Polycentric Governance in Theory and Practice:
Dimensions of Aspiration and Practical Limitations

Michael D. McGinnis

Professor and Chair, Political Science,
Senior Research Fellow and former Director,
The Vincent and Elinor Ostrom Workshop in Political Theory and Policy Analysis,
Indiana University, Bloomington
mcginnis@indiana.edu

Feb. 29, 2016

DRAFT – Comments welcomed

Abstract

This paper offers a three-step (structure, process, outcome) definition of *polycentric governance,* a concept that constitutes the core of the research program of the Bloomington School of institutional analysis, as first articulated in the works of Vincent and Elinor Ostrom. The basic assertion of this paper is that certain kinds of fragmented governance structures, specifically those consisting of multiple authorities with overlapping jurisdictions, may impel policy actors to interact with each other through processes of mutual adjustment and continued expansion of institutional diversity in ways that may generate outcomes which exhibit positive characteristics of emergent order and scale economies. However, practical approximations of this ideal congruence of structure, process, and outcome will necessarily fall short of fully accomplishing all of these aspirations, and instead tend to fall into six traps or "failures" of polycentric governance: structural inequities, incremental bias, high levels of complexity, structural fissures, coordination failures, and, ultimately, a lack of normative clarity. Yet, even imperfect proto-polycentric systems of governance provide actors with continued access to multiple mechanisms for improvement that hold out the hope that the most negative consequences of these tendencies can be ameliorated. The paper concludes with a discussion of the merits of using polycentricity as a lens through which political, economic, and societal interactions can be seen in a new light.

Polycentric Governance in Theory and Practice:
Dimensions of Aspiration and Practical Limitations

Michael D. McGinnis

If governance is taken to encompass all activities relevant to making collective decisions in some area of human society, then complexity would seem to an inevitable attribute of that term. Yet, democratic theory gives citizens of a democratic society the clear expectation that their leaders should remain responsible to the public as a whole, and that policy outcomes should generally comport to public preferences. Constitutions, voting, political parties, interest groups, judicial oversight, and freedom of the press are among the most commonly recommended organizations and institutional processes meant to insure the accountability of leaders to the led, but the intrinsic complexity of democratic processes of governance must inevitably weaken that connection.

In this paper I investigate one influential body of contemporary research that heartily embraces the reality of the complex diversity of governing institutions, and yet nonetheless heralds the amazing capacity of communities to effectively govern themselves, even in the presence of that complexity. The Bloomington School of political economy or institutional analysis was pioneered by the work of Vincent and Elinor Ostrom (see Aligica and Boettke 2009, Cole and McGinnis 2015, McGinnis 1999, 2000, 2011, Mitchell 1988, E. Ostrom 1990, 2005, 2010, V. Ostrom 1997, 2008a,b). The foundational principles of this school of thought have been most clearly stated in two works, the original statement of the concept of polycentric governance (V. Ostrom, Tiebout, and Warren 1961) and Elinor Ostrom's 2009 Nobel Memorial Prize Lecture on polycentric governance of complex economic systems (E. Ostrom 2010). These basic ideas underwent considerable development during the intervening decades, and continue to be extended into new areas of scholarly inquiry and policy advocacy, but it is safe to say that the concept of polycentric governance remains front and center in this school of thought.

In an ideal-typical system of ___polycentric governance___, a diverse array of communities and public and private authorities with overlapping domains of responsibility interact in complex and ever-changing ways, and out of these seemingly uncoordinated processes of mutual adjustment emerges a persistent system of social ordering that can support and sustain capacities for individual liberty, group autonomy, and community self-governance. Originally introduced by Ostrom, Tiebout and Warren (1961) as a vision of governance that embraced the potentially positive consequences of governmental fragmentation in U.S. metropolitan areas, the best-known application of polycentricity to real-world settings remains the pioneering research of Elinor Ostrom (1990, 2010) on community-based collective management of natural resources. Ostrom concluded that this form of community self-governance was likely to be sustainable only if it was nested within a broader system of polycentric governance, one that allowed for multiple mechanisms of collective decision-making and conflict resolution at multiple levels of aggregation. This concept of polycentric governance as requiring cross-sector collaboration among multiple levels of governance units lies at the heart of the Bloomington School of political economy (McGinnis and E. Ostrom 2012).

This paper develops a careful distinction between polycentricity considered as (1) a normatively desired and idealized form of governance and (2) a practical means of effecting governance. By the term ___governance___ I mean to encompass all the processes through which the rules and procedures that apply to members of a defined group are made, implemented, interpreted, and changed. It may be the case

1

that some or all of these rules and procedures are made, implemented, interpreted, and changed by outside actors who impose their rule upon the members of that group. These external actors may include not only formal government officials but also private individuals, corporations, professional associations, community-based organizations, and other voluntary/non-profit/non-governmental organizations (McGinnis 2011).

Not all governance processes welcome the active participation of all who are subjected to those decisions. Indeed, what passes for governance can sometimes amount to mere domination, if power-holders use these processes to make and enforce rules that limit the choices of members of other groups, while not holding themselves accountable to those same restrictions. As will be argued below, a truly polycentric system would provide adequate mechanisms for oppressed peoples to escape these restrictions, in order to more effectively govern themselves.

The first section sets the stage for this analysis by explicitly separating the normative and explanatory aspects of the ways in which this concept of polycentric governance has been used. Section 2 highlights subtle confusions among the related concepts of structure, process, institution, organization, and actors. Section 3 applies these distinctions to a working definition of polycentric governance as a combination of particular types of fragmented governance structures, processes of mutual adjustment and institutional innovation, and outcomes evaluated at multiple levels of aggregation. Section 4 identifies six fundamental shortcomings inherent in real-world manifestations of polycentric governance, with particular attention to the ways in which its other properties can ameliorate these limitations. A brief concluding section 5 defends its continuing normative appeal, despite the practical difficulties of ever fully realizing this ideal in practice.

Sections 3 and 4 introduce 6 definitional components of polycentric governance, in its idealized state, and 6 unfortunate biases or tendencies such systems typically exhibit in practice. These definitional characteristics and intrinsic tendencies are summarized in Tables 1 and 2, which should help readers navigate their way through this long survey of the deeply complex concept of polycentric governance.

<< Insert Tables 1 and 2 about here >>

Overall, this paper summarizes the strengths and weaknesses of polycentric governance in practical applications, and demonstrates how viewing a system of governance from the lens of polycentricity helps us realize that serious reform requires attention to the several different ways in which any real-world system falls short of the fully-articulated polycentric ideal. A brief overview of the history of environmental protection in the United States is used to illustrate this point, and demonstrates that this mode of analysis can prove to be a useful corrective to overly simplistic and ideologically-biased reform proposals, thus demonstrating the potential import of "thinking polycentristically."

1. Separating the Normative and Explanatory Aspects of Polycentricity as a Concept of Governance

Because of its centrality to Bloomington School research tradition, polycentricity has been called upon to serve both normative and explanatory functions. The normative basis of polycentric governance is the belief that any group of individuals facing a common problem (or a shared aspiration for mutual gain) should have easy access to multiple means of addressing that problem, and that this right should also extend to any group who might be harmed by the collective efforts of the first group. As such, polycentricity stands as a foundation for basic principles of liberty and good governance. However, since

each individual has valid interests in many different aspects of social life, each also belongs to multiple social groups. The natural consequence, then, is that a polycentric system of governance will support a potentially overwhelming variety of collective action, for groups of all sizes and potential interests. It is hardly obvious that such complexity would always be desirable.

When used as an explanatory factor, the presence of a system of polycentric governance is expected to generate different patterns of policy outcomes than we would observe under a simpler mode of governance. Analysts within the Bloomington School tradition typically hypothesize that polycentric forms of governance will generate "better" outcomes for the members of that society, but for explanatory purposes, the critical thing is that the outcomes are significantly different, not that they are necessary better or worse on some evaluative criterion. For example, in comparative analyses of policing services delivered in selected metropolitan areas of the U.S., a Bloomington-based research team demonstrated that citizens living within more polycentric systems of governance expressed higher levels of satisfaction with their sense of physical security and the quality of relations between the police and their local community (see Ostrom 2010 and the papers collected in McGinnis 1999).

In some instances of "community policing" these researchers concluded that this policy was also more efficient on economic grounds, but it is rarely the case that all dimensions of comparative evaluation favor the same alternative. Citizens living in a polycentric system are likely to face high levels of transaction costs, because the costs of organizing community action can be substantial. In addition, in the face of such complexity, citizens may find it difficult to ascertain which public official should be held accountable for poor policy outcomes, and this breakdown in accountability makes it more difficult for public officials to be removed from office for poor performance. Even so, the expectation, among adherents to the Bloomington School, is that in more cases than you might expect, these higher transaction costs and accountability deficits are likely to be offset by the higher benefits of public satisfaction with the quality of the public goods and services to which they have access, and to which they often contribute in direct and meaningful ways.

For the purposes of this paper, it is critical to keep in mind this distinction between normative expectations of the benefits of polycentric governance and the practical effects of this form of governance on the members of that society. The next two sections articulate an idealized vision of how polycentric governance should operate, which is then followed by a section detailing the many ways in which any practical realization of that concept must necessarily fall short of that ideal. The remainder of the paper shows that even imperfect realizations of polycentricity may generate normatively desirable outcomes, and illustrates some examples of policy changes that can help move the system in the direction of a fuller manifestation of polycentricity.

2. Structure, Process, and Outcome in Polycentric Governance

In explanations of policy from an institutional perspective, it is common to distinguish among *structures*, *processes*, and *outcomes*. Structures define the ways in which individual actors and the collective entities they construct are connected together into networks, hierarchies, and other forms on interconnections. Structures shape the processes through which actors interact with each other, and each process generates outcomes that actors evaluate in terms of the different levels and types of costs and benefits they derive from experiencing those outcomes, including such non-tangible intrinsic concerns as perceptions of legitimacy. In short, structures shape the political processes which determine policy outcomes.

3

One reason the term "institution" is notoriously difficult to define precisely (see Crawford and Ostrom 1995) is that institutions can take the form of either structure or process, or both, depending on the setting. A *market*, for example, conveys both a sense of structured relations between buyers and sellers, and of the process of voluntary exchange which lies at the heart of any market. The term *organization* adds an additional level of potential confusion, because an organization not only has an internal structure (hierarchical vs. flat, etc.) and standard operating procedures (as well as other processes of decision-making), but it may also be treated as a collective actor, if the organizational structure defines which individual agents are authorized to act in the name of that organization.

Institutions, in contrast, don't have agents that act on their behalf. Even so, many analysts treat institutions as actors, as well as using that same term to refer to the structures and processes which shape the policy outcomes generated policy actors. I try to maintain a sharp distinction between *organizations*, which have agents to act on their behalf and can for many analytical purposes be treated as if they are unitary actors, and *institutions*, which do not act for themselves but instead define the processes through which actions take place. For me, the term *structure* denotes the overall system of connections among actors (including organizations) and the institutional processes through which their actor interactions shape policy outcomes.

I find the definition provided by Elinor Ostrom (2005: 3) to be a useful foundation for institutional analysis: "Broadly defined, institutions are the prescriptions that humans use to organize all forms of repetitive and structured interactions including those within families, neighborhoods, markets, firms, sports leagues, churches, private associations, and governments at all scales. Individuals interacting within rule-structured situations face choices regarding the actions and strategies they take leading to consequences for themselves and for others." It is worth highlighting her use of the terms repetitive and structured, since individual and collective decisions take place within broader contexts of past and expected future social interactions as well as the extant body of norms and shared expectations within the relevant communities. For analytical purposes, it is unfortunate that both the processes by which collective decisions are made and the structures within which these processes occur are so deeply intertwined. Even so, it is often useful to make use of a clear distinction between structure and process, as in this paper.

Governance combines both structure and process. As stated above, I take the term governance to encompass all the processes through which collective decisions are made, implemented, interpreted, and changed by and/or for some group. In some circumstances governance may be said to have emerged spontaneously from actions taken separately by distinct actors, but typically the task of governance is dominated by individuals or organizations that specialize in performing that function.

The broader structure within which these collective decisions can be made are intrinsically complex, since the actors who specialize in governance include not only formal government agencies but also influential private individuals, corporations, professional associations, community-based organizations, and a diverse array of voluntary/non-profit/non-governmental organizations. Each organization has its own particular internal structure and approved set of procedures, and they are linked together in elaborate networks of interaction, and all governance processes take place within a broader social-political-legal-cultural structure that sets the rules by which different kinds of organizations are constituted and their processes of interaction defined and legitimated.

4

Not surprisingly, any one approaching the concept of polycentric governance faces a bit of a conceptual morass. I cannot offer any definitive resolution of the resulting confusions in this one paper, but I nonetheless contend that it is useful to draw careful distinctions among the structural, procedural, and outcome-related components of governance in general, and for polycentric governance in particular.

3. A Three-Part Definition of Polycentric Governance

Although the terms polycentricity and polycentric governance appear throughout the large body of research associated with the Bloomington School of political economy, there is no single definitive definition of either term. Instead, different authors, or the same authors at different times, highlight different aspects of its structures, processes, or outcomes. I offer the following list of characteristics that I have distilled from the many descriptions of polycentric governance by Vincent and Elinor Ostrom and other scholars working in this tradition.

*A **polycentric system of governance** consists of (1) multiple centers of decision-making authority with overlapping jurisdictions (2) which interact through a process of mutual adjustment during which they frequently establish new formal collaborations or informal commitments, and (3) their interactions generate a regularized pattern of overarching social order which captures efficiencies of scale at all levels of aggregation, including providing a secure foundation for democratic self-governance.*

This one long sentence summarizes all the critical elements of the structure, process, and outcomes associated with polycentric governance. Needless to say, there is a lot packed into that one sentence. I further specify each of these dimensions of polycentricity as follows:

Structure
1. There exist multiple centers of decision-making authority (or decision units), each sufficiently autonomous to be able to make collective decisions for explicitly organized or latent groups whose members share at least some common interests;
2. These authorities have overlapping jurisdictions (or areas of responsibility).

Process
3. These authorities interact with each other through a process of mutual adjustment (which is limited in the sense that it rarely requires the complete submission or conversion of all parties to a uniform standard of behavior),
4. During which they frequently establish new formal collaborations or informal commitments (in order to address common problems and/or realize shared aspirations).

Outcomes
5. Their interactions generate a regularized pattern of social order (which either emerges spontaneously or involves some level of coordination);
    a. This social order reinforces the continued operation of the overarching system of law (or more broadly a shared repertoire of institutions, including laws, rules, norms, and shared understandings),
    b. And yet this social order nonetheless supports relatively separable subsystems within which diverse groups live under different cultural understandings and norms,
6. And this social order supports outcomes that capture efficiencies of scale at all levels of aggregation, including sustaining capacities for self-governance (which includes protection of

5

individual liberty, significant autonomy for minority groups, and effective forms of cooperation at the level of the broader society).

I have used parentheticals to include alternative terms or elaborations that I find to be useful for my analytical purposes. Each of these components, or dimensions, of polycentricity requires further clarification.

1. Multiple Authorities

*A*lthough Ostrom, Tiebout and Warren chose the phrase "many centers of decision making" to justify their selection of the label "polycentric," I find it useful to focus on the fact that in each of these centers someone in authority is making decisions for a definable group. That group may be formally demarcated, as is typically the case for political authorities, but it may also be more informal in nature, since non-governmental actors are typically a major contributor to polycentric governance.

I propose taking the term <u>decision unit</u> (or, alternatively, center of authority) as the basic unit upon which a polycentric system must be built. Informally, ***in a decision unit some individuals make collective decisions for themselves and/or for others concerning what resources can be used in what ways, when, and where, and under what restrictions or responsibilities***. Several clarifications are needed.

Any governance system is likely to include decision units that vary significantly on all dimensions, including the attributes upon which group membership is defined, the level of resources available to different groups, and the rules, norms, and shared understandings most commonly found in different cultures. Thus, there is no reason to presume that a polycentric system must be restricted to groups of homogeneous individuals or organizations.

The conjunction *and/or* is needed because the decision-makers may or may not be members of the group directly affected their decisions, and it may or may not be the case that all members of the affected group are included in the set of active decision-makers. Thus, this formulation allows collective choices to be made by officially designated agents, external actors, and/or decisions taken by the group as a whole.

Each decision unit may refer to a formal organization, with explicit rules about selecting agents and making decisions binding on all members of that entity, or voluntary organizations with no capacity to enforce compliance on its members or participants, or informal groups that nonetheless find some way to act together in a cohesive manner. One should also keep in mind that even unorganized groups may be relevant for consideration, since such *latent groups* may later organize themselves or they may turn out to be the targets of efforts by *entrepreneurs* seeking to garner their support by providing some collective good or service to that group. As will be demonstrated below, no polycentric system of governance can be fully understood without acknowledging potential groups that remain latent.

Both latent groups and explicitly defined decision units or centers of authority or decision-making include individual actors that share some, but not all, interests in common. They agree on some matters while still disagreeing quite fervently about other matters. These *clusters of partially shared interests* can be taken as a fundamental component of the relevant political system, and we fully expect that any one individual will be located within many such clusters.

6

But *decision units* are the *basic unit* of a polycentric system of governance because that system is defined by the nature of interactions among these *units*, rather than the direct interactions of the individuals included in these units, or the ways in which decisions are made within each unit. In this sense, the *institutional collective action* perspective developed in Feiock and Scholz (2009), in which the focus shifts to structured interactions between the public officials serving as agents of separately defined agencies, falls well within the meaning of polycentric governance.

Different systems of governance, or subsystems active in separate policy sectors of a single governance system, may differ in the number of separate decision units that are involved. But this attribute would best be captured by the concept of _multiplicity_, that is, the number of independent or relatively autonomous decision units in a system. As will become apparent in this paper, just having multiple centers of authority does not automatically fulfill the more demanding conditions clearly articulated in Vincent Ostrom's many discussions of polycentricity.

As introduced and developed by Vincent Ostrom and his colleagues, polycentricity encompasses the actions of general-purpose and special-purpose political jurisdictions, formal organizations and informal groups, public, private and voluntary organizations, any of which may be operating at scales of aggregation from local to, in some instances, global, and dealing with the entire range of collective action evident in any society.

2. Overlapping Jurisdictions.

Any of these organizations or other collective entities is associated with a "jurisdiction," with that term broadly interpreted to denote the range and scope of problems or issues that entity is authorized to consider as well as the range and scope of the collective decisions it is empowered to make. Although typically interpreted to refer only to official political entities, for this analysis I adopt this broader interpretation.

A decision unit, defined as above, has *jurisdiction* over a range of collective decisions concerning the rules, norms, etc., that govern the use of particular resources that are held to be binding on the members of a definable group. This gives us the opportunity to specify that two jurisdictions *overlap* when they share some of the same people, resources, or institutions in common. In effect, if they overlap on even one of these core constituent parts, connections among all three may arise as a consequence. For example, decision units that share some rights or responsibilities for using or managing similar kinds of resources may well take actions that directly or indirectly impact on each other, even if they share no individuals in common.

Note that in this usage, jurisdiction need not be restricted to cover individuals or activities located within specific territorial regions. Instead, jurisdictions can be defined in functional or other terms as well. Although, as discussed below, territorially-defined jurisdictions play a central role in most governance systems, they do not exhaust the range of relevant bases upon which jurisdictions are defined (see Hooghe and Marks 2003, Skelcher 2005)

The term jurisdiction need not be restricted to apply only for official public agencies. In a 1972 convention paper reprinted in McGinnis (1999), Vincent Ostrom revisited the analysis that he, Tiebout, and Warren provided in their classic 1961 article on polycentricity in metropolitan governance. After

noting that many critics had dismissed their concept as being either a justification for the status quo or as a misleading application of a simple market metaphor, Ostrom admitted that

> The task we undertook was more difficult than we had realized. Polycentricity must be applicable to a large range of social tasks if the *governance* of metropolitan areas is to be subject to a polycentric ordering. … The essential defining characteristic of a polycentric political system is one where many officials and decision structures are assigned limited and relatively autonomous prerogatives to determine, enforce and alter legal relationships. No one office or decision structure has an ultimate monopoly over the legitimate use of force in a polycentric political system. Inequalities in the authority of "rulers" and the "ruled" are purposely constrained and limited so that "rulers" can also be *subject* to a "rule" of law and be required to *serve* the "ruled." (Ostrom [1972] in McGinnis 1999: 54, 55; italics in original)

I propose using the term "fragmented governance system" to denote a structure in which multiple semi-autonomous centers of decision authority share overlapping responsibilities for governance over different peoples, territories, resources, functions, or policy domains. Under this definition, a strictly federal system of governance in which all the component parts are neatly nested within larger units leading up to a single source of authority at the national level would be fragmented, but not fully polycentric. Such an ultimately monocentric system would not necessarily generate the levels of mutual adjustment and institutional diversity that remain critical to the concept of polycentric governance, as I understand it. Nor would a system in which multiple overlapping jurisdictions prove unable to coordinate their respective behavior to any appreciable degree.

3. Mutual Adjustment.

We now move beyond a merely fragmented system of governance to consider the most prominent aspects of the processes that can move that system in the direction of full polycentricity. The critical importance of processes of interaction among decision units was highlighted in the following statement of Vincent Ostrom:

> "A polycentric organization has been defined as a pattern of organization where many independent elements are capable of **mutual adjustment** for **ordering their relationships** with one another within a general system of rules." (V. Ostrom 1972, in McGinnis 199b, p. 73; emphasis added)

The ultimate foundation for this kind of complex system of polycentric governance is the ability of groups of citizens to associate together to undertake a wide variety of tasks with public import, including forming corporations, voluntary associations, political parties, or interest groups to lobby their elected representatives. Much of our political discourse (and academic work in political science) obsesses on elections and lobbying and campaign contributions, but most real policy outcomes emerge from other processes, undertaken by other kinds of actors, especially by citizens themselves. In short, government is not some kind of disembodied force imposed on us from above; instead it IS us, since processes of governance are constructed out of the tools that we and others have devised to help us address practical policy problems and to realize our shared aspirations.

For this key aspect of the foundational processes of polycentric governance I borrow a term made famous by Lindblom (1965), who introduced the term *partisan mutual adjustment* to denote the core process that makes incrementalism so common in democratic political systems. The basic idea is one of compromise, in that partisans of different interest-based factions or social groups would be able to adjust their behavior to each other so as to manage to live together in relative peace. Of course, a democratic system can decay into civil war and even anarchy, but such disasters merely demonstrate that the previous system had deep flaws that prevented that society from enjoying the full benefits of a free expression of opinions. Lindblom praised the long-term wisdom inherent in open systems of political discourse, asserting that such systems are better able to change in response to past mistakes. In a similar fashion, Aligica (2014) concludes that the error-correcting properties of polycentric processes are foundational, and may be their most desirable trait.

The partisan mutual adjustment processes that drive interactions in conditions of polycentricity remain limited in their ability to bridge fundamental cleavages, which implies that polycentric governance cannot generate societies that are totally homogeneous. A significant degree of cultural and institutional diversity are both required, and sustained, by polycentric governance. If religious beliefs and organizations are to serve as a counter to excessive concentration of political power over personal lives, then believers must be able to defend their core principles against those articulated by other religions or by secularists. Even though polycentricity cannot be expected to entirely bridge deep cultural divides, it should suffice to support effective channels of communications that reach across those divides to enable governance processes to operate as efficiently as possible in conditions of cultural heterogeneity.

4. Institutional Diversity.

Later in her career, Elinor Ostrom (2005) placed a great deal of emphasis on institutional diversity, in effect arguing that defending it was just as important as defending biodiversity and cultural diversity. And in her Nobel memorial lecture, Ostrom (2010) highlighted the close and natural connection between a system of polycentric governance and the institutional diversity exhibited by its component organizations, norms, rules, and other institutional arrangements.

In their initial formulation of the concept of polycentric governance, Ostrom, Tiebout and Warren were inspired by looking at the way metropolitan areas in the U.S. tend to be governed, not by a single overarching political center of power, but rather by a fragmented system of different sized communities and public agencies that nonetheless generates recognizable patterns of order that may seem to have emerged spontaneously but that were instead driven by the efforts of a large number of public entrepreneurs (McGinnis 2005). Ostrom, Tiebout, and Warren discussed a wide range of behaviors that authorities might pursue in pursuit of public purposes: competition, negotiation, contracts, joint production, coordination, dispute resolution. Later researchers and practitioners have generated even more examples of policy instruments, so many as to defy easy categorization or comparative analysis.

In a polycentric system, decision units interact with each other in diverse ways (in order to address common problems and/or realize shared aspirations). The long-term consequences of the continued operation of the deep and complex endogenous forces driving polycentric governance can be very profound indeed. Paul Dragos Aligica (2014) nicely captures the radically dynamic process through which interactions within a polycentric system can generate, regenerate, or transform the structures underlying polycentricity itself.

9

Ostrom thought that studying the cases of polycentric order (in economy, law, and politics) reveals that a polycentric order is more than just a series of different centers of decision operating in competition with each other in a specific domain or area. Polycentricity is a complex system of powers, incentives, rules, values, and individual attitudes, all combined in a complex system of relationships at different levels. One may detect very interesting dynamics at work. Market polycentrism seems to entail judicial polycentrism. Judicial polycentrism entails political polycentrism, and in turn political polycentrism entails constitutional polycentrism. Accepting the existence of such a systemic logic, **one may visualize the entire social system as defined by underlying currents originating in pulsating polycentric domains**. Polycentric order in one area entails and produces polycentrism in other areas. A tension is created, pushing change in the direction of more nodes of decision-making. (Aligica 2014: 51, emphasis added)

Thus, there is an intrinsic dynamism in the logic of polycentric governance. Since the entire collection of culturally-accessible institutional arrangements is an essential component of the underlying structure of polycentricity, as defined here, the normal operation of polycentric processes generates additional structural elements. On the other hand, some past innovations may be forgotten over time, as rarely used institutional forms fade from active memory, or are actively suppressed by powerful actors. Either way, the very operation of polycentric processes shapes the broader structural context within which these processes occur, and no institutional analysis can be complete without taking account of the ever-present opportunity for significant change or fundamental transformation.

The ceaseless innovation that is one of the hallmarks of a polycentric system results in a subtle interweaving of structure and process. Each new institutional innovation, whether in the form of new laws, rules, norms, the establishment of new centers of authority, or even in new understandings of the very concepts of collective decision making or authority, opens up the door for new organizational forms and capabilities, and thereby expands the repertoire of institutional arrangements that can be used by anyone who learns of these innovations. But even this level of complexity is no guarantee that the policy outcomes generated by these processes will satisfy the high normative expectations set by Vincent Ostrom and others who make use of the concept of polycentricity governance. The conditions that facilitate the realization of desired outcomes will be discussed in the next sub-section.

In Table 1 I use the term "proto-polycentric" to denote a system of governance which is characterized by multiple centers of authority with overlapping jurisdictions who mutually adjust their behavior through the construction and operation of a diverse array of institutional processes, but which may or not be able to achieve the positive outcomes posited in the vision of Vincent Ostrom.

5. Emergent Order.

Some readers may find it difficult to envision how such a deeply complex and dynamic process could ever result in an orderly society, but that is one of the core components of Ostromian polycentricity. The possibility (but not the certainty) of observing social order despite seeming chaos was evident in the initial statement of this concept.

"Polycentric" connotes many centers of decision making that are formally independent of each other. Whether they actually function independently, or instead constitute an interdependent system of relations, is **an empirical question in particular cases**. To the

10

extent that they take each other into account in competitive relationships, enter into various contractual and cooperative undertakings, or have recourse to central mechanisms to resolve conflicts, the various political jurisdictions in a metropolitan area **may function in a coherent manner** with consistent and predictable patterns of interacting behavior. To the extent that this is so, they may be said to function as a "system." (Ostrom, Tiebout, and Warren, 1961: 831 emphasis added)

Although an orderly outcome cannot be presumed a priori, some who make use of this concept do include effective coordination at the societal level in their operational definition of polycentricity. For example, Pahl-Wostl and Knieper (2014: 140) state that "According to the definition chosen in this paper, polycentric governance systems are characterized by multiple centers of authority and distribution of power along with effective coordination structures." Although I agree, for reasons that will be detailed later, that a fully realized system of polycentric governance would generate effective levels of coordination, in practice the extent and quality of coordination actually observed should remain more of an empirical question, and not part of the basic definition.

In a solo-authored 1972 paper, Vincent Ostrom (1999: 57) offers this definition: "a polycentric order is 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." Aligica and Tarko (2012: 237) define polycentricity as "a structural feature of social systems of many decision centers having limited and autonomous prerogatives and operating under an overarching set of rules." Although variants of this last phrase in each of these quotations appear elsewhere in Vincent Ostrom's writings on this subject, the nature of this overarching rule system was never specified in any detail (but see V. Ostrom, 1997). Basically, the idea was that beneath the seeming chaos of a polycentric system of governance lies an underlying set of laws, rules, norms, and cultural understandings. This aspect of the concept of polycentricity does require a bit of explanation.

Decision units and their respective jurisdictions are conceptualized, authorized, legitimized, and reformed within the context of an *overarching institutional repertoire*, which covers the entire collection of laws, formal rules, informal norms, strategies, and shared understandings available to any group of individuals (see Crawford and Ostrom 1995 and Ostrom 2005 for a framework to analyze all kinds of institutional statements). Since the specific institutions relevant to any particular decision unit are drawn from this overarching system, this system imparts a particular kind of overlap among jurisdictions or decision units.

The nature and source of any order that results remain in dispute. Ostrom, Tiebout, and Warren (1961) introduced this term in the context of their efforts to understand processes of governance that occur in U.S. metropolitan areas that lack any central political authority. Although the work of Michael Polyani is not cited in this classic analysis, Vincent Ostrom later acknowledged that the term polycentricity originated in the work of Michael Polyani (1951). Ostrom goes on to suggest that he and his co-authors may not have captured the full scope of the conceptualization offered by that chemist/philosopher:

Polyani's emphasis upon a general system of rules as providing a framework for ordering relationships in a polycentric system is an issue that was seriously neglected in Ostrom, Tiebout, and Warren. Our implicit identification of the term *political* with *government* and our identification of the "business" of government with the production and provision of public goods and services led us to gloss over the essential relationship of rules to the structure of political systems. … *Whether the governance of metropolitan*

11

> *areas can be organized as a polycentric system will depend upon whether various*
> *aspects of rule making and rule enforcing can be performed in polycentric structures.*
> (Ostrom [1972] 1999: 58, italics in original)

Other students of polycentricity, such as Boettke and Coyne (2005) and Aligica (2014), follow Polyani's lead in presuming that this kind of complex system would spontaneously generate a meaningful sense of order. However, I am convinced that since the creative actions of public officials and civic entrepreneurs drive the process of order generation, the resulting order cannot be treated as purely spontaneous (see McGinnis 2005). To quote my own words published there,

> I am concerned with the use of the term "spontaneous order" in that it suggests that the system automatically arrives at some equilibrium. As long as a polycentric system is in operation we should expect to observe unending processes of change and renegotiation, as new collective entities are formed, old ones dissolve, and new bargains are arrived at to deal with an unending series of new issues of public policy. If this can be said to be an equilibrium, it is a radically dynamic one with nothing fixed except the underlying complexity of the system as a whole. … I argue that a polycentric system can be described as spontaneous in only the very limited sense of not being the result of the actions of a central planner. In all other respects, it is chock full of planners and schemers, entrepreneurs of all types, actively engaged at all levels of aggregation.
> (McGinnis 2005: 168, 169)

Algicia (2014) argues that polycentric governance is particularly well-suited to societies experiencing high values of cultural diversity. I am convinced that Ostrom did not mean to presume that the underlying legal system was completely unified, since his work also lends support to the relevance of "legal pluralism" in many social orders (see McGinnis 2008). In particular, Ostrom left considerable room for the operation of religious individuals and organizations within primarily secular societies governed by the rule of law. As I argue in more detail elsewhere (McGinnis 2010), religious belief systems and organizational networks, which are ultimately grounded in ideas and practices distinct from ordinary political discourse, can serve as a uniquely efficacious constraint on the excessive partisanship so characteristic of struggles for political power. In this way, religion takes its rightful place as a supporting pillar of the checks and balances essential for democratic governance.

The relevant implication for polycentric governance is that a society's overarching institutional repertoire may contain relatively distinct sub-repertoires, each likely to be used only by those members of that society that belong to the relevant sub-group. Thus, this overarching system of rules must, to some extent, be partially decomposable, in the sense of Simon (1969). We should not expect the operation of a polycentric system of governance to result in a completely homogeneous society. Instead, polycentricity should operate, with varying levels of difficulty, in more heterogeneous societies, provided that all parties share at least some basic normative principles in common. The very institutional diversity that comprises a polycentric order can provide the foundation for continued operation of a situation of cultural diversity, while still operating within a broadly understood shared set of norms for political contestation and collective action.

To conclude this subsection, I emphasize that polycentricity does not just happen, instead many public entrepreneurs are actively engaged in helping form the many components parts of that kind of system, whether setting up new organizations or devising innovative institutional practices to resolve their own problems, or bhy offering their services to groups needing assistance of some kind. This sets up a critical

12

question: what is it in a fully operational polycentric system that insures that enough public entrepreneurs will be inspired to behave in the way needed to keep the system sustainable?

6. Scale Economies.

A polycentric system tackles a wide range of functional tasks simultaneously, and does so at multiple levels of aggregation. In their classic statement of the nature of polycentricity, Ostrom, Tiebout, and Warren (1961) articulated a vision of governance in which political authorities, each acting on the behalf of constituent groups of varying sizes and composition, could *provide* (select) goods and services desired by these groups either by *producing* them directly or by arranging for their production by private corporations or other entities. In addition, individual members of communities could themselves participate in the production of essential goods and services, in a process known as *co-production*. Attention must also be given to the mechanisms by which these processes were financed and especially to the rules that specified permissible actions by each type of organizational actor.

The critical point in their normative defense of this admittedly complex system was that citizens in any society seek to enjoy a diverse array of public goods and services, not all of which can be most effectively produced at the same level of aggregation. Instead, different public goods may well be most efficiently produced at different levels, and so if a system of governance is to fully realize any potential economies of scale, authorities in that system need to be able to arrange for production of different public goods at or close to the scale that is most efficient for that particular good.

In this sense, their vision of polycentricity could be treated as an application of basic principles of economic theory to the design and evaluation of systems of governance. Later analysts, notably Aligica (2014) and Aligica and Tarko (2012) highlight the critical importance of insuring that polycentric processes of governance retain low costs of entry, exit, switching, and self-organization. Given that Tiebout was one of the co-authors of the first statement of polycentric governance, the importance of sorting processes of this type should be obvious. But a polycentric system allows for consumer-citizens to switch to other providers without physically moving to another jurisdiction. For Aligica, Tarko, and others, low entry and exit costs insure that systems in which alternative providers compete to deliver governance services and other public goods to communities can come to more closely approximate the efficiency of competitive markets in private goods.

But there is no reason to preclude the possibility that individuals or communities living within polycentric order might trade off economic efficiency for other goals, such as clarity, accountability, fairness, or physical sustainability (see V. Ostrom 1993). Indeed, there are other costs that are likely to increase as a system of governance more closely approximates the polycentric ideal.

> A polycentric system should improve the chances that any existing economies of scale in the production of public goods and services could be realized by an entity operating at the most efficient scale, but there is no reason to presume that these same arrangements also will economize on transaction costs. Instead, intensive and often contentious transactions among active components of a polycentric system are absolutely critical for its continued operation. (McGinnis and E. Ostrom 2012: 18)

A contrast with the institution of perfectly competitive markets helps illuminate on this point. A perfectly competitive market is an idealized system for the production, exchange, and consumption of private goods, a system that will, under the proper conditions, achieve a Pareto optimal equilibrium

(and thereby achieve, by definition, maximal economic efficiency). Similarly, an idealized governance system that is fully polycentric in the sense of meeting all the conditions detailed in this section would, in effect, constitute an idealized political-economic-legal-social-cultural system for the production, selection, and consumption of all kinds of goods: private goods, public goods, toll goods, common pool resources, and any hybridized combinations thereof. As argued initially by Ostrom, Tiebout, and Warren (1961), this level of complexity is required if society is to take full advantage of all the efficiencies of scale available for the production, provisioning, and collective consumption of the full panoply of local public goods and services, and the management of common pool resources, and the oversight and regulation of private commerce and market processes.

I find it necessary to emphasize that by all levels of aggregation I do mean all, encompassing the entire range from individual empowerment to enjoy freedom of choice to effective coordination for the society as a whole, and touching on all levels in-between. Fully-realized polycentricity requires scale economies for private, public, and group goods. For markets in private goods to be efficient, systems of individual and collective property rights, enforcement of contracts, and basic information revelation need to be protected by public officials. Insuring that groups have the capacity to organize for their own protection also requires the presence of a legal system and normative values that legitimize and support these capacities. Finally, effective coordination at the societal level requires that public officials have, in defined circumstances, the capacity to legitimately use all acceptable forms of coercion needed to procure sufficient resources to produce or procure the desired level of public goods. As a consequence, polycentric governance is necessarily cross-sector in nature, involving close interconnections among private organizations, collective groups, and public authorities.

By now the breath-taking scope of polycentric governance, in idealized form, may seem overwhelming, and certainly incapable of being fully realized in any real world setting. In the next section we consider the most important limitations and shortcomings, as well as the options available to help ameliorate those shortcomings.

4. Persistent Problems and Potential Remedies

How could such an obviously impossible ideal ever be useful for empirical analysis or comparative policy design? Fortunately, we have an excellent example at hand, namely, the idealized concept of a perfectly competitive market (as briefly discussed above). Real-world markets differ in the extent to which they approximate this ideal, and can be arrayed on a continuum ranging from fully competitive to imperfectly competitive to fully monopolistic.

Economists typically presume argue that, when a real-world market is shown to suffer from significant levels of inefficiency, then an effective response would be to identify "missing markets" and then take measures to build (or support the emergence of) the structures, processes, or other institutions needed to fill those gaps in the existing system of markets. For example, systematic asymmetries in the generation and distribution of information will tend to increase transaction costs and thus lower the overall efficiency of markets in the relevant goods. One useful policy response would be to find some way to provide easier access to better information to either potential buyers or sellers, or perhaps both.

Using a similar line of argument, one might first admit that in real-world settings some groups facing an emerging, or even a long-standing, shared problem will find it too costly to overcome all of the dilemmas of collective action that would confront them. They may find it impossible to devise ways to

14

work together to realize the nature of the problem they share, and with whom, communicate with others who are facing or have faced similar problems, devise appropriate resolutions, monitor the implementation of these policy responses, and evaluate the consequences of their policy interventions. Any changes in that system that would lower the costs of any of these steps in the process of collective action can be interpreted as filling gaps in the existing institutional structure, and thereby increasing the effective level of polycentricity in that system (since the revised system would now be able, supposedly, to resolve even more problems than before). Where economists focus their proposals for policy reform on identifying missing markets, the Bloomington School directs attention instead to identifying "missing institutions."

As an ideal-type, polycentric governance is more expansive than competitive markets. Even economists must acknowledge that markets, no matter how competitive, are not capable of fully generating, on their own, all of the conditions needed for their long-term sustainability. "Market failures" is the term used to signify that markets are unable, operating on their own, to optimally produce levels of public goods, including the public goods of a legal system that can consistently protect property rights and adjudicate disputes, which are necessary for the smooth operation of market processes (Weimer and Vining 2010).

 Conversely, a perfectly operating polycentric governance system, might, in principle, be able to generate all of the public goods needed for its own sustainability. Real-world examples inevitably fall short of this utopian ideal, but, even so, this contrast suggests that the Ostromian concept of polycentricity digs very deeply into the fundamental nature of human interaction.

Taken together, the structure, process, and outcome components of polycentric governance introduced above define an idealized vision of polycentric governance. But in practice, there are practical limitations on each of these dimensions. The structural foundation may fail to provide the right kinds of overlappability to encourage regular means of mutual adjustment, processes may become too complex to be fully understood by the people operating that system, and citizens may lose sight of the reasons why their predecessors ever built such a complex system in the first place.

Fortunately, the negative implications of the limitations inherent in one dimension can often be compensated by the effective operation of other dimensions of this concept. Deficiencies in structure, for example, may be overcome by building processes that guarantee a fuller complement of productive overlaps. Unsatisfactory outcomes can inspire groups to devise new processes or decision units, or to make creative use of existing ones. Times of reform may serve as teaching moments during which citizens learn more about the tools they must wield to realize improved outcomes, and to rediscover the reasons why it makes sense to want to live within such a complex polycentric system.

If there are systematic biases in the structures, processes, or outcomes of real-world realizations of polycentric governance, then it may be possible to find ways to counteract, at least partially, the negative consequences of those biases. In this section I argue that real-world manifestations of polycentric governance typically suffer from one or more of six biases or unfortunate tendencies, each of which can be partially countered by cleverly designed internal work-arounds or by external policy interventions. Briefly, these putative "polycentricity failures" are structural inequities, incremental bias, high complexity, deep structural fissures, coordination failures, and a lack of normative clarity. Each of these requires more detailed consideration.

15

A. Structural Inequities

By now it should be evident that the continued operation of a polycentric system of governance requires an immense amount of successful collective action, taken by diverse groups operating at all relevant levels of aggregation. Collective action lies at the heart of this system. It has long been established that some kinds of groups, who are pursuing certain kinds of shared interests, find it much easier to do so successfully than other kinds of groups pursuing other interests. Olson (1965) is a classic statement of inherent bias in the logic of collective action, namely, that small, homogeneous, and concentrated interest groups find it much easier to effectively organize for collective action than do groups that are large, heterogeneous, and/or geographically dispersed. It's not impossible for groups facing one or more of these complications to work together, but overall a bias in favor of certain groups cannot be avoided.

Olson also argues that if there are certain actors within larger groups who find it worth their while to produce some public goods, then successful collective action becomes more likely. Another possible path runs through the political process, especially in electoral democracies, where political entrepreneurs face strong incentives to identify some group with unmet needs and promise to deliver the goods to them should they win election.

In general, then, different kinds of groups operating in different contexts may face different levels of difficulty in organizing for collective action. Technically, groups differ substantially in the transaction costs of organizing and coordinating their actions. A polycentric system will offer groups alternative options they might pursue, but it cannot totally equalize the transaction costs of all forms of collective action. Policy interventions that can reduce such transaction costs for any currently disadvantaged group will make a political system more closely approximate the polycentric ideal. This is why public or civic entrepreneurs play such a critical role in the dynamic operation of polycentric governance.

B. Incremental Bias

The kind of entrepreneurship that is most frequently successful in a polycentric system tends to result in incremental improvements within relatively limited parts of policy sectors, rather than revolutionary transformations in the way different policy sectors relate to each other. The sheer number of veto points that may be in place in a complex system of governance imparts a bias towards incremental change. Some critics have used this as the basis for a critique of polycentricity, saying it demonstrates a conservative bias, but that hardly seems fair for a system that is constantly undergoing changes at all levels of aggregation.

Rampant incrementalism also works against the inclusion of new actors into the inner circle of policy-making elites. Those actors currently wielded considerable influence in a given market or policy sector often seek to restrict entry of new competitors, and this practice of rent-seeking is a dominant concern of public choice scholars and policy analysts. As demonstrated most clearly in Aligica (2014), low entry, exit, and switching costs lie at the core of the error-correcting processes that give polycentric governance its ability to effectively adapt to new circumstances. To maintain easy entry, exit, and switching, special precautions must be taken to prevent incumbents from taking undue advantage of their current position of prominence.

The sheer number of veto points present in any complex system of governance makes a bias towards incremental change virtually impossible to avoid. Consider, for example, that the fragmented and very complex system of health care, health insurance, and public health in the United States has been built

16

through the never-ending efforts of private and public entrepreneurs to build innovative medical treatments and coverage programs to meet the needs of identifiable segments of the population (McGinnis 2014a,b,c). Working alone or together, for-profit and not-for-profit organizations built its diverse components by responding to the many subsidies, tax breaks, and regulations devised by policy-makers to encourage quality improvements and other innovations. There is no reason to presume that a system of health-related programs built up in this bottom-up fashion would, in the end, result in an integrated delivery system capable of achieving high value results. Instead, we should expect to see duplication of effort in some areas and a total lack of coverage of other concerns, many instances where separate programs operate at cross-purposes, and the lack of any coherent plan.

Previous reform efforts have been deeply hampered by what Paul Starr (2013) describes as a *policy trap* in which the success of some groups to establish programs that satisfy many of their basic needs and interests makes it more difficult, in the long run, to implement any long-reaching transformation. Even though many of those who already benefit from the current arrangement might, eventually, benefit from a movement to a simpler and more comprehensive system, they are reluctant to do so. In effect, past successes at limited forms of collective action make later more comprehensive efforts more difficult to accomplish.

Perhaps the most dramatic example of this policy trap effect is Medicare. Many of its initial advocates hoped that this program that ensured elders' access to medical care would eventually be expanded to the population as a whole, and thus serve as the first step towards a comprehensive single-payer program. Ironically, its effect was almost exactly the opposite. Because this program, along with its companion program of Medicaid, quickly turned out to be much more expensive than expected, there soon emerged very strong opposition to any expansion of these programs. This experience also had the effect of shifting the focus of subsequent efforts at health care reform towards cost-reduction rather than more comprehensive planning at a regional or national level.

Starr (2013) identifies other examples of policy traps within the U.S. health care system, thus demonstrating the overwhelmingly incremental bias that can be exhibited by proto-polycentric systems of governance. Yet, even in this setting, significant reforms have been accomplished, most notably the 2010 Patient Protection and Affordable Care Act, which continues to have ramifications throughout this complex system and whose ultimate consequences are yet to be determined.

C. High Complexity

The diverse array of institutional arrangements available to anyone living with a polycentric system of governance constitute resources that can be drawn upon to address new problems, or as the raw material upon which new institutional forms can be constructed to serve new purposes. Since there will always be some latent groups whose interests are not well captured by any of the organizations or procedures then in place, and since there will typically be some potential entrepreneurs who could benefit from helping organize or deliver new services to such groups, the system as a whole should continue to get more and more complex. In an endless process, new institutional arrangements will be added to an increasingly complex system, even if rarely used arrangements drop from the collective memory of the members of that society.

Actors operating within a polycentric system will be familiar with a wide array of institutional practices, and may have some awareness of options that have been used elsewhere or in earlier times. As communities face new challenges and continue to learn from each other's own experiences, they will

17

also be working together to creatively combine the elements of familiar institutional statements into new and innovative combinations. A society's institutional repertoire will tend to grow over time, as innovative new opportunities are developed, even as some previously known choices may be lost through disuse or inattention to past history. No one actor "owns" this entire repertoire, but the actions of all contribute to its growth or decline.

At some point the complexity of a polycentric system may become overwhelming, making its operation beyond the comprehension of many of the individuals living within that society. Even though a major potential benefit of polycentricity is the way in empowers individuals and small groups by providing access to a diverse range of alternative options to pursue their needs or interests, if this menu of options becomes too complex too many individuals may be immobilized by confusion. This danger has profound implications for the sustainability of polycentric governance, a topic to which we return later in this paper.

D. Deep Structural Fissures

If, in a polycentric system, each policy sector continues to become more complex, any coordination that remains effective may be limited in scope, tending to cover only some restricted areas of a single policy sector. Coordination across policy sectors may be nearly impossible in practice.

This is unfortunate, because the concept of polycentric governance, as it has been articulated by Vincent Ostrom, cannot be restricted to just the political aspect of a society, let alone to any single policy sector. The fact that for Vincent Ostrom the concept of polycentricity had a breath-taking depth and subtlety is amply demonstrated in these statements:

> Necessary **preconditions for polycentric order for a political system** as a whole include "Polycentricity in the organization of (1) market arrangements; (2) the legal community; (3) constitutional rule; and (4) political conditions [selection of political leadership and formation of political conditions]" (V. Ostrom 1972, in McGinnis 1999b, p. 69, emphasis added; phrase in square brackets from p. 57).

> [A] "**highly federalized**" political system … has a rich structure of overlapping jurisdictions with substantial autonomy among jurisdictions, **substantial degrees of democratic control within jurisdictions**, and subject to an enforceable system of constitutional law." (V. Ostrom, 1993: 205, 229, as quoted in McGinnis and E. Ostrom, 2012, p. 22, emphasis added)

To me these quotes suggest that it might be productive to consider the extent to which a polycentric system of order is, or is not, supported by similarly polycentric structures in the subsystems associated with economic, political, legal, scientific-technological, and social activities. By shifting our attention to these modular subsystems, it will be possible to explore connections to well-known examples of institutions studied by scholars in different disciplines.

For example, a market system is polycentric, in the sense defined above, with the core decision units understood as producers, consumers, and various kinds of intermediaries. Here the best interpretation of overlapping jurisdictions would highlight the extent to which very few forms of private property are without limits grounded in the rights of other citizens. However, the primary means of interaction between decision units in a polycentric market is presumed to be economic in nature, primarily in the

18

form of mutually-beneficial voluntary exchanges of private goods and services. Of course, more complex entities such as firms can also be established via contracts between employers and employees, or between stakeholders and corporate executives, but these interactions are also presumed to be voluntary exchanges. In an idealization of the perfectly competitive market, there is no other form of interaction that is relevant.

To me, this suggests that a competitive market can be interpreted as a special, actually degenerate, case of polycentricity, one which allows for only a limited range of interactions, namely, mutually beneficial contracts and trades shaped by the price signals reflecting relevant levels of supply and demand. In effect, the parties in a market are engaged in mutual adjustment, via prices. It would, of course, be possible to take a broader perspective and to include the public actors responsible for the production and maintenance of the public goods (protection of property rights, legal system, currency, etc.) upon which market actors routinely rely in making their exchanges, but, for most analytical purposes, only voluntary exchanges are allowed in market systems. From this perspective, a market is a polycentric system reduced to a single dimension, a single form of interaction.

Similarly, the standard Weberian ideal type model of bureaucracy envisions a system of interactions dominated by the relationship of authority and obedience to that authority. Social ties should play no role in a purely meritocratic system of bureaucratic efficiency, and bribes for special favors are not permissible forms of interaction in the ideal bureaucratic system. Whether or not all lines of upward authority converge to an ultimate source of sovereignty over that organization, this model of idealized bureaucracy amounts to a polycentric system reduced to a single dimension of permissible interactions.

Other examples could be considered, based on purely legal, familial, cultural or religious bases of interactions, but each of these examples would amount to a pale reflection of the much wider range of possibilities demonstrated in full-scale polycentricity. In a polycentric system as envisioned by the Ostroms, many forms of interaction comfortably co-exist and co-evolve over time.

Single-modal systems of social order (markets, bureaucracies, familial systems, etc.) can serve as a more useful contrast to fully-formed polycentric governance than the unrealistic notion of "*monocentric governance*" which Vincent Ostrom so frequently uses as a foil against his polycentric interpretation of the American system of political order (see especially V. Ostrom 2008). Ostrom defines his intended contrast between these two forms of political order as follows:

> The essential defining characteristic for a monocentric political system is one where the governmental prerogatives for determining, enforcing and altering legal relationships are vested in some single office or decision structure that has an ultimate monopoly over the legitimate exercise of coercive capabilities in some particular society. … The essential defining characteristic of a polycentric political system is one where many officials and decision structures are assigned limited and relatively autonomous prerogatives to determine, enforce and alter legal relationships. (Ostrom 1999: 55)

To take this notion to its logical extreme, a monocentric system of political order would be one in which some actor or collective group has managed to capture all sources of power, and to make it effectively impossible for any challenger to threaten that hegemony. Such a fully monocentric system of governance is difficult to imagine, even from self-professed totalitarian orders. In even the most tightly controlled political system there are other sources of influence on the perceptions and values of individual residents, including influences from family, religion, ethnicity, and general morality.

It is, however, easy to imagine situations in which some actor has monopolized power within some component of the overall system. Indeed, that is exactly what is meant by a monopoly in economic theory. Similarly, it is possible to imagine that each of the political, economic, legal, social, scientific-technological, or cultural subsystems that constitute an overall system of governance could be arranged along a continuum ranging from a total concentration of power within that subsystem to a situation more closely approximating the idealized notion of polycentricity, as applied to that policy sector or subsystem. This opens up the possibility that an economic monopoly, for example, might be vulnerable to being overturned by opponents who attack its position of dominance from sources of influence located in other subsystems. In this way, if a system of governance is insufficiently polycentric in any one of its major component systems, and falls under the capture of some ruling elite, then the system as a whole might prove to be resilient if polycentric channels for remedies remain available in other sectors or sub-systems. Ideally, any budding monopolist in any one major component subsystem could be undermined by the concerted action of entrepreneurs mobilizing resources located in other subsystems. In effect, the concentration of power or resources in any one subsystem of a system of governance can be countered by the extent to which other sectors remain more polycentric.

The extent of such cross-subsystem connections is likely to vary widely across empirical settings, and it is difficult to even imagine a situation in which all subsystems are tightly interwoven into a single source of complete hegemonic dominance. More likely are systems in which cross-subsystem coordination is incredibly difficult to accomplish. The lack of any channel to make cross-policy sector connections could be seen as another form of gap in a given system, and filling that gap should move the system in the direction of higher overall polycentricity.

E. Coordination Failures

Some analysts, such as Claudia Pahl-Wostl and Knieper (2014), include effective coordination at the societal or systemic level as one of the defining characteristics of a polycentric order. Ironically, other scholars frequently cite problems of coordination as one of the most glaring deficiencies of a polycentric system of governance. So frequently does this challenge manifest itself that coordination failure may be said to be the Achilles' heel of polycentric governance.

Coordination is, by definition, an important form of collective action. If a polycentric system is to realize economies of scale at all levels of aggregation, then coordination of the activities of different actors engaged in any policy sector becomes a public good for all participants in that sector. Coordination becomes especially difficult to arrange in large and complex systems. Thus, if a system is to be fully polycentric, then the production of coordination is precisely one of the collective action problems that the structure and processes that define that system should facilitate. In sum, a polycentric order needs to generate effective levels of coordination to be sustainable.

Ostrom, Tiebout and Warren (1961) did mention, almost in passing, area-wide coordination as one of the local public goods that need to be provided, in some way, by an effective system of metropolitan governance. Unfortunately, they did not give this coordination function much emphasis in their analysis, which made it possible for later readers to presume that the order they perceived to emerge from polycentric governance was an order that was generated spontaneously. Elsewhere, Vincent Ostrom (1997) put considerable emphasis on the pivotal contributions that public entrepreneurs provide to sustain processes of self-governance, making it clear that just having a lot of uncoordinated forms of collective action happening simultaneously was not enough to make a governance system fully

polycentric. Unfortunately, these early accounts did not give sufficient weight to the role of leadership in the administration of a polycentric system of governance (see McGinnis and E. Ostrom, 2012).

F. Lack of Normative Clarity

If full exploitation of economies of scale is taken as the primary normative reason offered for the continued operation of a complex system of polycentric governance, then that system is unlikely to receive warm and enthusiastic support from the public as a whole. It is notoriously difficult to measure economies of scale, and even getting to a shared conceptualization of what that terms means may be expecting too much of a heterogeneous society. As a slogan, fully exploiting economies of scale is beyond lame – at best it is a technocratic, economistic justification bereft of public understanding.

At the heart of the normative ambiguity of polycentric governance is the fact that some groups may want to cooperate to enhance their ability to exploit or repress other groups. Or groups may want to collaborate for purposes at odds with the general system of normative order within which this system is operating. The critical concern is that some groups will find it much easier to organize collectively in ways that directly harm the interests of other groups, which in turn may find it very difficult to organize themselves for effective self-defense.

Groups advantaged by any of the factors that facilitate collective action will be more likely to be able to cooperate for joint action. In particular, advantaged groups will be better able pass the costs of their own collective action onto other groups. These victim groups may be unable to respond because of the greater difficulty they have in coordinating their own actions. Of course, their own victimization may generate an increased realization of the potential benefits of their cooperation, which may inspire them to greater efforts. In dynamic settings, new groups constantly form, some of which may act to increase the costs of collective action by their intended victims (Lichbach 1996). Polycentricity can be sustained only if governing authorities take as one of their primary missions the task of minimizing the costs involved in bringing groups of all sizes and kinds together to resolve their own problems.

In equilibrium, those groups able to exploit others will do so, those groups able to resist will also do, and still other groups will remain latent and unmobilized. Public policy can shape these cost differentials in ways that can either minimize or aggravate these inequities. Since all political institutions have unequal distributional consequences (Knight 1992), the governance architecture currently in place will modify the differential advantages available to different groups. In particular, some groups will be especially well-placed to make use of the coercive capacity of public authorities to shift costs onto other victim groups. For a polycentric system of governance to contribute to the ability of all citizen groups to organize for their own self-protection, there needs to be counterbalancing forces in place.

Vincent Ostrom frequently used the compound republic established in the U.S. Constitution as an exemplar of a polycentric system, and he touted its benefits in providing a solid foundation for individual liberty and community self-governance. But he had in mind much more than the usual defense of federalism, since any restriction to interactions among just two or three layers of government agencies is far too simplified. Lots of other kinds of organizations need to be included in any institutional analysis of polycentric governance, including school districts, special tax districts, and other specialized jurisdictions within states, cross-state arrangements such as inter-state compacts for river or water management, or regional transportation authorities that cross state boundaries, etc., and, especially important in the US case, a long tradition of important contributions from private actors, including for-profit firms, professional associations, and nonprofit organizations (including faith-based organizations –

21

FBOs), all of which have been actively engaged in the delivery of public and community services from before the foundation of the American republic.

This is the kind of vision that has the potential to motivate the concerted effort needed to sustain a polycentric system of governance. There also needs to be support for empowerment at the individual level, because individuals working together support the operation of the system as a whole.

This brings to mind an argument that Aligica (2014) touches upon in his elaboration of themes first developed in Knight and Jackson (2014), who argue that competitive markets are an effective solution to a first-order collective action problem of maximizing the efficiency of voluntary exchange, but that markets work most efficiently within the context of at least partially centralized democracies, since public officials in such systems are capable of addressing a second-order problem of monitoring and exerting self-correction on the sometimes unfortunate consequences of unfettered market competition. Aligica (2014) goes a step further, along a line of argument first developed (albeit using very different terminology) by Vincent Ostrom (1997). Highly centralized and bureaucracy-ridden democracies are also prone to excesses, especially in the area of imposing too tight a regulatory control over emerging technologies and markets. This sets up a third-order collective action problem, namely, whether or not the institutions set up to solve the first two problems do so in a way that tends to instill in the participants a set of moral values and practical incentives that support the continued operation of these same institutions. It relates directly to the establishment and the sustaining of the right kind of institutional repertoire needed for effective and sustainable polycentric systems of self-governance.

This test is likely to be failed if democracy is over-centralized or if its citizens become too dependent on government largess. If citizens do not learn practical skills of self-governance but instead come to rely on the benefits they can obtain by influencing the outcomes of elections for their representatives, then the future of democracy is threatened. Recent events in the U.S. financial system demonstrate pretty clearly that we can't presume that market institutions will instill the right kind of stewardship values needed to keep markets stable.

All this suggests to me that while free markets are needed for efficiency, and representative democratic institutions can provide for effective management and regulation of markets, a polycentric component is also needed if these two types of institutions are going to be sustainable. This means markets and states are just as integral to a well-functioning polycentric order as are the diverse kinds of community-based management of natural resource commons that Elinor Ostrom (1990) emphasizes in her own research. Equally important are the institutional structures and practices that facilitate the efforts of every new generation of citizens to learn the art and science of self-governance.

5. Enhancing the Benefits of Seeing Through the Lens of Polycentricity

Given this long discussion of potential shortcomings of even a fully articulated polycentric system of governance, it is far from obvious that the benefits of polycentricity outweigh its costs. In this concluding section I briefly defend continued use of it as a normative goal for better governance.

The unfortunate tendencies and potential responses discussed in the preceding section were purposively presented in a way that highlights subtle inter-connections among structure, process, and outcome, which should help offset any misleading impression that neat analytical distinctions can be easily drawn among these integrated components. Plus, these interconnections provide a basis for the perhaps surprisingly upbeat defense of polycentric governance given here.

Any practical setting is likely to be characterized by *missing institutions*, when compared to the full complement of processes that would be available in an ideally polycentric system, and these missing institutions introduce systematic biases to the policy outcomes that will emerge in any practical realization. Earlier sections introduced this link between missing institutions and inadequate policy outcomes by outlining a few illustrative examples of what might be called *proto-polycentric* or less than fully polycentric systems of governance, and draws conclusions concerning the outcomes that we should expect to observe in those settings.

The bad news is that no real-world manifestation of the defining characteristics of a system of polycentric governance can completely avoid the unfortunate tendencies and biases identified above. But the good news is that since the successful operation of polycentric governance requires active engagement by the citizenry, careful attention to the development and enhancement of the skills needed to support diverse forms of collective action can ameliorate these problems, or at least insure that future generations will be able to develop new solutions to whatever new problems will emerge in their lifetimes. Thus, there are essential roles for political leaders, and for all kinds of economic, public, and social entrepreneurs, to play in furthering the development and diffusion of the skills and capabilities communities need to become, and remain, self-governing.

In short, I state the foundational normative goal of polycentricity as follows: ***any group with a common problem or shared aspirations should have easy access to multiple opportunities to find the support they need for effective collective action***. Public authorities and ordinary citizens should do all they can to help sustain and deepen the full range of these opportunities.

Finally, I feel I must apologize to the patient reader for what might seem obsessive over-use of the terms polycentric and polycentricity in this paper, but my experience is that once one sees how deeply these concepts tap into the foundations of human society, the more difficult it becomes to think of politics in any other way. Biologists often assert, following Dobzhansky (1973), that "nothing makes sense in biology except through the theory of evolution." Economists could credibly respond with a similar depiction of their subject matter, by saying "nothing makes sense in economics except through market theory."

For me as political scientist and policy analyst, much the same could be said about polycentric governance, namely, that nothing in politics or public policy or democratic theory makes sense except through the light shed by the concept of polycentricity. I realize that power, collective action, the authoritative allocation of value, and other concepts have been used to denote the core concerns of the discipline of political science, but to me they are all subsumed within polycentric governance, broadly

understood along the lines first laid out by Vincent and Elinor Ostrom, in conjunction with their many collaborators.

So, where do we go from here? Formal mathematics has been used to demonstrate that perfectly competitive markets necessarily result in efficient equilibrium. As a concept, "perfectly competitive markets" require stringent conditions that are rarely found, in pure form, in real-life settings. Despite what have been the "failures" or "imperfections" of real-world markets, many of them nonetheless exhibit properties that closely mimic those of the ideal-case model. When considering possible changes to existing markets, policy analysts steeped in economic theory tend to focus on making real markets more closely approach these ideal conditions, by seeking increases in the closeness of fit between their characteristics and those of the idealized mathematical model. Or, alternatively, they may point to aspects of a real-world model that are determined by non-market factors and advise policy-makers to act to establish "missing markets."

I suggest that policy analysts might adopt an analogous search for the "missing institutions" in real-world approximations of polycentricity, as a first step towards suggesting what kinds of practical steps might be taken to patch up those shortcomings.

Reforming a polycentric system of governance is no easy matter. It takes time, and requires a patient interweaving of strategic policy interventions directed at different aspects of that system. In effect, reformers need to craft a mutually-reinforcing path of movement to a new equilibrium that would retain (and enhance) the structural and procedural components of polycentricity while also achieving more desirable outcomes in terms of improved coordination and a fuller realization of potential scale efficiencies across the full spectrum of possibilities.

Because some readers may have trouble imagining this as a plausible path, I'm going to summarize how a multi-faceted set of policy changes has manifested itself in the area of the environmental consequences of industrial production, with particular reference to the federal system of governance in the United States.

Look back a few decades and you'll see an economic system in which producers of all kinds routinely polluted the environment, with little or no consequences to themselves. Increasing concern on the part of the public (and by experts in environmental science) lead to the passage of laws assigning responsibility for pollution to corporate producers. In some states these movements were especially effective in encouraging state executives and legislatures to impose stricter environmental regulations than could then be implemented at the national level. Given our complex system of diverse jurisdictions, this led to a race-to-the-bottom, in which poor states (or other countries) offered lower levels of environmental restrictions in hopes of attracting more industry to their areas. Even so, national regulations established a floor below which environmental conditions were no longer allowed to fall.

But it wasn't just a question of interactions between corporations and government regulators. Non-profit groups acted to enhance public knowledge and concern about the production methods of different corporations, and a process of naming and shaming began. Consumers began to take this information into account in their purchasing decisions, or their broader brand loyalties. Some companies began to play to these emerging tastes by changing their own advertising campaigns. They began to compete over the relative greenness of their own corporate practices, thus triggering an arms race of sorts leading to higher and higher levels of environmental sensitivity. Those corporations most effective at capturing this market opportunity did so by deeply institutionalizing green concerns within their

24

corporate practices, not just through tangible incentives but also through nurturing a shift in their corporate culture. Changes in corporate governance were especially effective at reinforcing goals sought by the public and encouraged by public officials. Now many communities advertise themselves to potential employers or workers as being great places to work, thus furthering a competitive "race-to-the-top" in which environmental conditions just keep getting better.

Or course, we still have environmental problems, from the local to global levels, but we're much better off than we used to be, or than many other countries are, which lack one or more of these changes. This improvement resulted from an inter-related array of changes by public officials, private corporations, voluntary associations, and individual consumers. It probably wasn't part of anybody's strategic plan from the start, but now that we've seen this process in action, those of us wanting to realize similar progress in other policy sectors can learn from their experience, and build these ideas into our strategy.

In some ways environmental policy is ideally suited to the polycentric governance approach. Ecologists have long realized that ecosystems consist of complex and only partially decomposable subsystems operating at many levels of analysis ranging from cellular biochemistry through global climate change. Since so many major rivers, lakes, and other waterways have significant effects on areas on both sides of national or subnational boundaries. Experts in water resource management often highlight the importance of establishing some form of oversight or stewardship at the level of individual watersheds. Yet they also realize that no one level of governance can, by itself, cope with the wide-ranging scope of these critical issues. Ecologists have also emphasized the critical importance of an ecosystem's resilience to the effects of exogenous shocks, and to the often rampant redundancies that occur throughout these complex systems. In effect, the concept of polycentric governance takes the basic lessons of the ecological sciences and translates them into political contexts.

Elinor Ostrom highlighted this connection in many ways throughout her long career. She argued that institutional diversity deserves to be just as highly valued and protected as are biodiversity and multi-cultural diversity. In some of her final publications she developed an agenda for policy response to global climate change that stands as an exemplar of "thinking polycentristically." Ostrom (2012) argues that climate change is such a complex policy problem, involving as it does so many forms of negative and positive externalities operating at scales from individual households to the global level and all levels in between, that only a program of policies directed at all of these levels can, in the end, be an effective response.

The regimen of thinking polycentristically requires us all to be creative, and to remain open to suggestions from whatever source, even if they seem to point in ideologically opposed directions. Not only are there no panaceas (E. Ostrom 2000), but we should also never expect that all critical components of long-lasting social orders will fit neatly into any pre-defined categories. To be effective, polycentric governance needs to continue to cut across policy sectors, and to transcend ideological divisions. Polycentricity, as a concept, threatens to disrupt its own definitional categories, with its very strengths generating systematic tendencies that can put at risk its own sustainability, while at the same time facilitating the generation of new ways to work around both old and newly emerging dilemmas of collective action.

References

Aligica, Paul Dragos. 2014. *Institutional Diversity and Political Economy: The Ostroms and Beyond*, Oxford University Press.

Aligica, Paul Dragos, and Peter Boettke. 2009. *Challenging Institutional Analysis and Development: The Bloomington School*. Routledge.

_____. 2011. "The Two Social Philosophies of Ostroms' Institutionalism" *Policy Studies Journal* 39 (1) (Feb. 2011), 29-49

Aligica, Paul D. and Vlad Tarko (2012) "Polycentricity: From Polanyi to Ostrom, and Beyond." *Governance,* 25: 2 (April), 237-262.

_____. 2013. "Co-Production, Polycentricity, and Value Heterogeneity: The Ostroms' Public Choice Institutionalism Revisited," *American Political Science Review* 107(4), 726-741.

Boettke, P.J., Coyne, C.J., 2005. Methodological individualism, spontaneous order and the research program of the Workshop in Political Theory and Policy Analysis. *Journal of Economic Behavior & Organization* 57, 145-158.

Cole, Daniel H., and Michael D. McGinnis, eds. 2015. *Elinor Ostrom and the Bloomington School of Political Economy: Polycentricity in Public Administration and Political Science*, Lexington Books.

Crawford, Sue E.S., and Elinor Ostrom. 1995. "A Grammar of Institutions." *American Political Science Review* 89(3):582-600. Also published in Elinor Ostrom (2005) *Understanding Institutional Diversity* (Princeton, NJ: Princeton University Press, 137–74) and in McGinnis 2000.

Dobzhansky, Theodosius. 1973. "Nothing in Biology Makes Sense Except in the Light of Evolution," *American Biology Teacher*, 35 (March), 125-129.

Feiock, Richard C., and John T. Scholz, eds. 2009. *Self-Organizing Federalism: Collaborative Mechanisms to Mitigate Institutional Collective Action Dilemmas*, Cambridge University Press.

Hooghe, Liesbet, and Gary Marks. 2003. "Unraveling the Central State, but How? Types of Multi-Level Governance," *American Political Science Review* 97 (2) 233-243.

Knight, Jack. 1992. *Institutions and Social Conflict*. Cambridge: Cambridge University Press.

Knight, Jack, and James Johnson. 2014. *The Priority of Democracy: Political Consequences of Pragmatism*. Princeton University Press.

Lichbach, Mark I. 1996. *The Cooperator's Dilemma.* Ann Arbor: University of Michigan Press.

Lindblom, Charles E. 1965. *The Intelligence of Democracy*. New York: Free Press.

McGinnis, Michael D., ed. 1999. *Polycentricity and Local Public Economies*: *Readings from the Workshop in Political Theory and Policy Analysis*. Ann Arbor: University of Michigan Press.

_____. ed. 2000. *Polycentric Games and Institution: Readings from the Workshop in Political Theory and Policy Analysis.* Ann Arbor: University of Michigan Press.

_____. 2005. "Beyond Individualism and Spontaneity: Comments on Peter Boettke and Christopher Coyne," *Journal of Economic Behavior and Organization,* June 2005, 57 (2), pp. 167-172.

_____. 2008. "Legal Pluralism, Polycentricity, and Faith-Based Organizations in Global Governance," in Mark Sproule-Jones, Barbara Allen, and Filippo Sabetti, eds. *The Struggle to Constitute and Sustain Productive Orders*. Lanham, MD: Lexington Books, pp. 45-64, 2008.

_____. 2010. "Religion Policy and the Faith-Based Initiative: Navigating the Shifting Boundaries between Church and State," *Forum on Public Policy*, Vol 2010, No. 4/5. (December 2010) http://forumonpublicpolicy.com/Vol2010.no4/archive.vol2010.no4/mcginnis.pdf; Reprinted in *Journal of Academic Perspectives*, 2011, no. 3, http://www.journalofacademicperspectives.com/back-issues/vol-2011/no-3/

_____. 2011. "An Introduction to IAD and the Language of the Ostrom Workshop: A Simple Guide to a Complex Framework," *Policy Studies Journal* 39 (1) (March 2011), 163-177. For updated version, see http://php.indiana.edu/~mcginnis/iad_guide.pdf

_____. 2014a. "Commons as Building Blocks for Polycentric Governance: Lessons from U.S. Health Reform," Keynote Address, 2nd Thematic Conference on Knowledge Commons: Governing Pooled Knowledge Commons, with Special Attention to Fields of Medicine and the Environment, International Association for the Study of the Commons (IASC), New York University (NYU) School of Law, Engelberg Center on

Innovation Law & Policy, Sept. 4, 2014
http://pages.iu.edu/~mcginnis/Commons%20as%20Building%20Blocks.pdf

_____. 2014b. "Local Governance of Healthcare: A Missing Ingredient for Reform," draft paper, June 2014.
http://pages.iu.edu/~mcginnis/lgh.pdf

_____. 2014b. "Rethinking Health Care and Corporate Governance," remarks at 2014 Summer Institute for Informed Patient Choice (SIIPC), The Dartmouth Center for Health Care Delivery Science, and The Dartmouth Institute for Health Policy and Clinical Practice, Hanover, New Hampshire, June 25-27, 2014,
http://pages.iu.edu/~mcginnis/SIIPC%20Remarks%20-%20McGinnis.pdf

McGinnis, Michael D. and Elinor Ostrom. 2012. "Reflections on Vincent Ostrom, Public Administration, and Polycentricity," *Public Administration Review* 72:1 (Jan/Feb), 15-25.

Mitchell, William C. 1988. "Virginia, Rochester, and Bloomington: Twenty-Five Years of Public Choice and Political Science."*Public Choice* 56:101-19.

Olson, Mancur. 1965. *The Logic of Collective Action.* Harvard University Press.

Ostrom, Elinor. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action.* New York: Cambridge University Press.

_____. 2000. "The Danger of Self-Evident Truths," *PS: Political Science & Politics* 33(1) (March 2000): 33–44.

_____. 2005. *Understanding Institutional Diversity.* Princeton, NJ: Princeton University Press.

_____. 2010. "Beyond Markets and States: Polycentric Governance of Complex Economic Systems," *American Economic Review*, 100(3) (June 2010): 641–72.

_____. 2012. "Nested Externalities and Polycentric Institutions: Must We Wait for Global Solutions to Climate Change before Taking Actions at Other Scales?" *Economic Theory* 49(2) (2012): 353–69.

Ostrom, Vincent. 1972. "Polycentricity," paper presented at Annual Meeting of the American Political Science Association, Washington, D.C., Sept. 5-9, 1972. Reprinted McGinnis 1999b.

_____. 1973. "Can Federalism Make a Difference?" *Publius* 3(2) (Fall): 197-237.

_____. 1993. "Epistemic Choice and Public Choice," *Public Choice* 77(1): 163–76.

_____. 1997. *The Meaning of Democracy and the Vulnerability of Democracies: A Response to Tocqueville's Challenge.* Ann Arbor: University of Michigan Press.

_____. 2008a. *The Intellectual Crisis in American Public Administration.* 3rd ed. Tuscaloosa: University of Alabama Press. (1st edition, 1973; revised edition 1974; 2nd edition 1989).

_____. 2008b. *The Political Theory of a Compound Republic: Designing the American Experiment.* 3rd ed. Lanham: Lexington Books. (1st edition 1971, Blacksburg, Va., Public Choice, VPI&SU; 2nd edition 1989, Lincoln: University of Nebraska Press).

Ostrom, Vincent, Charles M. Tiebout, and Robert Warren. 1961. "The Organization of Government in Metropolitan Areas: A Theoretical Inquiry." *American Political Science Review* 55 (4):831-42. Reprinted McGinnis 1999b.

Pahl-Wostl, Claudia and Christian Knieper (2014) "The Capacity of Water Governance to Deal with the Climate Change Adaptation Challenge: Using Fuzzy Set Qualitative Comparative Analysis to Distinguish between Polycentric, Fragmented, and Centralized Regimes." Global Environmental Change. Volume 29 (November), pp. 139-154.

Polanyi, Michael. 1951. *The Logic of Liberty*. Chicago, IL: University of Chicago Press.

Simon, Herbert A. 1969. *The Sciences of the Artificial*. MIT Press.

Skelcher, Chris. 2005. "Jurisdictional Integrity, Polycentrism, and the Design of Democratic Governance," *Governance: An International Journal of Policy and Administration* 18 (1), 89-110.

Starr, Paul. 2013. *Remedy and Reaction: The Peculiar American Struggle over Health Care Reform*, revised edition, New Haven and London: Yale University Press.

Weimer, David L., and Aidan R. Vining. 2010. "Correcting Market and Government Failures: Generic Policies," chapter 10 in *Policy Analysis: Concepts and Practice*, 5th edition, Boston: Longman, 2011, pp. 209-262.

Table 1. Structure, Process, and Outcomes in Polycentric Governance

Structure	Process	Outcomes
Multiple Centers of Authority (at all levels of aggregation, each unit semi-autonomous)	**Mutual Adjustment** (results in complex mix of both cooperation and competition)	**Emergent Order** (overarching system of rules, but with distinctive subcultures)
Overlapping Jurisdictions (each authority has a limited domain of responsibility)	**Institutional Diversity** (innovation with isomorphic selection, but still polymorphic)	**All-Scale Efficiencies** (including sustainable self-governance at all levels)
Fragmented system of governance (varying levels of the concentration of political power)	*Proto-Polycentric system of governance* (varying levels of entry/exit and switching costs)	*Polycentric system of governance* (varying levels of performance on multiple criteria)

Table 2. Persistent Problems and Potential Remedies of Polycentric Governance

Systemic Tendencies or Biases	Sources and Reasons	Remedies and Potential Benefits
A. Structural Inequities	Different groups face different costs for collective action, and high costs can be imposed by especially successful groups	Continued access to other channels for mobilization outside existing forms of domination
B. Incremental Bias	Multiple veto points restrict range of feasible mutually beneficial adjustments	Can appeal to authorities at other levels to break an impasse at any single level
C. High Complexity	High participation costs can give current experts a big advantage on others	Since no governance system can be complete, new forms of connections may provide alternative paths to participation
D. Deep Structural Fissures	Each policy domain may be dominated by network of incumbents insulated from outside pressure	Interconnectedness between policy domains will change with new technologies and systemic shocks
E. Coordination Failures	Dilemmas of collective action are especially difficult at high levels of aggregation	Gaps or failures in coordination exposed at one level can inspire efforts of other actors at lower levels, or leadership from above
F. Lack of Normative Clarity	No single goal will be consistently pursued by all actors at all levels	Reminds analysts and participants of the continued legitimacy of multiple goals