

ELINOR OSTROM

Coevolving Relationships between Political Science and Economics



Elinor Ostrom

Nobelpreisträgerin für Wirtschaftswissenschaften 2009, ist Professorin für Politikwissenschaft an der *Indiana University*, Bloomington, und gründete mit ihrem Mann Vincent Ostrom den *Workshop in Political Theory and Policy Analysis*. Sie war Fellow zweier ZiF-Forschungsgruppen.

Der vorliegende Aufsatz war als öffentlicher Vortrag im Rahmen eines Autorenkolloquiums geplant. Leider musste Frau Ostrom aus Krankheitsgründen ihre Teilnahme an der Veranstaltung absagen.

Abstract

During the last 50 years, at least four interdisciplinary developments have occurred at the boundaries of political science and economics that have affected the central questions that both political scientists and economists ask, the empirical evidence amassed as a new foundation for understanding political economies, and new questions for future research. These include: (1) the Public Choice Approach, (2) the Governance of the Commons debate, (3) New Institutional Economics, and (4) Behavioral Approaches to Explaining Human Actions. In this short essay, I briefly review the challenges that these approaches have brought to political science and some of the general findings stimulated by these approaches before identifying some of the major issues on the contemporary agenda.

This is a revised version of a paper presented at the 2003 APSA meetings at a panel on 'What Has Political Science Been: What Should It Become?' Support from the National Science Foundation and a subcontract with Dr. THOMAS STERNER, University of Gothenburg, Sweden, that is funded by FORMAS is gratefully acknowledged as are the useful comments of HARTMUT KLIEMT and PATTY LEZOTTE's careful and cheerful editing.

Important developments in science frequently occur at the boundaries of disciplines when scholars from two or more fields discover each other and begin to address old questions in new ways. Since the 1950s, the border-zone of economics and political science has generated a rich endowment of path-breaking work as well as creative controversies. Four developments have occurred at the boundaries of political science and economics that have affected the central questions that we ask, the empirical evidence amassed, and questions for future research. These include: (1) Public Choice, (2) the Tragedy of the Commons Debate, (3) New Institutional Economics, and (4) Behavioral Approaches to Explaining Human Actions. In this short essay, I will briefly review the challenges that these approaches have brought to scholars working at the borders of major disciplines and some of the general findings stimulated by these approaches before identifying some of the major issues on the contemporary agenda.

The Challenges of Interdisciplinary Approaches

The Public Choice Approach

The publication of ARROW's *Social Choice and Individual Values* in 1951, DOWNS's *An Economic Theory of Democracy* in 1957, BLACK's *The Theory of Committees and Elections* in 1958, BUCHANAN and TULLOCK's *The Calculus of Consent* in 1962, and OLSON's *The Logic of Collective Action* in 1965 generated a new approach—called public choice. A group of economists, political scientists, and sociologists used methods originally developed in economics to examine public sector processes and outcomes. An organizing question underlying work in the public choice tradition has been: what incentives do actors face when making decisions in the public sector or outside a strict market setting? After identifying incentives in specific situations, public choice theorists predict how individuals will act and how behavior will aggregate into collective outcomes. Incentives result from the structure of a situation that is affected by the type of goods involved, combined with attributes of a community and the rules used for making decisions about provision, production, distribution, and consumption of those goods.

The early work challenged not only the implicit conceptual models that political scientists utilized but the notion that order stemmed primarily from central direction. Instead of presuming the existence of only two kinds of order—the market and the state—political economists have come to recognize *public economies* where large, medium, and small governmental and nongovernmental enterprises engage in both competitive and cooperative relationships. Without prejudging the performance of complex metropolitan areas, V. OSTROM, TIEBOUT, and WARREN (1961) proposed, for example, that the multiplicity of local jurisdictions in a metropolitan area be conceived as a 'polycentric political system'. A large body of work has since relied on their distinction between the *provision* of a collective good by citizens, elected representatives, and NGOs, and the *production* of a collective good by a government or private agency. Given that the appropriate scale for organizing the provision side is frequently not the same as for organizing the production side of a collective good, one should expect to find messy polycentric systems of provision and production units operating at multiple scales in regard to almost any collective good.

The public choice or 'rational choice' approach was quickly adopted by many political scientists who rapidly developed and applied it to the study of many types of institutional arrangements (see BARRY and HARDIN 1982 for an early review). Empirical studies flourished, including those that focused on legislatures (RIKER 1962; SHEPSLE 1989) voting systems (TSEBELIS 1990), and bargaining (MILLER 1992). The approach was strongly criticized by other political scientists, however, because it portrayed human behavior as narrowly self-interested, short-sighted, and constrained only by formal rules. Critics observed that people do vote, do contribute to philanthropic efforts, do follow norms, do engage informally, and do make long-term commitments contrary to predictions of some of the new theoretical models.

The Tragedy of the Commons Debate

Another important interdisciplinary development that started in the same era is the analysis by economists and ecologists of ‘the tragedy of the commons’ (GORDON 1954; HARDIN 1968). This theory, like that of OLSON, challenged the earlier work of political scientists who presumed that individuals were motivated to contribute efforts toward solving common problems when it was in their long-term interest to do so. Both GORDON and HARDIN posited that individuals focused on maximizing immediate short-term benefits and were helpless to do anything but overharvest resources. The prediction that individuals would destroy the resources was consistent with noncooperative game theory models of one-shot or finitely repeated dilemma settings. In these settings, everyone is posited to maximize their own short-term benefits, but end up achieving less net benefits than feasible if they had found a way to cooperate with one another.

This work opened up an immense body of theoretical and empirical work as well as substantial policy debates. Many studies provided empirical data and theoretical arguments to challenge the presumption that individuals were forever trapped in a remorseless tragedy by documenting many common-property institutions around the world where individuals had overcome the tragedy (McCAY and ACHESON 1987; CIRIACY-WANTRUP and BISHOP 1975; National Research Council 1986). Still other in-depth analyses documented the accelerated overharvesting of forests that occurred after national governments declared themselves to be the formal owner of forested land (ARNOLD and CAMPBELL 1986; ASCHER 1995).

Commons scholars did not, however, find any ‘sure cures’ for the problem of overuse. They found that failure occurs in regard to private property, government property, and common property. Overharvesting did occur, of course, when a valuable resource was effectively an open-resource due to a lack of rule defining and limiting who had access and other rights to use and manage the resource. GORDON and HARDIN along with the myriad of scholars and policy makers from multiple disciplines who accept the tragedy metaphor as a general theory were correct in identify a challenging problem—especially under open-access conditions. Their analysis was incomplete, however, because they failed to recognize the rich variety of complex institutional arrangements that had been used to solve these problems while their own solutions of government or private ownership often failed to solve the problem.

New Institutional Economics

The *New Institutional Economics* (NIE) field has challenged both economists and political scientists. COASE started the first foray in 1937 with his pathbreaking article on ‘The Nature of the Firm’. Asking “why do firms exist” was an embarrassing question for economists. Why should one find firms existing in the midst of highly competitive markets? He challenged the presumed dichotomy of the world into Markets for production, allocation, and distribution of private goods and Hierarchy for the production, allocation, and distribution of public goods. COASE answered his own question by pointing to the diversity of costs (particularly transaction costs) that are associated with using the market, which were absent from neoclassical theory.

Influenced by COASE, NORTH (1981) initiated studies of institutional change that challenged the static focus of both political science and economics. NIE scholars demonstrated that of self-organized institutions had guaranteed property rights of merchants long before the creation of a State (MILGROM, NORTH, and WEINGAST 1990). Scholars in the NIE tradition are expanding the model of human behavior used to explain institutional behavior so as to be broadly consistent with developments in cognitive science (DENZAU and NORTH 1994; NORTH 2005). WILLIAMSON (1975) examined a diversity of internal mechanisms within firms to keep agents accountable and to reduce transaction costs, and provides one of the clearest presentations in the literature of the dysfunctions

of a strict hierarchy. Research in political science on principal-agent theory (MILLER 1992) owes a great deal to the NIE initiatives.

Added to theoretical rigor is the development of an experimental tradition that enables scholars to test predictions under controlled settings that can be replicated by others and modified to examine the impact of specific rules or other variables that affect decisions and outcomes in complex settings. Experimental scholars have developed an extremely careful set of methods that have greatly improved the reliability and veracity of their results over time. By carefully inducing preferences, developing instructions that convey the meaning of the theoretical structure under investigation, freely sharing instructions with others, and making the data from the experiments available, experimental scholars have strongly validated many propositions derived from noncooperative, game-theoretical models related to behavior in markets (see, e.g., SMITH and WALKER 1993).

Behavioral Economics

Political scientists were relatively unaware of the early days of game theory. Over time, as the power of game theory grew due to its generality and precision, it has steadily become a tool that is used by more and more social scientists. That one can use the same set of tools to analyze a game of tennis, the decision of when to run for office, predator-prey relationships, how much to trust a stranger, and how much to contribute to a public good makes game theory one of the most important analytical tools available to all of the social sciences. On the other hand, game theory has frequently been dismissed by political scientists as just another abstract theory.

While experimental results gave strong support to predictions of institutional theorists related to market incentives, simple social dilemma games that generate crystal clear theoretical predictions have not been supported in a large number of experimental settings around the world. Experimental researchers have generated findings related to the extension of trust (see FEHR 2009; WALKER and OSTROM 2009 for an overview), the division of benefits in settings that lack external enforcement, the provision of public goods (SEFTON, SHUPP, and WALKER 2007). Findings from these types of games in multiple labs have been inconsistent with a theory that presumes individuals maximize short-term, objective payoffs to self alone. This evidence challenges the core assumptions of micro-economics, as well as those of public choice theorists. Given consistent findings across a large number of experiments conducted in multiple countries with varied amounts of payoffs, the findings have to be taken seriously.

Political Science and Political Economy Have Coevolved

The last half-century has been a time of challenge. Political scientists and political economists have reacted in multiple ways to these challenges. Some have continued in their own paths undaunted by the calls for change. Others have attempted to build on the core of the challenges as well as more classical political and economic theorists including HOBBS, HUME, TOCQUEVILLE, the authors of *The Federalist Papers*, COMMONS, HAYEK, SMITH, and SCHUMPETER, to craft an interdisciplinary approach to the study of the governance of public economies at multiple levels (ALLEN 2005; SHIVAKUMAR 2005). New frameworks, theories, and models have been developed (see GREIF and LAITIN 2004; GIBSON et al. 2005; BOETTKE 2005; E. OSTROM 2005, 2007, 2009).

One of the healthiest aspects of the coevolution of political science and economics has been a strong commitment to the use of theory in the design of research and a resultant increase in the cumulation of theory. Slowly, a new foundation for the political and social sciences is emerging. It is not yet broadly accepted, but many scholars are independently drawing on, improving, and extending this work. In the remainder of this short overview, I will first discuss some of the general findings that have emerged from multiple studies and then turn to some of the major questions on the future agenda.

Diverse Forms of Order—None Always Good or Bad

A general finding relates to the recognition of multiple forms of order. One form of political order is created when a central power uses a monopoly of force to impose its central will on the subjects of an entire country (HOBBS [1651] 1960). The work of LEVI (1988) and SAWYER (2005) demonstrate how costly and unstable it is to rely entirely on a central monopoly of force to govern effectively. Other forms of order at all levels of organization exist and need to be studied seriously. PUTNAM (2000) points to the importance of networks in the creation of essential social capital that enables complex governance systems to evolve without all links being planned from the top. KEOHANE (1984) provides us with new ways of viewing political order at the international level without depending on the hegemony of one State.

Organizations that are omitted from basic textbooks focusing on markets or the state are major actors for good or evil in contemporary political life. A host of organizations in addition to governments undertake the provision of collective goods (BRYCE 2005). Some generate benefits for themselves and others, such as groups of resource users like the lobster fishermen of Maine (ACHESON 2003) or organizations of recreational users in Sweden (ANTTILA and STERN 2005). Others are organized informally to provide benefits for themselves, but not always for others (HELMKE and LEVITSKY 2004). The performance of a system depends on the match of the structure of the system to the scale and structure of problems individuals within that system face and the incentives participants face to generate broad or narrow benefit streams and not on whether a system looks neat on an organization chart.

Structure and Performance of Local Public Economies

In regard to the organization of governments serving a metropolitan area, however, scholars have now provided an analysis of why complex systems may perform better than simple and highly centralized systems may perform. The optimal scale of organization for the production and provision of goods and services differs radically for different types of goods and services usually considered to be in the public sector. This leads to the prediction that public economies in metropolitan areas with many governmental enterprises organized at diverse scales that have the authority to undertake joint activities will perform more effectively than either one large-scale (metropolitan-wide) government or a large number of governments organized entirely at a small scale. This prediction was counterintuitive for many scholars, who had long argued that the performance of metropolitan governments would be enhanced by streamlining and creating a single, consolidated government for a metropolitan area.

Considerable research on local public economies and multi-level systems more generally (see HOUGHE and MARKS 2001; BICKERS and WILLIAMS 2001) has demonstrated that social order can emerge from polycentric systems and need not be imposed by a centralized system. In our own extensive studies of police performance, ranging from carefully matched neighborhoods in one metropolitan area to a random sample of 80 metropolitan areas we have consistently found:

1. Small- to medium-sized police departments outperform large police departments serving similar communities—and at similar or lower costs.
2. Services that are characterized by substantial economies of scale (e.g., crime lab, dispatching) are produced by large units and services characterized by diseconomies of scale were produced by small units. Thus, polycentric systems facilitate the search for more efficient modes of production.
3. Citizens living in the most fragmented metropolitan areas receive more police presence on the streets for their tax expenditures than do citizens living in the most consolidated areas (see articles reprinted in MCGINNIS 1999).

1

See *The Comprehensive Bibliography of the Commons* at <http://dlc.dlib.indiana.edu/cpr/index.php>

In addition to the research on police, scholars have conducted rigorous empirical research that has challenged the presumptions that larger public school districts achieve higher performance (TESKE et al. 1993; FISCHEL 2001), that fragmentation of governments leads to higher costs (SCHNEIDER 1986), and have provided further insights to the way local governments are constituted (OAKERSON and PARKS 1989). In light of a meta-analysis of 20 empirical studies of the effect of local government structure in the United States, BOYNE (1992, 352) concludes that: “In sum, the broad pattern of the evidence suggests that lower spending is a feature of fragmented and deconcentrated local government systems. By contrast, consolidated and concentrated structures tend to be associated with higher spending.”

Governing Common-Pool Resources

The empirical research related to local public economies generated many studies whose results are broadly consistent with the theoretical analyses of early public choice theorists. Empirical research undertaken to study ‘the tragedy of the commons’ on the other hand, has contradicted the initial theoretical work. Studies have demonstrated that many of those facing multiple social dilemmas have crafted institutions to govern their own resources, and sustained these regimes for very long periods of time in many instances.¹ Design principles that characterize robust, long-lasting institutional arrangements for the governance of common-pool resources have been identified (E. OSTROM 1990) and supported by further testing (DE MOOR, SHAW-TAYLOR, and WARDE 2002; WEINSTEIN 2000; COX, ARNOLD, and VILLAMAYOR TOMÁS 2010).

In addition to the earlier case studies, quantitative studies have shown that local-scale common-pool resources, such as irrigation systems, tend to be effectively self-organized by resource users themselves (LANSING and KREMER 1993). LAM (1998) examined the performance of over 100 irrigation systems in Nepal that are either self-organized by the farmers or constructed and operated by the national government. LAM shows that the farmer-managed systems outperform the government-managed systems in terms of their productivity and more equitable water distribution, controlling for the size of the system and physical variables. The difference in performance is striking since most farmer-managed systems are constructed using primitive techniques, while government systems have been constructed with donor assistance using modern engineering designs. JOSHI et al. (2000) conducted rigorous research related to 229 irrigation systems in Nepal. They found that farmer managed irrigation systems were able to outperform government owned and managed systems in regard to agricultural productivity, technical efficiency, and equity of service delivery.

A National Research Council (2002) report provides an overview of the substantial research showing that many common-pool resources are governed successfully both by nonstate provision units as well as by government and private property. No simple governance system has been shown to be successful in all implementations, but effective monitoring and sanctioning are essential factors affecting performance (DIETZ, OSTROM, and STERN 2003; HAYES and OSTROM 2005; GIBSON, WILLIAMS, and OSTROM 2005). HEIKKILA and GERLAK (2005) have applied the theoretical insights derived from the studies of the emergence and robustness of institutions related to smaller-scale common-pool resources along with findings from literature on policy entrepreneurs and social capital to a study of very large, multiactor, multiple-scale watershed-management institutions.

In a recent study, CHHATRE and AGRAWAL (2009) focus on factors that affect tradeoffs and synergies between the level of carbon storage in forests and the livelihood of those using the forest. When local communities have high levels of rule-making authority and monitor the activities in the forests, they find that larger forests are more effective in enhancing both carbon and livelihoods outcomes. COLEMAN (2009) and COLEMAN and STEED (2009) also find that a major variable affecting forest conditions is the investment by local users in monitoring. Further, when local users are given harvesting

rights, they are more likely to monitor illegal uses themselves. Other focused studies also stress the relationship between local monitoring and better forest conditions (GHATE and NAGENDRA 2005; E. OSTROM and NAGENDRA 2006; BANANA and GOMBYA-SSEMBAJJWE 2000; WEBB and SHIVAKOTI 2008).

The structure of a finitely repeated common-pool resource game has also been examined in experimental laboratory studies. In this setting, it has been shown that when appropriators from a common-pool resource are in a minimal institutional setting without any knowledge of the others or any capacity to communicate, outcomes approach the predicted outcome of the conventional theory. On the other hand, as soon as subjects are allowed to communicate, they achieve far better outcomes than predicted by the conventional theory. In noncooperative game theory, communication is viewed as ‘cheap talk’ and makes no difference in predicted outcomes in social dilemmas.

Once communication is allowed, however, subjects spend time and effort assessing each other’s trustworthiness and reaching agreements about the best strategies they should jointly take. Further, individuals in a laboratory setting are willing to monitor each other and invest in costly sanctions in order to punish those who overharvest, as well as in devising rules that they themselves enforce on each other (see E. OSTROM, WALKER, and GARDNER 1992). In other words, in a controlled setting, individuals solve social dilemmas and achieve substantially greater payoffs than predicted once communication is allowed. JANSSEN et al. (2010) demonstrate the importance of communication in enabling users to effectively use the opportunity to punish others. Without communication, punishment can evolve into a retribution effort and reduce all participants’ payoffs.

Revisiting the Model of Homo Economicus

Research growing out of the study of the commons, the work of new institutional economists, and that of behavioral game theorists has opened up serious reconsideration of the narrow model of the economic actor that was developed in neoclassical economics and initially applied to political settings without modification. The ‘classical’ model of individual choice used by many political economists—based on noncooperative game theory and neoclassical economic theory—uses extreme assumptions about individual capabilities and motivations. These include an unlimited computational capability and a focus on short-term, individual, net benefits. In other words, internal calculations are based on the increasing short-term material benefits and costs to the individual making the calculation and no one else.

In some field settings, the classical theory of individual behavior generates empirically confirmed results. In highly competitive environments, we can assume that the individuals who survive the selective pressure of the environment act as if they maximized their individual utility dependent on a key variable, such as profits, associated with survival in that environment (e.g., profits or fitness) (SATZ and FERREJOHN 1994). When individuals face a relatively simple decision situation where institutions generate accurate information about the variables relevant to a particular problem, that problem can be adequately represented as a straightforward, constrained maximization problem.

Many of the situations of interest in understanding how public economies govern and manage collective goods, however, are uncertain, complex, and lack the selective pressure and information-generating capabilities of a competitive market. Therefore, one strategy for dealing with this problem has been to assume bounded rationality—that persons are intendedly rational but only limitedly so—rather than the assumptions of perfect information and utility maximization used in the classical theory (SIMON 1972). Information search is costly, and the information-processing capabilities of human beings are limited. Individuals, therefore, often must make choices based on incomplete knowledge of all possible alternatives and their likely outcomes. Punctuated changes in policy outputs are more likely to result than smooth transitions (JONES, SULKIN, and LARSEN 2003). With

incomplete information and imperfect information-processing capabilities, all individuals may make mistakes in choosing strategies designed to realize a set of goals (V. OSTROM 1986). Over time, however, they can acquire a greater understanding of their situation and adopt strategies that result in higher returns. Bounded rationality is highly likely to be an effective tool for studies of field settings where the researchers may not be able to specify the specific structure of the situations participants face any more than the participants themselves. Bounded rationality, however, deals primarily with the information condition related to individual choice.

Consistent findings from behavioral game theory, as well as from neuroscientific studies of the brain of subjects in different settings (McDERMOTT 2004), have shown that a richer theory of individual valuation is necessary. Scholars are now positing a family of models that change the basic assumptions of the classical model (see LEVINE 1998; FEHR and GÄCHTER 2000; BOLTON and OCKENFELS 2000; GINTIS 2000; CASARI and PLOTT 2003; COX 2004). Several assumptions are shared across these new theories of individual behavior: (1) individuals are assumed to have heterogeneous preferences in the same objective situations; (2) some individuals may include the payoffs obtained by others in their own utility calculation while others may not; and (3) payoffs to others may bring positive, negative, or no utility to an individual.

The classical model of noncooperative game theory now becomes a special case of the revised theories for when individuals attach no utility to the payoffs of others. Once scholars begin to assume that there are multiple ‘types’ of players interacting in a setting, attention can then be focused on how specific aspects of the structure of the situation affect behavior over time, such as sequential moves, type of feedback, forms of communication, and how individuals are assigned to positions. CAMERER (2003, 117) has well-captured the broad understanding of many institutional theorists when he commented that: “Institutional arrangements can be understood as responding to a world in which there are some sociopaths and some saints, but mostly regular folks who are capable of both kinds of behavior.”

The possibility that there are individuals who take into account the payoffs of other individuals changes theoretical foundations greatly. Now one needs to ask how individuals provide reliable signals to each other about their preferences and intentions and how they gain information about the actions and outcomes of others. Further, behavior that evolves over time in different structures is also of considerable importance where those who are inclined to seek jointly beneficial outcomes may achieve significantly higher payoffs over time if they are able to identify one another. Once successful ‘contingent cooperators’ are noticed by others, these successful strategies may be learned and adopted more widely in a population (GÜTH and KLIEMT 1998). Some of the intriguing rules devised by users of common-pool resources through the ages can now be integrated into contemporary theory (see, e.g., CASARI and PLOTT 2003) rather than relegated to an irrational and incomprehensible past.

The Potlatch between Economics and Political Science

HERBERT SIMON (1999) has likened the exchange between economics and political science to a ‘potlatch’ where each discipline has brought ‘gifts’ to the other. After years of suspicion regarding the ‘gifts’ brought by the ‘other’ discipline, SIMON concludes that the extensive methodological and empirical development of the last 50 years has prepared all of the social sciences for a better interaction in the future. “Gift-giving between economics and the other social sciences can become a genuine exchange, going in both directions” (1999, 117). LEACH and SABATIER (2005) strongly demonstrate that the exchange should also include psychological theory for the many policy processes that involve understanding the process of gaining trust among participants.

Empirical evidence has steadily mounted that demonstrates the capability of humans to design complex systems that are neither markets nor the state. Variance in performance has been measured

in regard to efficiency, equity, accountability, and resilience of these nonmarket and nonstate institutions, but some achieve high levels of performance. Instead of presuming that all complex systems need to be replaced with a centralized order, growing evidence has mounted that the challenge is developing well-tested theories that enable us to harness complexity (AXELROD and COHEN 2000) rather than eliminate it.

In a special issue of *Public Choice* summarizing what has been learned in the last half-century, SHUGHART and TOLLISON (2005) also identify the issues that need to be addressed by political economists in the new century. Among the many important questions identified in this issue are: How can the independence of a judiciary be assured in a democratic polity? How can constitutions be protected from erosion by self-interested politicians seeking increased powers? How can democracy gain real roots in countries governed for more than a century by autocratic rulers? “Why are some government regimes, be they local, state or national, more corrupt than others?” (2005, 242). They then identify the “most important unanswered question on the public choice agenda” is also among the oldest: “Why do people vote?” (2005, 245). The latter question returns us to the challenge raised by behavioral economics as well as by NIE scholars—can we continue to use the narrow model of human motivation of immediate maximization of material benefits to self? Working out where this narrow engine of explanation continues to be a useful foundation for political economists and how to build a more complex model of human behavior that takes into account longer-term benefits to others, as well as to self, is one of the most important challenges facing political economists of the twenty-first century.

Wichtige Neuerungen beginnen oft an den Grenzen der Disziplinen. Seit den 1950er Jahren sind an der Grenze von Politikwissenschaft und Ökonomik wichtige Werke und kreative Kontroversen entstanden. Die Neue Politische Ökonomik (Public Choice Approach) beschreibt menschliches Verhalten als rational, selbstbezogen und von formalen Regeln bestimmt. Die Umwelt-Regulierungs-Debatte (Tragedy of the Commons Debate) brachte die Frage auf, ob Menschen verurteilt sind, in kurzfristigem Egoismus zu verharren und Ressourcen zu übernutzen. Diese Ansätze thematisierten ein wichtiges Problem, lieferten aber keine befriedigenden Lösungen. Die Neue Institutionen-Ökonomik (New Institutional Economics) erweiterte das Modell menschlichen Verhaltens und des Verhaltens von Institutionen und ergänzte theoretische durch experimentelle Präzision. Der verhaltenstheoretische Ansatz (Behavioural Economics) schließlich zeigte, dass viele Annahmen der klassischen Mikroökonomik der experimentellen Überprüfung nicht standhalten.

Anhand des Allmende-Problems lassen sich die zentralen Faktoren aufzeigen, die es Menschen ermöglichen, die nachhaltige Nutzung knapper Ressourcen jenseits von Markt und Staat selbst zu organisieren. Der wichtigste dabei ist die Kommunikation. In einem Prozess der Ko-Evolution von Politikwissenschaft und politischer Ökonomik entstand so ein viel reicheres und realistischeres Bild menschlichen Verhaltens, in dem die Rücksicht auf die eigenen langfristigen Interessen und die der Mitmenschen eine Rolle spielen. Herauszuarbeiten, an welchen Stellen das klassische rational-egoistische Bild menschlichen Handelns weiter verwendet werden kann und wo es erforderlich ist, auf das neue Bild zu setzen, ist eine der wichtigsten Herausforderungen der politischen Ökonomik des 21. Jahrhunderts.

Bibliography

- ACHESON, JAMES. 2003. *Capturing the Commons: Devising Institutions to Manage the Maine Lobster Industry*. New Haven, CT: University Press of New England.
- ALLEN, BARBARA. 2005. *Tocqueville, Covenant, and the Democratic Revolution*. Lanham, MD: Lexington Books.
- ANTTILA, STEN, and CHARLOTTA STERN. 2005. The Voluntary Provision of Snowmobile Trails on Private Land in Sweden. In *Rationality and Society* 17(4): 453–74.
- ARNOLD, J. E. M., and J. GABRIEL CAMPBELL. 1986. Collective Management of Hill Forests in Nepal: The Community Forestry Development Project. In *Proceedings of the Conference on Common Property Resource Management*, National Research Council, 425–54. Washington, DC: National Academies Press.
- ARROW, KENNETH. 1951. *Social Choice and Individual Values*. 2nd ed. New York: Wiley.
- ASCHER, WILLIAM. 1995. *Communities and Sustainable Forestry in Developing Countries*. San Francisco, CA: ICS Press.
- AXELROD, ROBERT, and MICHAEL COHEN. 2000. *Harnessing Complexity*. New York: The Free Press.
- BANANA, ABWOLI Y., and WILLIAM GOMBYA-SSEMBAJJWE. 2000. Successful Forest Management: The Importance of Security of Tenure and Rule Enforcement in Ugandan Forests. In *People and Forests: Communities, Institutions, and Governance*, ed. CLARK GIBSON, MARGARET MCKEAN, and ELINOR OSTROM, 87–98. Cambridge, MA: MIT Press.
- BARRY, BRIAN, and RUSSELL HARDIN. 1982. *Rational Man and Irrational Society? An Introduction and Source Book*. Beverly Hills, CA: Sage.
- BICKERS, KENNETH, and JOHN T. WILLIAMS. 2001. *Public Policy Analysis: A Political Economy Approach*. New York: Houghton Mifflin.
- BLACK, DUNCAN. 1958. *The Theory of Committees and Elections*. Cambridge: Cambridge University Press.
- BOETTKE, PETER J., ed. 2005. Polycentric Political Economy. *Journal of Economic Behavior and Organization* 57(2) (special issue, June).
- BOLTON, GARY E., and AXEL OCKENFELS. 2000. ERC: A Theory of Equity, Reciprocity and Competition. In *American Economic Review* 90(1): 166–93.
- BOYNE, GEORGE A. 1992. Local Government Structure and Performance: Lessons from America? In *Public Administration* 70: 333–57.
- BRYCE, HERRINGTON J. 2005. *Players in the Public Policy Process: Nonprofits as Social Capital and Agents*. New York: Palgrave Macmillan.
- BUCHANAN, JAMES M., and GORDON TULLOCK. 1962. *The Calculus of Consent*. Ann Arbor: University of Michigan Press.
- CAMERER, COLIN F. 2003. *Behavioral Game Theory: Experimental in Strategic Interaction*. Princeton, NJ: Princeton University Press.
- CASARI, MARCO, and CHARLES R. PLOTT. 2003. Decentralized Management of Common Property Resources. In *Journal of Economic Behavior and Organization* 51: 217–47.
- CHHATRE, ASHWINI, and ARUN AGRAWAL. 2009. Tradeoffs and Synergies between Carbon Storage and Livelihood Benefits from Forest Commons. In *Proceedings of the National Academy of Sciences* 106(42): 17667–70.
- CIRIACY-WANTRUP, SIEGFRIED V., and RICHARD C. BISHOP. 1975. 'Common Property' as a Concept in Natural Resource Policy. In *Natural Resources Journal* 15(4): 713–27.
- COASE, RONALD. 1937. The Nature of the Firm. In *Economica* 4(16): 386–405.
- COLEMAN, ERIC. 2009. Institutional Factors Affecting Ecological Outcomes in Forest Management. In *Journal of Policy Analysis and Management* 28(1): 122–46.
- COLEMAN, ERIC and BRIAN STEED. 2009. Monitoring and Sanctioning in the Commons: An Application to Forestry. In *Ecological Economics* 68(7): 2106–13.
- COX, JAMES. 2004. How to Identify Trust and Reciprocity. In *Games and Economic Behavior* 46: 260–81.
- COX, MICHAEL, GWEN ARNOLD, and SERGIO VILLAMAYOR TOMÁS. 2010. A Review of Design Principles for Community-Based Natural Resource Management. In *Ecology and Society* 15(4): 38.
- DE MOOR, MARTINE, LEIGH SHAW-TAYLOR, and PAUL WARDE, eds. 2002. *The Management of Common Land in Northwest Europe, c. 1500–1850*. Belgium: BREPOL Publishers.
- DENZAU, ARTHUR T., and DOUGLASS C. NORTH. 1994. Shared Mental Models: Ideologies and Institutions. In *Kyklos* 47: 3–31.
- DIETZ, THOMAS, ELINOR OSTROM, and PAULS STERN. 2003. The Struggle to Govern the Commons. In *Science* 302 (December 12): 1907–12.
- DOWNS, ANTHONY. 1957. *An Economic Theory of Democracy*. New York: Harper and Row.
- FEHR, ERNST. 2009. On the Economics and Biology of Trust. In *Journal of European Economic Association*. 7 (2–3) 235–266.
- FEHR, ERNST and SIMON GÄCHTER. 2000. Cooperation and Punishment in Public Goods Experiments. In *American Economic Review* 90(4): 980–94.

- FISCHEL, WILLIAM A. 2001. *The Homevoter Hypothesis*. Cambridge, MA: Harvard University Press.
- GHATE, RUCHA, and HARINI NAGENDRA. 2005. Role of Monitoring in Institutional Performance: Forest Management in Maharashtra, India. In *Conservation and Society* 3(2): 509–32.
- GIBSON, CLARK, KRISTER ANDERSSON, ELINOR OSTROM, and SUJAI SHIVAKUMAR. 2005. *The Samaritan's Dilemma: The Political Economy of Development Aid*. New York: Oxford University Press.
- GIBSON, CLARK, JOHN WILLIAMS, and ELINOR OSTROM. 2005. Local Enforcement and Better Forests. In *World Development* 33(2) (February): 273–84.
- GINTIS, HERBERT. 2000. Beyond Homo Economicus: Evidence from Experimental Economics. In *Ecological Economics* 35(3): 311–22.
- GORDON, H. SCOTT. 1954. The Economic Theory of a Common Property Resource: The Fishery. In *Journal of Political Economy* 62: 124–42.
- GREIF, AVNER, and DAVID D. LAITIN. 2004. A Theory of Endogenous Institutional Change. In *American Political Science Review* 98(4): 633–51.
- GÜTH, WERNER, and HARTMUT KLIEMT. 1998. The Indirect Evolutionary Approach: Bridging the Gap between Rationality and Adaptation. In *Rationality and Society* 10(3): 377–99.
- HARDIN, GARRETT. 1968. The Tragedy of the Commons. In *Science* 162 (December): 1243–48.
- HAYES, TANYA M., and ELINOR OSTROM. 2005. Conserving the World's Forests: Are Protected Areas the Only Way? In *Indiana Law Review* 38(3): 595–617.
- HEIKKILA, TANYA, and ANDREA K. GERLAK. 2005. The Formation of Large-Scale Collaborative Resource Management Institutions: Clarifying the Roles of Stakeholders, Science, and Institutions. In *Policy Studies Journal* 33(4): 583–612.
- HELMKE, GRETCHEN, and STEVEN LEVITSKY. 2004. Informal Institutions and Comparative Politics: A Research Agenda. In *Perspective on Politics* 2(4): 725–40.
- HOBBS, THOMAS. [1651] 1960. *Leviathan or the Matter, Forme and Power of a Commonwealth Ecclesiasticall and Civil*. Ed. MICHAEL OAKESHOTT. Oxford: Basil Blackwell.
- HOUGHE, LIESBET, and GARY MARKS. 2001. *Multi-Level Governance and European Integration*. Lanham, MD: Rowman & Littlefield.
- JANSSEN, MARCO, ROBERT HOLAHAN, ALLEN LEE, and ELINOR OSTROM. 2010. Lab Experiments for the Study of Social-Ecological Systems. In *Science* 328(5978): 613–17.
- JONES, BRYAN D., TRACY SULKIN, and HEATHER A. LARSEN. 2003. Policy Punctuations in American Political Institutions. In *American Political Science Review* 97(1): 151–69.
- JOSHI, NEERAJ N., ELINOR OSTROM, GANESH P. SHIVAKOTI, and WAI FUNG LAM. 2000. Institutional Opportunities and Constraints in the Performance of Farmer-Managed Irrigation Systems in Nepal. In *Asia-Pacific Journal of Rural Development* 10(2) (December): 67–92.
- KEOHANE, ROBERT O. 1984. *After Hegemony: Cooperation and Discord in the World Political Economy*. Princeton, NJ: Princeton University Press.
- LAM, WAI FUNG. 1998. *Governing Irrigation Systems in Nepal: Institutions, Infrastructure, and Collective Action*. Oakland, CA: ICS Press.
- LANSING, J. STEPHEN, and JAMES KREMER. 1993. Emergent Properties of Landscape. In *American Anthropologist* 95(1): 97–115.
- LEACH, WILLIAM D., and PAUL SABATIER. 2005. To Trust an Adversary. In *American Political Science Review* 99(4): 491–504.
- LEVI, MARGARET. 1988. *Of Rule and Revenue*. Berkeley: University of California Press.
- LEVINE, DAVID K. 1998. Modeling Altruism and Spitefulness in Experiments. In *Review of Economic Dynamics* 1(3): 593–622.
- MCCAY, BONNIE J., and JAMES M. ACHESON. 1987. *The Question of the Commons: The Culture and Ecology of Communal Resources*. Tucson: University of Arizona Press.
- MCDERMOTT, ROSE. 2004. The Feeling of Rationality: The Meaning of Neuroscientific Advances for Political Science. In *Perspectives on Politics* 2(4): 691–706.
- MCGINNIS, MICHAEL, ed. 1999. *Polycentricity and Local Public Economies: Readings from the Workshop in Political Theory and Policy Analysis*. Ann Arbor: University of Michigan Press.
- MILGROM, PAUL R., DOUGLASS C. NORTH, and BARRY R. WEINGAST. 1990. The Role of Institutions in the Revival of Trade: The Law Merchant, Private Judges, and the Champagne Fairs. In *Economics and Politics* 2(1) (March): 1–23.
- MILLER, GARY. 1992. *Managerial Dilemmas: The Political Economy of Hierarchy*. New York: Cambridge University Press.
- National Research Council. 1986. *Proceedings of the Conference on Common Property Resource Management*. Washington, DC: National Academies Press.
- National Research Council. 2002. *The Drama of the Commons*. Washington, DC: National Academies Press.
- NORTH, DOUGLASS C. 1981. *Structure and Change in Economic History*. New York: Norton.
- NORTH, DOUGLASS C. 2005. *Understanding the Process of Economic Change*. Princeton, NJ: Princeton University Press.

- OAKERSON, RONALD J., and ROGER B. PARKS. 1989. Local Government Constitutions: A Different View of Metropolitan Governance. In *American Review of Public Administration* 19(4): 279–94.
- OLSON, MANCUR. 1965. *The Logic of Collective Action: Public Goods and the Theory of Groups*. Cambridge, MA: Harvard University Press.
- OSTROM, ELINOR. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. New York: Cambridge University Press.
- OSTROM, ELINOR. 2005. *Understanding Institutional Diversity*. Princeton, NJ: Princeton University Press.
- OSTROM, ELINOR. 2007. A Diagnostic Approach for Going Beyond Panaceas. In *Proceedings of the National Academy of Sciences* 104(39): 15181–87.
- OSTROM, ELINOR. 2009. A General Framework for Analyzing Sustainability of Social-Ecological Systems. In *Science* 325(5939): 419–22.
- OSTROM, ELINOR, and HARINI NAGENDRA. 2006. Insights on Linking Forests, Trees, and People from the Air, on the Ground, and in the Laboratory. In *Proceedings of the National Academy of Sciences* 103(51): 19224–31.
- OSTROM, ELINOR, JAMES WALKER, and ROY GARDNER. 1992. Covenants with and without a Sword: Self-Governance is Possible. In *American Political Science Review* 86(2) (June): 404–17.
- OSTROM, VINCENT. 1986. A Fallibilist's Approach to Norms and Criteria of Choice. In *Guidance, Control, and Evaluation in the Public Sector*, 229–49. Berlin and New York: Walter de Gruyter.
- OSTROM, VINCENT, CHARLES TIEBOUT, and ROBERT WARREN. 1961. The Organization of Government in Metropolitan Areas. In *American Political Science Review* 55: 831–42.
- POTNAM, ROBERT. 2000. *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon and Schuster.
- RIKER, WILLIAM H. 1962. *A Theory of Political Coalitions*. New Haven, CT: Yale University Press.
- SATZ, DEBRA and JOHN FERREJOHN. 1994. Rational Choice and Social Theory. In *Journal of Philosophy* 91(2): 71–87.
- SAWYER, AMOS. 2005. *Beyond Plunder: Toward Democratic Governance in Liberia*. Boulder, CO: Lynne Rienner Publishers.
- SCHNEIDER, MARK. 1986. Fragmentation and the Growth of Government. In *Public Choice* 48: 255–63.
- SEFTON, MARTIN, ROBERT SHUPP, and JAMES M. WALKER. 2007. The Effect of Rewards and Sanctions in Provision of Public Goods. In *Economic Inquiry* 45(4): 671–690.
- SHEPSON, KENNETH A. 1989. Studying Institutions. In *Journal of Theoretical Politics* 1(2) (April): 131–49.
- SHIVAKUMAR, SUJAI. 2005. *The Constitution of Development*. New York: Palgrave Macmillan.
- SHUGHART, WILLIAM F., and ROBERT TOLLISON. 2005. The Unfinished Business of Public Choice. In *Public Choice* 124(1–2): 237–47.
- SIMON, HERBERT A. 1972. Theories of Bounded Rationality. In *Decision and Organization*. eds. C. B. MCGUIRE and ROY RADNER, 161–76. Amsterdam: North Holland.
- SIMON, HERBERT A. 1999. The Potlatch between Economics and Political Science. In *Competition and Cooperation*, ed. JAMES ALT, MARGARET LEVI, and ELINOR OSTROM, 112–22. New York: Russell Sage Foundation.
- SMITH, VERNON, and JAMES M. WALKER. 1993. Rewards, Experience and Decision Costs in First Price Auctions. In *Economic Inquiry* 31: 237–44.
- TESKE, PAUL, MARK SCHNEIDER, MICHAEL MINTROM, and SAMUEL BEST. 1993. Establishing the Micro Foundations of a Macro Theory: Information, Movers, and the Competitive Local Market for Public Goods. In *American Political Science Review* 87(3): 702–13.
- TSEBELIS, GEORGE. 1990. *Nested Games: Political Context, Political Institutions and Rationality*. Berkeley: University of California Press.
- WALKER, JAMES, and ELINOR OSTROM. 2009. Trust and Reciprocity as Foundations for Cooperation. In *Whom Can We Trust?: How Groups, Networks, and Institutions Make Trust Possible*, ed. KAREN COOK, MARGARET LEVI, and RUSSELL HARDIN, 91–124. New York: Russell Sage Foundation.
- WEBB, EDWARD, and GANESH P. SHIVAKOTI, eds. 2008. *Decentralization, Forests and Rural Communities: Policy Outcomes in South and Southeast Asia*. New Delhi: Sage India.
- WEINSTEIN, MARTIN S. 2000. Pieces of the Puzzle. In *Georgetown International Environmental Law Review* 12(2): 375–412.
- WILLIAMSON, OLIVER E. 1975. *Markets and Hierarchies: Analysis and Antitrust Implications*. New York: Free Press.