

## **Institutional Analysis and Development (Micro)**

Class No. 20374 / T 3:00-5:00 PM / Park 1, Tocqueville Room @ 513 N. Park Ave.

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### **Syllabus**

*This is the Syllabus used by Lin Ostrom the last time she taught the seminar in 2011.*

The central questions underlying this course are:

- How can fallible human beings achieve and sustain self-governing ways of life and self-governing entities as well as sustaining ecological systems at multiple scales?
- When we state that institutions facilitate or discourage effective problem-solving and innovations, what do we mean by institutions and what other factors affect these processes?
- How do we develop better frameworks and theories to understand behavior that has structure and outcomes at multiple scales (e.g. household use of electricity affecting household budget and health as well as community infrastructure and investments and regional, national, and global structures and outcomes)?
- How can institutional analysis be applied to the analysis of diverse policy areas including urban public goods, water and forestry resources, and healthcare?

To address these questions, we will have to learn a variety of tools to understand how fallible individuals behave within institutions as well as how they can influence the rules that structure their lives. This is a particularly challenging question in an era when global concerns have moved onto the political agenda of most international, national, and even local governing bodies without recognizing the importance of the local for the global. Instead of studying how individuals craft institutions, many scholars are focusing on how to understand national and global phenomena. It is also an era of substantial political uncertainty as well as violence, terrorism, and disruption. Many of the problems we are witnessing today are due to a lack of understanding of the micro- and meso- levels that are essential aspects of global processes.

In our effort to understand self-governance, we will be studying the four “I’s”: individuals, incentives, institutions, and inquiry.

To understand processes at any level of organization, one needs to understand the individuals who are participants and the incentives they face. When we talk about “THE”

government doing X or Y, there are individuals who hold positions in a variety of situations within “THE” government. We had better understand how individuals approach making decisions in a variety of situations given the incentives they face. Those incentives come from a variety of sources, but a major source, particularly in the public sector, are the rules of the game they are playing. Institutions include the rules that specify what may, must or must not be done in situations that are linked together to make up a polity, a society, an economy, and their inter-linkages. To understand this process, we must be engaged in an inquiry that will never end.

The settings we study are complex, diverse, multi-scaled, and dynamic. Thus, we need to develop frameworks that provide a general language for studying these complex, multi-scaled systems. And, we can learn a variety of theories (and models of those theories) that help us understand particular settings. We cannot develop a universal theory of actions and outcomes in all settings for all time. Thus, our task of inquiry is a lifelong task. And, the task of citizens and their officials is also unending. No system of governance can survive for long without commonly understood rules and rule enforcement. Rule enforcement relies on varying degrees of force and potential use of violence. Consequently, we face a Faustian bargain in designing any system of governance.

A self-governing entity is one whose members (or their representatives) participate in the establishment, reform, and continued legitimacy of the constitutional and collective choice rules-in-use. All self-organized entities (whether in the private or public spheres) are to some extent self-governing. In modern societies, however, it is rare to find any entity whose members (or their representatives) have fashioned all of the constitutional and collective-choice rules that they use. Some rules are likely to have come from external sources. Many rules will have come from earlier times and are not discussed extensively among those using the rules today.

On the other hand, even in a totalitarian polity, it is difficult for central authorities to prevent all individuals from finding ways of self-organizing and creating rules of their own. Some of these may even be contrary to the formal laws of the totalitarian regime. Given that most modern societies have many different entities, let me rephrase the first question on Page 1: How can fallible individuals achieve and sustain large numbers of small, medium, and large-scale self-governing entities in the private and public spheres?

We cannot thoroughly understand all of the diverse processes of self-governance in any semester-long or year-long course of study. How humans can govern themselves is a question that has puzzled and perplexed the greatest thinkers of the last several millennia. Many have answered that self-governance is impossible. In this view, the best that human beings can do is live in a political system that is imposed on them and that creates a predictable order within which individuals may be able to achieve a high level of physical and economic well-being without much autonomy. In this view, the rules that structure the opportunities and constraints facing individuals come from outside from what is frequently referred to as “the state.”

For other thinkers, rules are best viewed as spontaneously emerging from patterns of interactions among individuals. In this view, trying to design any type of institution, whether to be imposed on individuals or self-determined, is close to impossible or potentially disastrous in its consequences. Human fallibility is too great to foretell many of the consequences that are likely to follow. Efforts to design self-governing systems, rather than making adaptive changes

within what has been passed along from past generations, involves human beings in tasks that are beyond their knowledge and skills.

The thesis that we advance in this seminar is that individuals, who seriously engage one another in efforts to build mutually productive social relationships – and to understand why these are important – are capable of devising ingenious ways of relating constructively with one another. The impossible task, however, is to design entire social systems “from scratch” at one point in time that avoid the fate of being monumental disasters. Individuals who are willing to explore possibilities, consider new options as entrepreneurs, and to use reason as well as trial and error experimentation, can evolve and design rules, routines, and ways of life that are likely to build up to self-governing entities with a higher chance of adapting and surviving over time than top-down designs. It takes time, however, to learn from errors, to try and find the source of the error, and to improve one part of the system without generating adverse consequences elsewhere.

Successful groups of individuals may exist in simple or complex nested systems ranging from very small to very large. The problem is that in a complexly interrelated world, one needs effective organization at all levels ranging from the smallest work team all the way to international organizations. If the size of the group that is governing and reaping benefits is too small, negative externalities are likely to occur. Further, even in small face-to-face groups, some individuals may use any of a wide array of asymmetries to take advantage of others. Individuals, who are organized in many small groups nested in larger structures – a polycentric system – may find ways of exiting from some settings and joining others. Or, they may seek remedies from overlapping groups that may reduce the asymmetries within the smaller unit. If the size of the group that is governing and reaping benefits is too large, on the other hand, essential information is lost, and further, the situation may again be one of exploitation.

Scale and complex nesting are only part of the problem. Another part has to do with how individuals view their basic relationships with one another. Many individuals learn to be relatively truthful, considerate of others, trustworthy, and willing to work hard. Others are opportunistic. Some approach governance as involving basic problem-solving skills. Some approach governance as a problem of gaining dominance over others. The opportunities for dominance always exist in any system of rule-ordering, where some individuals are delegated responsibilities for devising and monitoring conformance to rules and sanctioning rule breakers. Those who devise self-governing entities that work well only when everyone is a “saint” find themselves invaded by “sinners” who take advantage of the situation and may cause what had initially worked successfully to come unglued and fail.

Thus, the initial answer to the first question on Page 1 is: Self-governance is possible in a setting, if . . .

- most individuals share a common, broad understanding of the biophysical, cultural, and political worlds they face; of the importance of trying to follow general principles of trust, reciprocity, and fairness; and of the need to use artisanship to craft their own rules;
- most individuals have significant experience in small to medium-sized settings, where they learn the skills of living with others, being responsible, gaining trust, being entrepreneurial, and holding others responsible for their actions;

- considerable autonomy exists for constituting and reconstituting relationships with one another that vary from very small to very large units (some of which will be highly specialized while others may be general purpose organizations);
- individuals learn to analyze the incentives that they face in particular situations (given the type of physical and cultural setting in which they find themselves) and to try to adjust positive and negative incentives so that those individuals who are most likely to be opportunistic are deterred or sanctioned.

The above is posed as a “possibility” not a determinate outcome. In other words, we view self-governing entities as fragile social artifacts that individuals may be able to constitute and reconstitute over time. A variety of disturbances are likely to occur over time. A key question is to what kind of disturbances is a self-organized governance system robust? We can make scientific statements about the kinds of results that are likely if individuals share particular kinds of common understandings, are responsible, have autonomy, possess analytical tools, and consciously pass both moral and analytical knowledge from one generation to the next. These are strong conditions!

With this view, small self-governing entities may exist as an enclave in the midst of highly authoritarian regimes. This may not be a stable solution, but self-governance may provide opportunities to develop productive arrangements for those who establish trust and reciprocity backed by their own willingness to monitor and enforce interpersonal commitments. If the macro structure is not hostile or even supports and encourages self-organization, what can be accomplished by smaller private and public enclaves can be very substantial. This is initially a bottom-up view of self-governance. Productive small-scale self-organization, however, is difficult to sustain over time in a larger political system that tries to impose uniform rules, operates through patron-client networks or uses terror to sustain authoritarian rule. Having vigorous local and regional governments and many types of voluntary associations is part of the answer but not sufficient in and of itself.

Simply having national elections, choosing leaders, and asking them to pass good legislation is hardly sufficient, however, to sustain a self-governing society over the long run. Electing officials to national office and providing them with “common budgetary pools” of substantial size to spend “in the public interest” creates substantial temptations to engage in rent-seeking behavior and distributive politics. The central problem is how to embed elected officials in a set of institutions that generates information about their actions, holds them accountable, allows for rapid response in times of threat, and encourages innovation and problem solving. Solving such problems involves the design of a delicately balanced system. It requires decisions from sophisticated participants who understand the theory involved in constituting and reconstituting such systems and share a moral commitment to the maintenance of a democratic social order.

Now, what is the role of the institutional analyst in all of this? Well, for one, it is essential for those who devote their lives to studying the emergence, adaptation, design, and effects of institutional arrangements to understand a very wide array of diverse rules that exist in an equally diverse set of physical and cultural milieus. To understand how various rules may be

used as part of a self-governing society, one has to examine how diverse rules affect the capacities of individuals to achieve mutually productive outcomes over time or the dominance of some participants over others. Eventually, one has to examine constellations of embedded institutional arrangements rather than isolated situations. And, one has to examine the short-run and long-run effects of many different types of rules on human actions and outcomes. Further, one has to acquire considerable humility regarding exactly how precise predictions can be made about the effects of different rules on incentives, behavior, and outcomes achieved. Design of successful institutions may indeed be feasible. Designed institutions, which tend to generate substantial information rapidly and accurately and allow for the change of rules over time in light of performance, are more likely to be successful than those resulting from “grand designs” for societies as a whole.

To be an institutional analyst, one needs to learn to use the best available theoretical and data collection tools, while at the same time trying to develop even better theories and conducting further empirical studies that contribute to our theoretical understanding of self-governing systems. All tools have capabilities and limits. The task of the skilled artisan – whether an institutional theorist or a cabinetmaker– is to learn the capabilities and limits of relevant tools and how best to use a combination of tools to address the wide diversity of puzzles that one comes across in a lifetime of work.

Relevant tools are plentiful in the sense that we do have an extensive body of political, social, and economic theory that focuses on the impact of diverse rules on the incentives, behavior, and likely outcomes within different settings. These tools are limited, however, in that many of the most rigorous theories make questionable assumptions about both the individual and about the settings within which individuals find themselves. This can be problematic for explaining behavior in many settings. These explicit and often implicit assumptions may mask some of the deeper problems of sustaining democratic systems over time. Many of the difficult problems that human beings face in trying to develop and sustain democratic organizations are assumed away when one starts with assumptions that individuals have complete and perfect information and can make error-free calculations about expected consequences for themselves and no one else in complex, uncertain worlds.

Further, when assumptions are made that the structure of the situations facing individuals are fixed and cannot be changed by those in the situation, little effort is devoted to addressing how individuals affect their own situations. Yet, these same assumptions (full information and fixed structures) are useful when the analyst wants to examine the expected short-term outcomes of an institutional and physical setting, where the options available to individuals are narrowly constrained and where individuals have many opportunities to learn about the costs and benefits of pursuing diverse options. Learning which assumptions, theories, and models to use to analyze diverse institutional arrangements combined with diverse settings is an important aspect of the training of institutional analysts.

During this seminar, we will use a variety of theoretical tools. These will help us to understand the Institutional Analysis and Development (IAD) framework that we have been developing over many years at the Workshop as well as the more recent Social-Ecological Systems (SES) framework. The skilled institutional analyst uses a framework to identify the types of questions and variables to be included in any particular analysis. The artisan then

selects what is perceived to be the most appropriate theory available given the particular questions to be addressed, the type of empirical evidence that is available or is to be obtained, and the purpose of the analysis. For any one theory, there are multiple models of that theory that can be used to analyze a focused set of questions. Choosing the most appropriate model (whether this is a mathematical model, a simulation, a process model or the design for an experiment) also depends on the particular puzzle that an analyst wants to examine.

Further, there are multiple tools that are used in the conduct of research ranging from individual case studies, meta-analyses, large-N studies, laboratory and field experiments, GIS and remote sensing, agent-based models, and others. Institutional analysts respect all of these methods when used to understand human behavior in diverse settings. No scholar can use all of these methods well nor are they all appropriate for the study of all institutional settings, but it is important to learn more about diverse tools and their strengths and weaknesses for examining diverse research questions.

*End of Professor Ostrom's 2011 syllabus.*

### **Schedule of Topics and Reading Assignments**

This is a reading-heavy course. The full schedule of topics and reading assignments is available on CANVAS under the "Syllabus" tab. And all of the required readings, with the exception of the two required books, are found under the "Files" tab. The two required books are: (1) Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge 1990); and (2) Amy Poteete, Marco Janssen, and Elinor Ostrom, *Working Together: Collective Action, the Commons, and Multiple Methods in Practice* (Princeton 2010). You should have completed the first book by the third week of the semester, and the second before the last week of the semester.

### **Paper and Memo Requirements**

Enrolled students are expected to write a 25-page or so (double-spaced) paper for the "mini-conference," which is usually held the Monday following the last week of classes. Non-student participants are also encouraged to draft a paper for the "mini-conference." At the mini-conference, papers will not be presented by their authors but by other affiliated members of the Workshop (faculty and advanced graduate students). Presenters will summarize the paper in 10 minutes, then provide 5 minutes of feedback, after which the authors will have 5 minutes to respond, followed by general discussion among all participants. The main goal of the mini-conference is to provide an object lesson in how to prepare and deliver conference papers. The main purpose of having papers presented by Workshoppers other than the authors is to give the authors a sense of how their writing is read and interpreted by other scholars, so that they learn how to get their ideas across with the greatest possible clarity.

Paper topics are due, along with a precis (or draft introduction), before Week 9 of the semester. That week will be devoted to an initial discussion of everyone's paper topics and research problems.

In addition to the main seminar paper, enrolled students will be responsible for preparing a memo, every other week, reflecting on the writings for the upcoming week's seminar session. I will usually incorporate questions and comments from those student memos in my prepared remarks for the class session.

The only other major requirements for *all* participants in the seminar are to attend all classes (or as many as possible), read closely all of the assigned readings, and come prepared to discuss them in detail. The seminar is not designed for me to be talking the entire time. We will all learn a great deal more if everyone participates actively. Now that the course is cross-listed between Political Science, SPEA, and the law school, along with the participation of Visiting Scholars and other assorted Workshoppers, we should have a wide variety of perspectives to share.

## SCHEDULE OF TOPICS & READINGS

In addition to the readings below, you should have read the entirety of Elinor Ostrom, *Governing the Commons* (1990) by the third week of the semester; and Amy Poteete, Marco Janssen, and Elinor Ostrom, *Working Together* (2010) should be read in its entirety by the last week of the semester.

### Week 1: Background

1. McGinnis and Walker (2010), "Foundations of the Ostrom Workshop: institutional analysis, polycentricity, and self-governance," *Public Choice* 143: 293-301.
2. Elinor Ostrom, Selections from Fall 2011 Syllabus for Political Science Y673.
3. Elinor Ostrom (2010), "A Long Polycentric Journey," *Annu. Rev. Polit. Sci.* 13: 1-23.
4. McGinnis and E. Ostrom (2012), "Reflections on Vincent Ostrom, Public Administration, and Polycentricity," *PAR* 12(1): 15-25.
5. Michael D. McGinnis (2011). "Elinor Ostrom: Politics as Problem-Solving in Polycentric Settings," in Donatella Campus, Gianfranco Pasquino, and Martin Bull, eds., *Maestri of Political Science*, volume 2, Colchester, UK: ECPR Press, pp. 137-158.
6. Singer (2015), "The Indian States of America: Parallel Universes & Overlapping Sovereignty," *Amer. Indian L. Rev.* 38: 1-33.

### Week 2: Social ontology: of things and institutions

1. Searle (1998), "Social Ontology and the Philosophy of Society," *Analyse & Kritik* S. 143-158.
2. Denzau & North (1994), "Shared Mental Models: Ideologies and Institutions," *Kyklos* 47: 3-31.
3. V. Ostrom (1980), "Artisanship and Artifact," *PAR* 40: 309-317.
4. Searle (2005), "What is an institution?" *J. Inst. Econ.* 1: 1-22.
5. North (1994), "Economic Performance through Time," *Amer. Econ. Rev.* 84: 359-368.
6. Coase (1992), "The Industrial Structure of Production," *Amer. Econ. Rev.* 82: 713-719.
7. Crawford and E. Ostrom, "A Grammar of Institutions," *Amer. Poli. Sci. Rev.* 89: 582-600.
8. E. Ostrom (1986), "An Agenda for the Study of Institutions," *Public Choice* 48: 3-25.

**Week 3: Governance institutions: law and/or social norms**

1. Pound (1940-41), "What is Law?" *W. Va. L. Q.* 47: 1-12.
2. Holmes (1896-97), "The Path of the Law," *Boston L. School Mag.* 1: 1-17.
3. Llewellyn (1949), "Law and the Social Sciences," *Amer. Socio. Rev.* 14:451-462.
4. Milgrom, North, and Weingast (1990), "The Role of Institutions in the Revival of Trade: The Law Merchant, Private Judges, and the Champagne Fairs," *Econ. And Pol.* 2: 1-23.
5. Ellickson (1986), "Of Coase and Cattle: Dispute Resolution among Neighbors in Shasta County," *Stanford L. Rev.* 38: 623-687.
6. R. Posner (1997), "Social Norms and the Law: An Economic Approach," *Amer. Econ. Rev.* 87: 365-369.
7. Jolls and Sunstein (2006), "Debiasing through Law," *J. Leg. Stud.* 35: 199-242.

**Week 4: Commons dilemmas, rational actors, and collective action**

1. Arrow (1986), "Rationality of Self and Others in an Economic System," *J. Bus.* 59: S385-S399.
2. Simon (1972), "Theories of Bounded Rationality," in C.B. McGuire and R. Rander (eds) *Decision and Organization*, Dordrecht: North-Holland.
3. Cave (1987) "Introduction to Game Theory" RAND Graduate School.
4. Edney and Harper (1978), "The Commons Dilemma: A Review of Contributions from Psychology," *Env't'l Mgt.* 2: 491-507.
5. E. Ostrom (1988), "Institutional Arrangements and the Commons Dilemma," in V. Ostrom, Feeny, and Picht (eds), *Rethinking Institutional Analysis and Development*. SF: ICS Press, pp. 103-139.
6. Cole & Grossman (2010), "Institutions matter! Why the Herder Problem is not a Prisoner's Dilemma," *Theory and Decision* 69: 219-231.
7. Nowak (2006), "Five rules for the evolution of cooperation," *Sci.*

**Week 5: "Design principles" for sustainable CPR governance**

1. Dietz, E. Ostrom, and Stern (2003), "The struggle to govern the commons," *Sci.* 302: 1907-1912.
2. E. Ostrom *et al.* (1999), "Revisiting the Commons: Local Lessons, Global Challenges," *Sci.* 284: 278-82.
3. E. Ostrom, "Design Principles of Robust Property Rights Institutions: What Have We Learned," in Ingram and Hong (eds), *Property rights and land policies*. Cambridge, MA: Lincoln Institute.
4. Cox, Arnold, and Villamayor Tomas (2010), "A Review of Design Principles for Community-based Natural Resource Management," *Ecol. & Soc.* 15: 38-\_\_.
5. Gutierrez, Hillborn & Defeo (2011), "Leadership, social capital and incentives promote successful fisheries," *Nature* 470: 386-389.
6. Agrawal (2003), "Sustainable Governance of Common-Pool Resources: Context, Methods, and Politics," *Ann. Rev. Anthro.* 32: 243-262.

## Week 6: Property and resource governance

1. V. Ostrom & E. Ostrom (1977), "Public Goods and Private Choices," in McGinnis (ed), Polycentricity and local public economies. Readings from the workshop in political theory and policy analysis. Ed. Michael McGinnis, Ann Arbor.-University of Michigan Press, 1999.
2. Hardin (1968), "The Tragedy of the Commons," *Sci.* 162: 1243-1248.
3. E. Ostrom, "How Types of Goods and Property Rights Jointly Affect Collective Action," *J. Theo. Pol.* 15: 239-270.
4. Schlager & Ostrom (1992), "Property-Rights Regimes and Natural Resources: A Conceptual Analysis," *Land Econ.* 68: 249-262.
5. Clark (1973), "Profit Maximization and the Extinction of Animal Species," *J. Pol. Econ.* 81: 950-961.
6. Cole (2015), "'Economic property rights' as 'nonsense upon stilts': a comment on Hodgson," *J. Inst. Econ.* June 1-6.
7. Cole & E. Ostrom (2011), "The Variety of Property Systems and Rights in Natural Resources," in Cole & Ostrom (eds), *Property in Land and Other Resources*. Cambridge, MA: Lincoln Institute, pp. 37-64.

## Week 7: Analytical frameworks 1: IAD

1. V. Ostrom & E. Ostrom (2004), "The Quest for Meaning in Public Choice," *Amer. J. Econ. & Soc.* 63: 105-147.
2. E. Ostrom (1986), "A Method of Institutional Analysis," in Kaufmann et al. (eds), *Guidance, Control, and Evaluation in the Public Sector*. Berlin: de Gruyter, pp. 459-475.
3. E. Ostrom (2011), "Background on the Institutional Analysis and Development Framework," *PSJ* 39: 7-27.
4. McGinnis (2011), "An Introduction to IAD and the Language of the Ostrom Workshop: A Simple Guide to a Complex Framework," *PSJ* 39: 169-183.
5. McGinnis (2012), "How to Use the IAD Framework" (mimeo).
6. McGinnis (2011), "Networks of Adjacent Action Situations in Polycentric Governance," *PSJ* 39: 51-78.
7. Cole (forthcoming), "Formal Institutions and the IAD Framework: Bringing the Law Back In"

## Week 8: Analytical frameworks 2: SES

1. Anderies, Janssen, and E. Ostrom (2004), "A Framework to Analyze the Robustness of Social-ecological Systems from an Institutional Perspective," *Ecol. & Soc.* 9: 18- .
2. E. Ostrom (2007), "A diagnostic approach for going beyond panaceas," *PNAS* 104: 15181-15187.
3. E. Ostrom (2009), "A General Framework for Analyzing Sustainability of Social-Ecological Systems," *Sci.* 325: 419-422.
4. Cox and E. Ostrom (2010), "Moving beyond panaceas: a multi-tiered diagnostic approach for social-ecological analysis," *Env'tl Conserv.* 37: 451-463.
5. McGinnis & E. Ostrom (2014), "Social-ecological system framework: initial changes and continuing challenges," *Ecol. & Soc.* 19: 30- .
6. Epstein et al. (2013), "Missing ecology: Integrating ecological perspectives with the social-ecological system framework," *Int'l J. Commons* 7: 432-453.

7. Cole, Epstein & McGinnis (2014), "Digging deeper into Hardin's pasture: the complex institutional structure of 'the tragedy of the commons'," *J. Inst. Econ.* Mar. 2014: 1-17.

### **Week 9: Your research topics**

TBA

### **Week 10: Polycentricity and metropolitan governance**

1. Gellar (2004), "Tocquevillian Analytics," conference paper from WOW3.
2. V. Ostrom, Tiebout, & Warren (1961), "The Organization of Government in Metropolitan Areas: A Theoretical Inquiry," *Amer. Pol. Sci. Rev.* 55: 831-842.
3. E. Ostrom (1996), "Governance of Local Communities" (unpublished manuscript)
4. Boettke, Palagashvili, and Lemke (2013), "Riding in cars with boys: Elinor Ostrom's adventures with the police," *J. Inst. Econ.* 9: 407-425.
5. E. Ostrom (1974), "Ventures in Teaching and Learning," *A & S The Review* 10-17
6. Feiock (2009), "Metropolitan Governance and Institutional Collective Action," *Urban Affairs Rev.* 44: 356-377.
7. Aligica and Tarko, "Polycentricity: From Polanyi to Ostrom, and Beyond," *Governance* 25: 237-262.

### **Week 11: Polycentricity beyond metropolitan governance**

1. Hooghe and Marks (2003), "Unraveling the Central State, but How? Types of Multi-level Governance," *Amer. Pol. Sci. Rev.* 97: 233-243.
2. V. Ostrom (1973), "Can Federalism Make a Difference?" *Publius* 3: 197-237.
3. V. Ostrom (1969), "Operational Federalism: Organization for the Provision of Public Services in the American Federal System," *Public Choice* 6: 1-17.
4. E. Ostrom (2010), "Polycentric systems for coping with collective action and global environmental change," *Global Env't'l Change* 20: 550-557.
5. Cole (2015), "Advantages of a polycentric approach to climate change policy," *Nature Climate Change* 5: 114-118.
6. Andersson and E. Ostrom (2008), "Analyzing decentralized resource regimes from a polycentric perspective," *Policy Sci.* 41: 71-93.

### **Week 12: The Ostroms and public choice**

1. Mitchell (1988), "Virginia, Rochester, and Bloomington: Twenty-Five Years of Public Choice and Political Science," *Public Choice* 56: 101-119.
2. Boettke and Marciano (2014), "The past, present, and future of Virginia Political Economy," *Public Choice* 163: 53-65.
3. V. Ostrom & E. Ostrom (1971), "Public Choice: A Different Approach to the Study of Public Administration," *PAR* 31: 203-216.
4. E. Ostrom (1998), "A Behavioral Approach to the Rational Choice Theory of Collective Action," *Amer. Pol. Sci. Rev.* 92: 1-22.
5. V. Ostrom (1975), "Alternative Approaches to the Organization of Public Proprietary Interests," *Nat. Res. J.* 15: 765-789.

6. V. Ostrom (2011), "Executive Leadership, Authority Relationships, and Public Entrepreneurship," in B. Allen (ed.), Vincent Ostrom, *The Quest to Understand Human Affairs: Natural Resources Policy and Essays on Community and Collective Choice*, vol. 1. Lanham, MD: Lexington Books, pp. 443-449.

### **Week 13: Development dilemmas**

1. Radelet (2006), "A Primer on Foreign Aid," Center for Global Development Working Paper 92.
2. Alesina and Dollar (2000), "Who Gives Foreign Aid to Whom and Why?" *J. Econ. Growth* 5: 33-63.
3. Easterly (2003), "Can Foreign Aid Buy Growth?" *J. Econ. Pers.* 17: 23-48.
4. E. Ostrom, Schroeder and Wynne (1993), "Analyzing the Performance of Alternative Institutional Arrangements for Sustaining Rural Infrastructure in Developing Countries," *J. Pub. Admin. Res. & Theory* 3:11-45.
5. Araral (2005), "Bureaucratic incentives, path dependence, and foreign aid: An empirical institutional analysis of irrigation in the Phillipines," *Policy Sci.* 38: 131-157.
6. Ramalingam and Jones (2008), "Exploring the science of complexity: Ideas and implications for development and humanitarian efforts," Overseas Development Institute Working Paper 295.
7. Sawyer (2005), "What African Analysts can learn from the Ostroms," *J. Econ. Behavior & Org.* 57: 237-240.
8. Leeson (2005), "Self-enforcing arrangements in African political economy," *J. Econ. Behavior & Org.* 57: 241-244.

### **Week 14: Applying Workshop frameworks and methods to artifactual commonses**

1. Madison, Frischmann, and Strandberg (2010), "Constructing Commons in the Cultural Environment," *Cornell L. Rev.* 95: 657-709.
2. E. Ostrom (2010), "Response: The Institutional Analysis and Development Framework and the Commons," *Cornell L. Rev.* 95: 807-815.
3. Frischmann (2005), "An Economic Theory of Infrastructure and Commons Management," *Minnesota L. Rev.* 89: 918-1030.
4. Kunneke, Groenewegen, and Menard (2010), "Aligning modes of organization with technology: Critical transactions in the reform of infrastructures," *J. Econ. Behavior & Org.* 75: 494-505.
5. Hiatt (1975), "Protecting the Medical Commons: Who Is Responsible?" *N.E. J. Med.* 293: 235-241.
6. McGinnis (2013), "Caring for the Health Commons: What It is and Who's Responsible for It?" Ostrom Workshop Working Paper W13-5.

### **Week 15: Legacies and persisting challenges**

1. Liu et al. (2007), "Complexity of Coupled Human and Natural Systems," *Sci.* 317: 1513-1516.
2. E. Ostrom (2012), "Coevolving Relationships between Political Science and Economics," *RMM* 3: 51-65.

3. E. Ostrom (2007), "Challenges and growth: the development of the interdisciplinary field of institutional analysis," *J. Inst. Econ.* 3: 239-264.
4. Poteete and E. Ostrom (2003), "In Pursuit of Comparable Concepts and Data about Collective Action," CAPRI Working Paper No. 29.
5. Cole, Epstein, and McGinnis (forthcoming). "Toward a New Institutional Analysis of Social-Ecological Systems: Combining the IAD and SES Frameworks"
6. Frischmann (2013), "Two enduring lessons from Elinor Ostrom," *J. Inst. Econ.* 9: 387-406.