeed, her work ethic, as well as the little amount of sleep she needed was famous among the Workshopppers.

Secondly, while the Indiana University Department of Political Science was dominant in granting PhDs until 1980s, the Workshop-related dissertations we examined indicate a growing interdisciplinarity of dissertations which starts in the 1980s and continues until the present day. This is evident

¹⁰We have surveyed the list of dissertations at the Ostrom Workshop Website (<https://ostromworkshop.indiana.edu/resources/publications/dissertations.html>), the Digital Library of the Commons (<https://dlc.dlib.indiana.edu/dlc/>), and the Catalog of the Indiana University Library (<https://iucat.iu.edu/>).

¹¹We have categorized the dissertations according to a classification used by the Digital Library of Commons (<https://dlc.dlib.indiana.edu/dlc/handle/10535/6/browse>) which assigns dissertations into sectors. This way, 12 categories emerged (Fisheries, General & Multiple Resources, Global Commons, Land Tenure and Use, Social Organization, Water Resource & Irrigation, Agriculture, New Commons, Theory, Grazing, Urban Commons, Forestry). The dissertations which we found in different repositories were assigned to one or two of these categories depending on their title, abstract, and table of contents.

¹²While we identified 135 Workshop related dissertations in total, we only managed to access a sample of 97 dissertations. While this sample is not random (we only have access to few of the old documents) and we cannot, for instance, see the members of dissertation committees or the acknowledgments and the content of the dissertations, the sample still provides valuable information.



Figure 1: Total number of dissertations by decades separated by topics. While originally, theoretical dissertations had the upper hand, in 1990s analyses of CPR started dominating the PhD. dissertations produced at the Workshop.

in the growing number of dissertations in Public Policy (in a Joint Ph.D. Program of the Department of Political Science and School of Public and Environmental Affairs) but also in a growing number of dissertations undertaken at the School of Public and Environmental Affairs or at other departments in the social sciences at Indiana University such as Anthropology, Economics, Geography, Cognitive Science, or the School of Education. This tendency toward greater interdisciplinary – evident from a stronger involvement of faculty from other schools and departments in the education of Workshop apprentices – comes in tandem with the growing importance of applied research on CPRs. The applied work came to complement the theoretical work on social organization which dominated in the 1970s and 1980s.

A number of scholars who wrote their theses while working together with the Ostroms would later become resident faculty at the Workshop thus contributing to its further expansion. In 1992 these included Ronald Oakerson (graduated 1978), Roger Parks (graduated 1979), William Blomquist (graduated 1987) and Susan Wynne (graduated 1989).

Articles, Books

A structured overview of the research produced by the Ostrom Workshop scholars – the Bloomington School of Political Economy – was recently put together by Daniel Cole and Michael McGinnis in four volumes which are organized around the key ideas discussed at the workshop: “Polycentricity in Public Administration and Political Science” (McGinnis and Cole, eds., 2015a), “Resource Governance” (McGinnis and Cole, eds., 2015b), “A Framework for Policy Analysis” (McGinnis and Cole, eds., 2017), and finally, “Policy Applications and Extensions” (McGinnis and Cole, eds., 2018).¹³ An earlier attempt to define a core set of readings from the Workshop were the three volumes edited by Michael McGinnis ‘Polycentric Governance and Development’ (1999a), ‘Polycentricity and Local Public Economies’ (1999b) ‘Polycentric Games and Institutions’ (2000).

The selections in these volumes clearly show how central Elinor and Vincent Ostrom’s work was to the Workshop. Others such as Roger Parks, Gordon Whitaker and William Blomquist also occupy an important place. What also stands out is the breadth of these volumes. After the Nobel Prize in 2009 which was explicitly rewarded for the work on the commons there has been some tendency to equate the Workshop with that subject. But these volumes range, like the dissertations, from political philosophy to the study of governance and institutions generally, with an emphasis on federalism, local public goods, polycentricity and (experimental) game theory. The core of the Workshop was thus not the management of the commons, but rather the general analysis, design and crafting of institutions of any sort. While the overall output in research articles and books from the Workshop

¹³See Aligica (2014, 2018) for recent in-depth studies of the political theory behind the work of the Ostroms and the Workshop.

is too large to summarize or even list here, the above-mentioned volumes provide a good overview of the most important topics and problems that those at the Workshop were engaged with, and which were considered the core of the research program.

The Seminar on Institutional Analysis and Development

The seminar called “Institutional Analysis and Development” deserves special attention as it lies at the heart of the Workshop:

A core seminar on Patterns of Order and Development in Human Societies, now known as the Institutional Analysis and Development seminar, was organized in an effort to explore elements in a common framework that would serve as a basis for inquiries with diverse foci and levels of analysis, including both micro and macro considerations. (Jagger et al., 2009, p. 4)

The course document from 1991-1992 (V. Ostrom et al., 1992) explains that in the early years, “several visiting scholars in economics and political science have pursued post-doctoral programs” at the Workshop; these programs were “organized in an ad hoc way related to the research interest of each individual.” In 1983, when the Workshop started focusing on opportunities for the post-doctoral research and regular faculty, this changed. The Workshop would then come to provide “a common foundation for intellectual dialogue among scholars and professionals with diverse specializations about the way that human institutions affect developmental potentials and shape the ways of life that people live in different societies.” It was explicitly meant to foster a dialogue between “mature” researchers, regardless of their academic rank or level.

The seminar room, once the dining room in the old fraternity that houses the Workshop, affords plenty of space for people to gather around a large table . . . [so that the] Workshop staff, post-doctoral students, visiting scholars, and undergraduates all take part. The course is divided into two semesters. During the first semester, students study macro political orders. Participants read, write about and discuss diverse ways of structuring governments for nations and other large political organizations. Readings and discussions during the second, micro semester, led by Lin Ostrom or other faculty members, focus on much smaller units such as work teams, families, or people who use the same resource. (Tierney, 1994, p. 25)

In this way the apprentices and more experienced artisans who would get their hands on experience with practical aspects of research, interact with visiting scholars and learn the art of contestation: “They have to take criticism, and they have to give it, and they have to engage in good analytical

discourse ... your work is taken very seriously, and there's a real discussion about it. You really learn something" (E. Ostrom quoted in Tierney, 1994, p. 25).

2.3 Facilities

The Workshop would move several times before finding its home at 513 North Park Avenue in Bloomington, Indiana. In 1983, the former fraternity house would provide "conference and seminar rooms, production facilities, library, and numerous individual studies for visiting scholars" (V. Ostrom et al., 1992). The main building is now surrounded by three other buildings which "house visiting scholars, graduate students and Workshop staff" (Jagger et al., 2009, p. 13).

In 1992, the Workshop counted with nine resident faculty members. The majority of resident faculty members were educated as political scientists, except for James Walker and Roy Gardner who were economists by education. In 2009, the Workshop-affiliated faculty consisted of 30 members out of whom only two (Blomquist and Parks) were Workshop alumni.¹⁴ The Workshop affiliated scholars became much more diverse, having PhD. degrees in Forestry and Environmental Studies, Geography, Anthropology, Sociology, Psychology, or Law, in addition to Economics and Political Science.

In 2009 the Workshop Research Library located on the third floor of 513 N. Park contained "9,000 books and reports; almost 50,000 articles, pre-prints, and working papers; and 380 runs of newsletters, journals and newspapers" and had amassed "the world's largest collection on the commons" having thus evolved "into one of the premier resources for studies on the commons, institutions, and collective action" (Jagger et al., 2009, pp. 12-13). The physical library is supplemented by the Digital Library of Commons which can be accessed online. From 1979 to 1983, Susan Wynne (who would graduate at the Workshop in 1989) served as a Library Assistant and Librarian being responsible for "purchasing, content coding, processing publications and papers for the library, and hiring and supervising assistants" (Wynne, 1989, CV). Wynne was succeeded by Fenton Martin who "initiated the search for materials related to common-pool resources soon after the 1985 [National Research Council] meeting" (Jagger et al., 2009, p. 12). In time, Martin was joined by Charlotte Hess who became a full-time librarian at the Workshop until 2008. Since then "Emily Castle has served as a library director and has continued to innovate and improve the library" (Jagger et al., 2009, p. 12). The Workshop has also counted with administrative staff whose assistance is often affectionately acknowledged in many of the PhD. theses written at the Workshop.

¹⁴For an overview of Workshop-affiliated scholars over time, see V. Ostrom et al. (1992) and Jagger, Walker, and Bauer (2009).

3 Collective Knowledge Production Analysis of the Workshop

Now that we have a good overview of the history of the Workshop and its diverse outputs, we are able to analyze the way in which it functioned as an organization that contributed to collective knowledge creation, as we suggest in our introduction. In doing so we will rely, reflectively, on some of the key theoretical concepts developed at the Workshop. Among others, the analysis of the institutional design is applicable to the Workshop which is a clearly defined self-organizing community that persisted over time, and which shared a set of resources, such as the library, the research support, and the intellectual framework. We distinguish three ways of collective knowledge production: team production, co-production and joint production (the latter two build on ideas developed at the Workshop).

Team production is the simplest type of collective knowledge production, it was facilitated directly by the group research projects undertaken at the Workshop as well as the seminars and conferences. But collective knowledge production was not restricted to members of the Workshop. Knowledge and solutions or improvements to collective action problems were often developed in conjunction with the communities facing these problems. This type of engagement in community governance knowledge was actively pursued by many members of the Workshop. Specifically, in their work on the provision of public goods such as public safety or education the Workshop members suggested that these services were co-produced by citizens. The idea of co-production was then mirrored in how they sought to develop knowledge about governance. The notion of joint production is the most novel, and the least direct type of collective knowledge production, but crucial to understanding the eventual success of the Workshop. Joint production refers to the (often unintentional) byproducts created by individual research projects which are valuable complementary inputs into new research projects. The jointly produced intellectual artifacts, elsewhere we have suggested to call them instruments of interpretation (Dekker and Kuchař, 2019), are thus complementary to the projects and goals pursued in the Workshop. We suggest below that the IAD framework resulted as such a byproduct of research projects and acted as an important complementary input into later research projects. Below we examine the three types of collective knowledge production with greater detail.

3.1 Team Production

The Ostrom Workshop was explicitly set up to stimulate team production between senior researchers, junior researchers and students drawn from several different academic fields. It sought independence from the traditional departments at the University of Indiana which were believed to be too narrow to fully study governance. It took a while before this dynamic really developed at the Ostrom Workshop. Initially it was mostly a collaboration between economists and political scientists, with the latter dominating. But over time the Workshop was able to draw in graduate students and research affiliates

from many different disciplines who combined their pieces of knowledge with each other to produce new ways of analyzing institutions and governance.

The police studies were in part innovative because they were team efforts which involved many researchers in research projects of longer duration. These research projects allowed them to track in detail how policing services were provided in different neighborhoods, how these were perceived by the citizens, and what the relevant outcomes were. The Ostrom Workshop was not the first intellectual center to engage in team production. But such centers often sought to bring senior scholars together to stimulate fundamental or reflective research. The hands-on approach with close ties to the field was a clear innovation in economics and political science. Sue Crawford, a former graduate student at the Workshop, put it this way:

There's a real sense in which students who participate in the classes and other discussions in the Workshop are treated as professionals (...) It's given me experience in being a colleague in a research environment outside of the ordinary experience that you get in typical classrooms. (Tierney, 1994, p. 24)

An important innovation in the team production came around the mid-1980s when the visiting scholar program was introduced. Although it took a while before the right format was found to make visiting scholars fully productive, they would eventually provide new stimuli and new insights to the research projects carried out at the Workshop. The new format was put in place along with the introduction of the year-long seminar on Institutional Analysis and Development, which proved to be an ideal way to generate productive interactions between the visiting scholars, the faculty, and the graduate students.

The team production was further stimulated by the practice of contestation both within the Workshop and between the Workshop scholars and their intellectual adversaries. To highlight the centrality of this practice, consider that Elinor Ostrom dedicated her most important book *Governing the Commons* as well as the Nobel Prize to her husband for his love *and contestation*. Vincent's most (in)famous challenge was that he would never allow anyone to use the term market or state without making explicit what he mentioned. Attentive to the great institutional variety hidden behind these abstractions he would push any presenter on what they meant precisely when they referred to 'the state' or 'the market'. But most oral histories suggest that the colloquia and other events at the Workshop had a constructive character. The Ostroms were often praised by their graduate students for the way they made people see their own research projects in a new light, and for their generally constructive suggestions for extensions and implications. They were particularly skillful in creating conversations between scholars from different disciplines while avoiding the conceptual difficulties that often accompany such meetings (more on that below).

There was also heavy contestation with outsiders. The debate with Garret Hardin about the

‘tragedy’ or possibilities of the commons is an excellent example of how such debates were productive in driving the research at the Workshop forward. The metropolitan debate about centralization or polycentricity was another instance. While these discussions provided an important impetus for the initial work at the Workshop, later the Workshop would also seek to bridge and connect different traditions and disciplines. Both the exchange with Bielefeld and the development of a shared language to talk about CPR management with economists, political scientists, anthropologist and environmental scholars were examples of fruitful exchanges that were primarily aimed at connecting, rather than contesting, different approaches.

3.2 Co-Production

In 1981 nearly all of the core-members of the Workshop published a paper which argued that many public services were co-produced by the consumers (Parks et al., 1981). The paper argued for a blurring of the neat distinction between producers and consumers and suggested that especially in services this distinction was never clear-cut. While writing about the production of public services, the paper could have well been a report on the research practices carried out both inside the Workshop and outside of it.

Elinor Ostrom (1985, p. 13) defined co-production as a situation in which “the outcomes of a process cannot be produced without the active cooperation of several different owners of input resources.” When this is the case, “the outcomes are subject to co-production”; among examples of this process, she included education “where both teachers AND students must engage in an educational process for students to acquire new skills,” or health care “where both doctors AND patients must exchange information and patients must understand and follow advice given by a doctor before that doctor’s advice can affect the outcomes.” On the one hand, the examples of co-production of law enforcement, education, or healthcare blur the distinction between producers and consumers of these services. On the other hand, they also blur the line between stakeholders who are members of a community or an organization and those that are not. While recognizing there will always be some overlap between team production and co-production, we suggest that they are conceptually distinct as co-production can take place in a team (a community or an organization) as well as across teams.

We have provided a number of examples in which elements of scholarly communication were produced at the Workshop by users who were at the same time producers. But the Workshop would also often create knowledge with individuals and communities who were not part of the Workshop. Vincent Ostrom would, for instance, help draft the natural resources section of the Alaskan constitution, which he did in continuous conversation with the relevant communities. This practice was continued all through the research practices at the Workshop. The police studies were designed so

that both police departments and community organizations and citizens were involved throughout the process. As such the police departments and citizens co-produced the research projects and the knowledge that helped improve policing services.

In the later work on CPR management the presumption the Ostroms worked from was again that local communities not only had crucial knowledge about local circumstances, but also that they might have developed sophisticated kinds of governance structures already. This is not to say that the goal was not to improve the management of CPR. But even here they were attentive to the subjective understandings of the community members. If a solution or improvement was suggested the local community had to be able to understand and agree with the proposed changes. This was broadly in line with the republican and federalist vision of politics that Vincent Ostrom sought to develop. He argued for informed citizens who were able to contribute to public policy not merely as it was being formulated and shaped, but also when it was executed. Policy making was thus to be reinforced by the ethos of artisanship and co-production.

3.3 Joint Production

In addition to the process of co-production, Elinor Ostrom would occasionally hint at processes that generate multiple “outcomes that participants jointly affect through their actions” (E. Ostrom, 1986, p. 17). Elsewhere she compares joint production to emergent outcomes, akin to the way that Thomas Schelling thought of the effects of micro-motives on macro-behavior. In the process of joint production, individuals may not necessarily be aware of the “connection between their own actions and the joint outcomes produced” (E. Ostrom, 1983, p. 12). We suggest that the most tangible artifact jointly produced at the Workshop was the IAD framework which, in Schelling’s language, became the focal point of the Workshop. It was jointly produced, primarily as a byproduct of individual research projects.

The usefulness of such jointly produced artifacts depends on the number of contributions, here the number of research projects produced along with them. In traditional economic analysis, one can think of joint products as of positive externalities, which have to reach some critical mass to be of use. The more research projects of a particular type (here institutional analysis) are pursued, the greater is the likelihood that something of value results as a byproduct. These byproducts thus come about as the joint output of the research activities that involve different individuals or teams within the Workshop. Furthermore, these jointly produced outputs tend to have great complementarity. In the case of the IAD framework this complementarity was explicitly understood by the researchers, and Elinor Ostrom herself made the conceptual distinction between frameworks, theories, and models quite clear (E. Ostrom et al., 1994, pp. 23-25). In effect, the language and the relevant set of meanings embedded

within the IAD framework were jointly produced with and complementary to particular theories of institutional analysis and development. While theories are often rivals to one another, a framework, on the other hand, should be compatible with a range of theories which build on the same basic elements. While the language and the set of corresponding meanings related to a framework come about as a result of particular research projects – they are produced jointly – their complementarity also makes them important inputs or resources for later research projects. The intellectual framework is a resource that is not rival. Instead it becomes enriched by repeated use, application, and modifications or extensions. Economists use the notion of network externalities to refer to positive value generated for users, through the adoption of the good by others. In science that would be equivalent to increased communication because of a shared language or set of concepts. But we suggest here that there is an additional effect in which repeated use improves the framework. It is in the process of producing, reproducing, and transforming the framework that it becomes an important instrument of interpretation.

The IAD framework, one of the most important intellectual resources produced at the Workshop, was thus produced jointly with, and was complementary to, many of the specific research projects on the provision of public services, on the governance of the commons, and on institutional analysis in general. As we demonstrated above it slowly formed through conversations, discussions and exchanges resulting from previous research projects. It slowly became a shared resource within the Workshop and was later made explicit in articles dealing specifically with the framework. As we have shown above the IAD framework never became a static entity, additions, refinements, simplifications, and changes were proposed until the late 2000s.¹⁵ Perhaps more importantly, the application of the framework in a wide variety of disciplines and contexts enriched the framework, which functioned more and more as the crucial shared resource.

Although the IAD framework was a focal point for the Workshop it was not generally adopted outside of the Workshop.¹⁶ In fact, there is a small body of literature which seeks to translate the ‘jargon’ from within the Workshop into the language of the related disciplines such as economics, political science and environmental science (McGinnis, 2011; E. Ostrom, 2011). Locally, at the Workshop, the problem of finding an interdisciplinary language was mostly solved, or at least constantly addressed, and discussed. But within the specialized disciplines it remained hard to find an entry. This is also clear from the publication patterns of the Workshop which basically relied on a new set of journals working at the intersection of policy, political science, economics and environmental science.¹⁷

¹⁵Consider, for example, the recent work by Brett Frischmann, Michael Madison and Katherine Strandburg (2014; 2017) on *Governing Knowledge Commons* that builds on a modified version of the IAD framework.

¹⁶The one exception as we demonstrated in section two was the work on common-pool resource management. This quickly found wide uptake by many other scholars and led to the founding of a broader research network the IASC.

¹⁷For example, *Policy Studies* (1972), *Journal of Economic Behavior and Organization* (1980), *Ecology and Society*

The recognition of the complementarity of the jointly produced outputs with later research projects also highlights one of the limitations of the Workshop. Since the usage of the intellectual ‘tools’ developed at this Workshop depended on extended participation of the Workshop members, or the affiliated scholars, the tools were not disseminated easily. This was further hampered by the fact that the Workshop was organized around relatively practical problems of governance. As such it fitted poorly in the traditional disciplinary structure of postwar academia (Backhouse, 2010). In some sense the knowledge generated within the Workshop was, in fact, incongruent with this wider body of knowledge.

Conclusion

In this paper we have reviewed the history of the Ostrom Workshop, the organization that gave rise to the Bloomington School of Political Economy. The Workshop was led by Vincent and Elinor Ostrom from its start to around 2010. The history of the Ostrom Workshop illustrates that scholarly communication is a collective enterprise dependent on different types of cooperation. In our analysis of the Workshop we have distinguished three aspects of collective knowledge production: team production, co-production, and joint production. The latter two types of knowledge production are in part inspired by the research at the Workshop.

First, we suggested that team production was facilitated by bringing researchers from different disciplines, and different levels together to work on common research projects. It is the most obvious form of collective knowledge production. The idea of co-production of knowledge between Workshop members and the communities they researched was facilitated by the particular approach to research that the Workshop promoted. From the start it was aimed at practical improvements in governance and the provision and management of economic goods, particularly public goods and CPR. Researchers would attempt to learn from the communities they studied, and one of the crucial insights their research generated was that communities were more capable of self-governance than traditionally believed. The local knowledge was valuable as it allowed these communities to improve the provision of public services and the governance of CPR. The Ostrom Workshop was meant to generate a practical, hands-on approach that crafted institutions, understood as sets of rules.

Most importantly, we have suggested that the focal contribution of the Ostrom Workshop was the IAD framework and the corresponding language, with its set of meanings that it generated. We have argued that the IAD framework was produced jointly along with the many research projects undertaken at the Workshop and was complementary to them. The IAD framework became a key resource, a signpost, around which the Ostrom Workshop scholars organized their conversation. While the

(1997), *Conservation and Society* (2003), and *International Journal of the Commons* (2007).

hope was that it could become a shared language and conceptual framework between disciplines for the analysis of governance and institutions, there is, however, a danger that such a distinct resource remains local. And, in particular, for research into the management of CPR this has been the case, whether this will be the case more widely remains to be seen.

Intellectual communities, such as the Workshop, but also conferences, seminars, or academic departments, are the most important site of knowledge production in modern social science. We have attempted here to say something about the way they generate knowledge, while paying attention to the particular structure of the Workshop compared to other intellectual communities. In section two we have shown how intellectual communities depend on an ecosystem for the production and dissemination of knowledge which includes a set of ideas, artifacts such as books and articles, as well as facilities. They provide the intellectual and physical resources necessary for advancing the scholarly communication and they are built around tacit and explicit rules and norms of conduct. Perhaps most importantly, intellectual communities are shared communities of understanding which require a certain adherence to an appropriate language and a corresponding set of meanings. Historians of ideas are well advised to pay attention to these communities and the ways they contribute to producing, reproducing and transforming the elements of the shared social scientific knowledge commons.

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