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Ecological Governance: Organizing Principles for an Emerging Era

Part I: 2020:
The Good, the Bad,
and the Ugly

The significant reforms being implemented in governance systems around the world reflect a broader transition of society from the modern to a new emerging era. This transition is framed in terms of a shift from a mechanistic to an ecological worldview, stimulated by a number of developments during the twentieth century and the last decade. In contrast to the mechanistic orientation toward reductionism, prediction and control, and competition, an ecological worldview emphasizes the interconnectedness, self-organizing capacity, and coevolutionary dynamics of all natural systems. This emergent worldview yields useful insights regarding the purpose, design, process, and relationships characteristic of organizational systems that strive to play an effective role in the future governance of society. The discussion outlines specific organizing principles pertinent to these four areas, identifying some compatible practices that are already being adopted by public and private organizations. The authors address the possibility that the continued transition to ecological governance may not reflect just a long, slow process of incremental change, but also could entail a sudden, systemic reorientation that results in a faster transformation of the extant institutions of public administration.

A significant trend in the field of public administration at present is the broadening of its focus, with attention now being given to the more expansive notion of governance, in contrast to the field's primary emphasis historically on the more limited issues of government (Bingham, Nabatchi, and O'Leary 2005; Milward and Provan 2000). After a quarter century of devolution, decentralization, downsizing, and debureaucratization, coupled with privatization, contracting out, and the adoption of business management techniques, growing interest in issues of governance reflects the fact that much of the work in the public arena takes place not just by government organizations but through partnerships and networks involving public, private, and nonprofit organizations, with greater involvement and/or scrutiny by a wide range of interest groups and concerned citizens.

Much attention has been given to the kinds of changes that public organizations and managers must make in order to be effective actors in these cross-sectoral, multilevel governance systems (e.g., Bryson, Crosby, and Stone 2006; McGuire 2002). A key theme in this literature is the importance of establishing structures and processes that facilitate collaborative dynamics among diverse participants, which, in turn, can enhance the quality of decisions made and implemented. Numerous examples of efforts to establish participative, collaborative processes that contribute to the effective governance of organizations, neighborhoods, communities, and regions have been documented (e.g., Berry, Portney, and Thomson 1993; Imperial 2005; Weeks 2000). In short, the emergence of new systems of collaborative governance (O'Leary, Gerard, and Bingham 2006) is already well under way.

The starting premise of this paper is that the reform processes apparent over the last few decades can fruitfully be viewed as a manifestation of a deeper and subtler transformation under way in society, namely, the transition out of modernity into a new, emerging era. On one hand, the philosophical foundations of the modern era have been challenged, if not undermined, during this period by postmodern critique and "deconstruction," such that modern-era institutions have lost some of their legitimacy and are now frequently expected to incorporate a more diverse set of perspectives and values (Bogason 2001; Fox and Miller 1995). On the other hand, an eclectic "new paradigm" literature posits the emergence of a new worldview that is superseding the now-outdated modern worldview (e.g., Dennard 1996; Elgin 1993; Harman 1998; Hubbard 1998; Laszlo 2001; Woodhouse 1996). Many observers suggest that this new paradigm is essentially an ecological worldview (Capra 1996; Frenay 2006; Metzner 1999), replacing the mechanistic worldview on which modern society was established.

Just as the arrival of modernity transformed the dominant institutions of premodern society, it is

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natural and inevitable that contemporary institutions founded on the premises of modernity will undergo transformation to reflect the new ecological paradigm. One primary institution of modern society is the Weberian bureaucracy, the mechanistic organizational form that has served as the dominant template for public and private organizations for at least a century. The growing obsolescence of the bureaucratic model is reflected in a considerable literature arguing for the adoption of new organizational forms (e.g., Ashkenas et al. 1995; Fradette and Michaud 1998; Hock 1999; Pasternack and Viscio 1998; Pinchot and Pinchot 1994; Purser and Cabana 1998; Robertson 1999; Strebel 2000). Among the ideas being offered regarding the new forms of organization needed to function effectively in the complex conditions of a global, postmodern world, there is growing recognition of the value of adopting an ecological perspective on organizational systems. For example, Tracy (1989) outlined the characteristics of a living organization, de Geus (1997) discussed the idea of a living company, Miles et al. (1997) developed the notion of a cellular organization, and Cook (2000) examined the evolution of organizations into a new, more “organismic” form. More generally, Hawken (1993) analyzed the ecology of commerce, and Hansen (1995) and Moore (1996) focused on the value of ecological thinking in business.

It is our contention that the momentum behind these reforms is powerful, and that the next decade will see even more sweeping changes in the organizational and interorganizational systems through which collective decisions that affect the well-being of communities and society are made. Whereas emergent systems of collaborative governance struggle to succeed in the context of a modern worldview and an institutional context biased toward self-interest and competition, acceptance and adoption of the principles and practices of collaboration will happen more readily as ecological consciousness (Uhl 2004) diffuses throughout modern society. This transformation will be further stimulated by the failure of modern institutions of governance to effectively address the severe challenges confronting a growing global population. With the inadequacy of many contemporary institutions becoming ever more apparent, we anticipate that, in the future, much public policy will be decided and implemented through newly developed systems of “ecological governance.”

The primary objective of this paper, after a brief comparison of the mechanistic and ecological worldviews, is to specify a set of organizing principles that can guide the development of ecological governance systems. The discussion is descriptive, predictive, and normative all at the same time: the model of ecological governance developed here incorporates ideas and approaches that are already being put into practice; it is based on the premise that contemporary organizational systems will continue to evolve in this direction, incorporating more and more of the features of ecological governance; and it clarifies the types of reforms that these systems should strive to implement if they want to become more compatible with the conditions and challenges of the emerging ecological era. Implementation of the required changes will not be easy, of course, and the conclusion addresses the viability of making significant progress toward widespread adoption of ecological governance.

Mechanistic versus Ecological Worldviews

The emergence of modern civilization is typically acknowledged as a result of the Enlightenment-era philosophy of seventeenth- and eighteenth-century Europe, especially the work of René Descartes and Isaac Newton. The Newtonian-Cartesian worldview is essentially mechanistic in nature, in that the universe is conceptualized as a perfect machine that operates according to a set of precise mathematical laws. The modern mechanistic worldview is characterized by three ideological orientations that serve as useful points of comparison with the emerging ecological worldview. The first is an orientation toward reductionism, which refers to the belief that systems can be best understood through analysis of their component parts. Philosophically, the emphasis on reductionism gave rise to the individualistic orientation embedded in modern political and economic theory, in contrast to the more collectivistic attitudes dominant in premodern societies. Modern systems of governance and administration reflect these tendencies in that they are divided into distinct branches, jurisdictions, spheres of activity, and organizations, each of which is expected to focus exclusively on its own issues and concerns, without much regard for the larger systems of which they are a part.

The mechanistic worldview also places a high emphasis on prediction and control. This emphasis, and the related goal of maintaining a steady-state equilibrium, was reflected in the design of modern administrative systems as well, with the Weberian bureaucracy serving as a prime example. The desire for control over the increasingly complex organizations arising in modern industrial society supported the reliance on hierarchical systems designed according to presumably scientific or general principles. Finally, the modern paradigm focuses on the competitive dynamics underlying evolution. The inevitability of human competitiveness and the primacy of self-interest are taken for granted, with modern political and economic institutions designed according to this premise. As a result, the large organizations that emerged as dominant actors in the political and economic realms incorporated this competitive, self-interested orientation as well.

The last century witnessed a number of developments that served to undermine the mechanistic mind-set of modernity and lay the foundations for a new paradigm. In the realm of science, the discoveries of quantum physics and research on the brain and mind have yielded insights that contradict the mechanistic worldview (Capra 1991; Talbot 1991). The development of systems theory (von Bertalanffy 1968) provided a theoretical foundation for studying systems as integrated wholes, with a focus on the interactions among their parts and with the larger environment in which they are embedded. The study of systems gave rise to the new field of complexity science, which explores the properties of complex adaptive systems, in which qualities of the system as a whole emerge spontaneously and unpredictably from the dynamic, nonlinear interactions among system components (Waldrop 1992). Life sciences research has clarified that the diverse species in ecological systems engage in various types of interactions or relationships, ranging from parasitic and competitive to collaborative and altruistic (Dugatkin 1999).

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Mechanistic assumptions as applied to organizations were further challenged by developments in the social sciences, including a resurgence of humanistic ideology in the mid-twentieth century (Maslow 1954), the development of open systems theory (Katz and Kahn 1966) and contingency theory (Lawrence and Lorsch 1967), the postmodern recognition that organizations are “socially constructed realities” (Berger and Luckmann 1966), and critical perspectives pointing to the dysfunctional consequences of the materialistic, individualistic, and control-oriented ideology embedded in modern institutions (Denhardt 1981). Finally, increased awareness of the environmental damage caused by modern industrial society has led to greater recognition that humanity must become more ecologically minded, viewing ourselves as part of and interdependent with the natural world rather than as separate and distinct from it with the right to abuse it for our own purposes (Metzner 1999).

Collectively, these developments provide the conceptual and empirical foundation for an ecological worldview, which can be described in terms of three key orientations that distinguish it from the modern mechanistic worldview (Harder, Robertson, and Woodward 2004). The first is an emphasis on interconnectedness (Laszlo 2003). In contrast to a reductionist focus on the parts of a system, an ecological orientation is more holistic in nature, recognizing that a thorough understanding of any system requires knowledge of the nature of the interactions among its parts as well as the nature of its interdependencies with other parts of the larger system(s) in which it is embedded. Second, in contrast to a mechanistic perspective, which assumes the necessity of centralized control to insure system performance, an ecological worldview recognizes the self-organizing capacity inherent in all natural systems (Jantsch 1980). Ecological systems are self-managing and self-regulating in that their distinct and diverse parts engage in patterns of interaction that maintain a dynamic equilibrium and the homeostasis of the system, even though specific patterns of behavior cannot be predicted in advance (Kauffman 1995). Third, an ecological worldview emphasizes the coevolutionary dynamics through which systems evolve along with their environments in a mutually reinforcing pattern of influence. Whereas the mechanistic paradigm assumes that progress occurs through competition among independent and self-interested entities, the health of ecological systems is actually maintained through complex patterns of both competitive and cooperative interactions among interdependent elements that pursue their purposes while also contributing to, and not detracting from, the well-being of the system as a whole (Capra 2002). Through the cumulative pattern of these interactions, a system, its parts, and its environment coevolve together in a continuous, reciprocal process of mutual adaptation.

Ecological Governance

The characteristics of ecological governance are discussed in terms of four categories of organizing principles—namely, purpose, design, process, and relationships—and examples are provided of practices being implemented that are compatible with these principles. Taken together, these features outline a generic model of organizing, that is, a new “ideal type,” that can guide efforts

to transform the modern bureaucracy into a more participative, collaborative, adaptable, and responsive system of governance. It provides a framework for rethinking how best to organize the activities of the people and organizations involved in the governance of public affairs, regardless of sector.

Because an ecological approach suggests thinking about organizations as living systems, the notion of a cellular organization (Miles et al. 1997) provides useful language for discussing organizational characteristics and dynamics. Cellular organizations are composed of cells, which can be thought of as individuals, groups, or departments, or even whole organizations participating in an interorganizational network—any constellation of people who can be seen as having a distinct role or function in a larger system. The activity of and interactions among the cells give rise to the system, and the system’s activities in the context of its environment shape cellular activity. In this sense, an ecological perspective requires consideration of the individuals who are the primary parts of organizations as well as the environments in which organizations function.

Purpose

Principle 1a. Interconnected actors or “cells” in ecological governance strive to add value to the larger systems of which they are a part while trying to avoid negative externalities.

In an ecological governance system, the purpose of every organization, its *raison d’être*, is to add value to the larger system(s) of which it is a part, while maintaining its own health and vitality in sustainable ways (Maynard and Mehrtens 1993). As a cell in a system (e.g., a government, an industry, a community, a network), each organization serves one or more roles or functions that contribute to the well-being of the collective, such that society should be better off in some way as a result of organizational activities. Ecological thinking also suggests that organizations should operate efficiently in the sense of maximizing the ratio of benefits or productive outcomes to the amount of waste (i.e., nonproductive or dysfunctional outcomes) generated by their activities. It is reasonable to expect organizations in an ecological governance system to be responsible and accountable for the negative externalities they create rather than leaving these costs to be paid for by society (Daly and Cobb 1994; Hawken 1993).

Principle 1b. Self-organizing and self-managing activity within an ecological governance system is guided by its mission and regulated by shared principles.

The characteristics of ecological governance are discussed in terms of four categories of organizing principles—namely, purpose, design, process, and relationships—and examples are provided of practices being implemented that are compatible with these principles.

The basic purpose of a system can be operationalized in terms of its mission (Weiss and Piderit 1999). Articulation of a well-defined purpose and mission together with an explicit set of operating principles or core values (Kernaghan 2003) helps clarify the basic parameters or “program rationale” (Mandell 1994) guiding the activities of the system’s many diverse cells (Cleveland 2000). It is important that the many cells that compose an ecological governance system act in ways that are congruent with these parameters of missions and operating principles, and thus it is helpful

for all cells to understand clearly how their roles fit into the bigger picture (Bradford and Cohen 1984). To the extent that continued pursuit of the mission is perceived as worthwhile, the requisite resources needed to accomplish it (e.g., material, financial, human, intellectual, and social capital) should flow to the system. Yet the scope and scale of the mission should also be compatible with the resources available to pursue it—cells should not be expected to do more than they are capable of in light of resource constraints.

Principle 1c. System effectiveness is defined and assessed broadly in terms of its responsiveness to the multiple stakeholders impacted by system activities.

The success of an ecological governance system is a function of the extent to which it responds adequately to the needs, demands, and expectations of various stakeholders (Svendsen 1998). It is clear that employees, customers, clients, community members, and many other interest groups are paying closer attention to organizational decisions and actions than they used to, resulting in growing demands for organizations to become more socially responsible (Wilson 2000). Public organizations have been subject to increased pressure in recent years to measure their performance so as to demonstrate more clearly whether they are providing the benefits desired or expected by important constituents (Heinrich 2002). Because the purpose of organizations in an ecological governance system is to provide these benefits while minimizing the harm caused, it is useful to get input and feedback from all relevant stakeholders as to the overall effects, both positive and negative, of the organization's activities.

Design

Principle 2a. The primary form of an ecological governance system is a dynamic network of relationships among interdependent cells, with diverse roles integrated into a coherent unity.

In ecological governance, the network replaces the hierarchy as the fundamental organizational form (Lipnack and Stamps 1994). In essence, network is to ecological governance as hierarchy is to bureaucracy—just as not all hierarchies are bureaucratic, not all networks are ecological. The nodes in the network are the many cells that carry out a particular set of tasks that help the system to accomplish its purpose. Role differentiation results in considerable diversity in the types of cells that constitute any such system. Role diversity is useful when the system capitalizes on the differences in information, skills, values, and attitudes reflected in a diverse membership (Cox and Blake 1991). Furthermore, the effectiveness of the system is a function of the extent to which its diversity is integrated into a coherent unity, a challenge being addressed by many organizations through the use of diversity management programs (Kellogg and Naff 2004). While shared commitment to purpose and principles help establish a foundation of commonality, the level of system integration is ultimately a function of the dynamic structure reflected in the pattern of relationships among the organization's cells (Hock 1999).

Principle 2b. Self-organizing, self-managing patterns of interaction among cells enable the system's continual adjustment to new circumstances.

An effective network has a relational structure (Kahn 1998) and patterns of interaction that give rise to the self-organizing, self-managing, and self-regulating qualities of natural systems. Despite the absence of a control mechanism, these systems display a considerable level of regularity, stability, and adaptability (Capra 1996). There has been growing recognition of the potential value to organizations of self-organizing dynamics (Wheatley 1992) and self-managing cells (Kalliola 2003; Yang and Guy 2004). Efforts to flatten organizational hierarchies reflect an awareness of the need to give frontline personnel and lower-level managers more authority and responsibility to make timely decisions in a responsive manner. Attempts to transform organizational structures from rigid hierarchies into more responsive systems suggest that large-scale organizational change occurs primarily through a continual process of organizational self-redesign, reflecting an ongoing series of incremental adjustments to new contingencies (Mohrman and Cummings 1989).

Principle 2c. Collaborative dynamics in an ecological governance system facilitate adaptability and innovation through experimentation and novelty.

In complex, fast-changing environments, it is imperative that governance systems become and remain flexible, responsive, and innovative, demonstrating the capacity to readily reconfigure and redeploy resources in order to respond to new opportunities and challenges (Fradette and Michaud 1998). Effective teams and collaborative alliances are increasingly recognized as useful tactics for improving organizations' innovative and adaptive capacity (Alter and Hage 1993; Powell, Koput, and Smith-Doerr 1996). Innovation also requires a willingness to try new approaches and activities, which means that system design should take into account ongoing needs for new knowledge and the exploration of novelty. Because creativity invariably requires experimentation and risk taking, ecological governance operates at "the edge of chaos," where there is enough order and stability to maintain the integrity of the system yet sufficient chaos and unpredictability to produce the needed novelty and innovation (Strebel 2000).

Process

Principle 3a. The process of making decisions in an ecological governance system is participative, democratic, and consensus based.

In order to determine what is to be accomplished (purpose, mission, and goals) and how it will be accomplished (strategy, operations, and administration), ecological governance systems require decision processes that are essentially democratic (deLeon and deLeon 2002), based on open participation and efforts to achieve consensus. Generally speaking, the various cells in the system have the right and responsibility to participate in decisions that pertain to and/or have an impact on them (Collins 1997). Inclusion of all relevant cells that have a stake in the outcome and thus a claim on participation in the process helps to ensure that the full range of benefits and costs associated with system activity is considered. The adoption of more inclusive decision processes to address complex public problems is resulting from such factors as governmental devolution and decentralization, greater involvement of citizens in public decision making (Box 1998; Roberts 2004), the growth of the nonprofit or third sector (Burbidge 1997), the increased focus on participative

community development (Henton, Melville, and Walesh 1997), and the emerging emphasis on collaborative planning (Booher and Innes 2002; Healey 2006). Given the participatory nature of these processes, cooperative/collaborative approaches to decision deliberation and conflict resolution (Isenhardt and Spangle 2000) are more constructive than competitive/adversarial approaches. In particular, a consensus-based decision process strives to integrate various perspectives and preferences in order to achieve a synthesis that addresses the broadest range of concerns and thus more successfully reflects the collective interest (Susskind, McKernan, and Thomas-Larner 1999).

Principle 3b. Authority in ecological governance is fluid, expertise based, and task bound, with everyone responsible for their own and the system's success.

Each cell in an ecological governance system is self-managing and independent in that it possesses the right and the obligation for its own "management" functions, such as planning operations, ensuring output quality, interfacing with other cells, and responding to external demands (Miles et al. 1997), but cells do not have authority over or responsibility for any other cell (Semler 1989). Whenever a cell's activities are interdependent with those of other cells, however, an inclusive decision process is utilized, in which case cells are expected to act in ways that are compatible with the interests of the larger system. In the inevitable situations in which it is useful for one cell to have final authority for a particular decision, such authority is expertise based and task bound, meaning that who is "in charge" in a given situation depends on the demands of the decision and the relative knowledge, skills, and abilities of those involved (Barry 1991). Thus, authority is much more fluid and focused than the broad, perpetual "position authority" found in bureaucratic hierarchies (Mohr 1994).

Principle 3c. Coordination among the diverse cells in an ecological governance system is achieved through mutual adaptation, with leaders serving as stewards and managers acting as facilitators.

The many tasks and activities carried out by the myriad cells in an ecological governance system are coordinated primarily through processes of mutual adaptation enabled by the pattern of relationships composing its network structure (Chisholm 1989). In the dynamic, flexible conditions of ecological governance, adherence to prescribed plans and rules is less valuable than successful adjustment to real-time contingencies based on timely information from relevant others (Cleveland 2000; Weber and Khademian 2008). Likewise, the function of "management" shifts from a focus on coordination and control to an emphasis on facilitation and development (Bradford and Cohen 1984; Orth, Wilkinson, and Benfari 1987), essentially an enabling function that is oriented toward helping cells carry out their activities and accomplish their objectives more effectively. Similarly, the leadership orientation most appropriate for ecological systems is the notion of stewardship, or servant leadership (Block 1993;

Greenleaf 1977). Such leaders act in service to the organization's purpose and are willing to be held accountable for the well-being of the system as a whole. They take action after identifying the best way to proceed to serve the highest purpose of all involved (Daft and Lengel 1998).

Relationships

Principle 4a. Positive relationships among the cells in an ecological governance system, based on mutually beneficial reciprocity, build social capital that contributes to system performance.

A web of positive, reciprocal relationships supporting collaborative interactions is key to the adaptive capacity of ecological governance. The success of an organization and the effectiveness of its cells are a function of its internal web of relationships as well as its external web with other cells and organizations in the environment (Feldman and Khademian 2002). The development of more positive relationships is the basic idea behind the concept of social capital (Putnam 1995), which is thought to be highest in communities of people who trust each other, usually based on their shared values, history, and identity and reinforced by the norm of reciprocity. Because competition readily undermines the trust underlying network effectiveness, cells that are helpful and fair in their dealings with others are better able to maintain reciprocal relationships that are mutually beneficial over the long run. Such relationships can often lie dormant for quite some time and yet be activated easily when circumstances warrant it, facilitating the self-organizing dynamics needed to respond readily to significant environmental fluctuations (Landau 1991; Moynihan 2007).

Principle 4b. Value alignment between a system and its cells enhances motivation and commitment to mutual well-being.

Participation by a cell in ecological governance is conditional on its agreement to serve the system's purpose and adhere to its core principles (Hock 1999). While some cells (e.g., paid employees) may not have any intrinsic interest in the system's purpose or principles, those that do are likely to have more meaningful and effective participation. This kind of identification or internalization constitutes a primary basis of organizational commitment (Balfour and Wechsler 1994; O'Reilly and Chatman 1986) and provides the foundation for mutually beneficial relationships in which a system is committed to promoting the health and development of its cells in return for the cells' commitment to the well-being of the system. Cells should benefit from their involvement in the system, just as their participation should benefit the system as a whole. Evidence indicates that organizations in which members feel valued and appreciated tend to perform better (Pfeffer 1998), possibly because this generates more "citizenship behavior" (Organ 1988), which contributes to the overall functioning of the system.

Principle 4c. Evaluation and feedback from interdependent others contribute to the ability to learn and adaptively coevolve.

In the dynamic, flexible conditions of ecological governance, adherence to prescribed plans and rules is less valuable than successful adjustment to real-time contingencies based on timely information from relevant others.

Effective evaluation and feedback based on a collective assessment of cell performance by others in its network can serve as an important mechanism through which to bring about cell development and improvement in cell performance (Antonioni 1996). Cells need this feedback so that they can understand why and how their activities or outputs need to change to meet the expectations of those with whom they are interdependent (Mausolff 2004). The ability to make such adjustments reflects an important facet of an effective learning system that enhances system capacity to adaptively coevolve with the environment. Interest in becoming a “learning organization” has grown rapidly in recent years (Dilworth 1996; Easterby-Smith, Araujo, and Burgoyne 1998; Senge 1990). Effective learning processes improve an organization’s ability to take self-correcting actions through which to accomplish goals, solve ill-defined problems, and innovate more readily (Bushe and Shani 1990; Nonaka and Takeuchi 1995). Double-loop learning enables a system to identify whether its goals, mission, and/or basic purpose and principles are still appropriate or worthwhile given current circumstances (Argyris 1977; Isaacs 1993). Organizational transformations driven by recognition of the need to change core purpose and/or principles (Levy and Merry 1986; Nutt 2004) reflect an inherent systemic capacity for self-(re)organization, and, in turn, influence the subsequent evolution of the larger systems in which they are embedded.

The Viability of Transformation

The organizing principles outlined here are compatible with the three key orientations of an ecological worldview. They reflect the interconnectedness of people and organizations, sectors of society, and the human and natural worlds; they acknowledge the self-organizing capacity of people and their social systems; and they promote the coevolutionary dynamics that enable a more symbiotic relationship between a society and its systems of governance. An assessment of the viability of these principles should begin with the question of whether organizing principles associated with natural systems can be applied successfully to the design and management of purposive social systems. Obviously, the answer remains to be seen, as it is unlikely that any medium or large organization has yet attempted to function in accordance with the full set of principles outlined here. While this is most certainly true in the public sector, there are a few large private organizations (e.g., W. L. Gore, Whole Foods, SAS, VISA) that have taken rather significant and sometimes quite remarkable (e.g., Semler 1989) steps to operate in ways different from traditional hierarchy and more compatible with ecological principles. Their success demonstrates that it is possible to create and/or transform organizations so as to incorporate some of these principles into the very essence of their identity.

Further evidence of their applicability is that many organizations, across sectors, have already adopted a variety of practices compatible with these principles, such as (1) development of mission and vision statements, and efforts to build organizational cultures that reflect more humanistic values; adoption of a stakeholder approach in strategic management; use of a balanced scorecard and other tools for promoting organizational social responsibility (purpose); (2) movement toward team-based organizational designs and other practices intended to enhance horizontal capacity; widespread involvement in partnerships, alliances, and networks (design); (3) efforts to create high-involvement organizations with empowered employees; inclusion of clients, customers, and other outsiders in organizational

decision making; various types of large-group interventions that stimulate dialogue, deliberation, and consensus-building (process); and (4) use of 360-degree performance assessments to enhance the quality of employee feedback and development; adoption of quality circles, total quality management, parallel learning structures, benchmarking, and other approaches intended to facilitate continuous improvement and organizational learning (relationships). Greater diffusion of such practices will help infuse ecological principles into existing organizations, facilitating and stimulating further development of systems of ecological governance.

Obstacles to Reform

There are, of course, significant obstacles to the widespread development and diffusion of a new model of governance. It is clear that large-scale systemic change is very difficult to achieve, at least in part because of the considerable institutional inertia that impedes efforts to initiate and maintain reforms in the practices and patterns of interaction through which a system operates. Research on the evolution of institutions clarifies the path-dependent nature of this process (Pierson 2000; Thelen 1999), and the notion of institutional or policy “stickiness” (Boettke, Coyne, and Leeson 2008; Kay 2006) refers to the fact that it is very difficult to generate significant change in policy or institutional arrangements because of a complex array of interests and factors that serve to block any efforts to deviate from the status quo. Those actors with the greatest vested interest in existing arrangements are most likely to resist any reform efforts that threaten those interests. Because this often includes the people and organizations with the most power in the relevant context, their resistance to change could seriously impede progress in the evolution toward ecological governance.

A particular challenge for ecological governance systems is how they will comport with existing legislative bodies, which currently have the formal, legitimate authority to determine policy and monitor its implementation. In terms of implementation, Congress, state legislatures, and city councils may be duly reluctant to yield responsibility for these activities to fluid, dynamic, “nobody-in-charge” (Cleveland 2000) systems, and hesitant to support more flexible and adaptable regulatory mechanisms that could be manipulated or “captured” to serve special interests. As for policy formulation, legislative bodies tend to address issues and problems in a fragmented way, and thus typically are not capable of taking the more holistic perspective associated with an ecological orientation. On one hand, then, ecological governance mechanisms could be used to develop policy proposals that relevant legislative bodies would then have final authority to modify and ratify, preserving their legitimate function in existing democratic systems. On the other hand, the evolution and diffusion of ecological governance may ultimately require more fundamental changes in the framework of democratic government, without which it would be unlikely to become the primary form of governance.

Underlying much of the resistance to ecological governance is the widespread, deep-seated belief that hierarchical arrangements are necessary to maintain adequate control over organizational systems and thus to ensure adequate oversight and accountability. The ecological perspective challenges this premise, and suggests the possibility that complex social systems can function according to a different set of parameters. For example, instead of assuming that accountability must be achieved through top-down mechanisms,

there is growing recognition that, in the context of uncentralized networks, it takes place more effectively through bottom-up and peer-based approaches. In fact, the whole concept of accountability expands in this context, to include such functions as identifying partner expectations, aligning goals, adjusting strategies, assessing implementation, communicating performance, and facilitating learning (Acar, Guo, and Yang 2008). While ecological thinking clearly challenges the hierarchical mind-set, the point is not that ecological governance would always and inevitably be superior to the bureaucratic mode of organizing activities. Rather, the claim here is that human society in the next decade and beyond will benefit from the development of effective ecological governance systems to supplement, and in some cases to replace, existing hierarchical systems. With both types of institutions available, the appropriate form could be selected to match the key contingencies of the context for which it is being utilized.

Rather than resisting its emergence, then, it would make more sense to take steps to encourage and enable the development of ecological governance. Because many organizations and key stakeholders are unlikely to make significant changes in the absence of some incentive and/or pressure, broad policy reforms could be adopted to create an institutional environment that motivates actors to incorporate new practices and operate according to a new set of norms. Many insightful ideas have been proposed regarding institutional changes that would support the transformation to a more ecologically conscious society (e.g., Daly and Cobb 1994; Daly and Farley 2004; Hawken, Lovins, and Lovins 1999; Henderson 1996; Jones 2008). For example, one powerful notion is that tax policies should be revised to put higher taxes on whatever we want less of (e.g., pollution) and lower taxes on whatever we want more of (e.g., income). Likewise, accounting rules and standards could be revised to require organizations to internalize the costs of some of their externalities. More generally, institutional reforms should serve to instill a new ethic in which it is no longer legitimate and acceptable for human and organizational actors to behave in a purely self-interested manner without taking into account the broader systemic consequences of their actions. This shift in perspective, with self-interests defined relative to the well-being of the larger systems within which the actor is operating, is essential to the emergence of ecological consciousness.

In light of the foregoing considerations, a cautious estimate—that is, what would seem to be the most likely scenario for the coming decade—is that there will continue to be slow, incremental development and diffusion of the principles and practices of ecological governance, but not any fundamental transformation of the system itself. Use of these new approaches will spread, primarily to address relatively circumscribed challenges and largely at the local or regional level, and participants will slowly but surely acquire a better understanding of what is required for them to succeed. As this process unfolds, most organizations are likely to keep many of their hierarchical features, while simultaneously experiencing on-going pressure to debureaucratize and become more efficient, flexible, and innovative. While maintaining some degree of autonomy, most organizations are also likely to participate in a growing number of alliances and networks in which they may need to subordinate some of their preferences for the greater good of the collective. Through their involvement in these systems, participants will gradually learn

how to function effectively in the context of the kind of collaborative network that constitutes the basis of ecological governance. It is easy to imagine that, in the long run, it would become increasingly clear which activities should be organized in traditional hierarchical mode and which should be organized through ecological governance mechanisms.

Potential for Discontinuity

While this scenario of continued incremental reform seems probable, the possibility of more rapid and radical transformation should not be discounted entirely. Historical institutional analysis indicates that “critical junctures” (Thelen 1999) exist in the development of institutions and policy agendas, at which point choices can be made that shift the trajectory such that the future path of development is no longer as dependent on the patterns of the past. Similarly, research indicates that social systems can display a “punctuated equilibrium” pattern of change (Gersick 1991; Romanelli and Tushman 1994; True, Jones, and Baumgartner 1999), in which long periods of relative stability are interrupted by short periods of rather sudden, systemic reorientation that can position them to respond better to the demands and expectations of their environment. This discontinuous change tends to occur when systems confront more environmental complexity than their structural dynamics can effectively handle (Leifer 1989). Indeed, systems at many different levels of analysis, when operating at “far-from-equilibrium” conditions, can reach a bifurcation point at which the system either deteriorates and fails or spontaneously reconfigures itself so as to be able to handle greater complexity (Capra 1996). This pattern of discontinuous change can be seen in the sudden collapse of societies (Diamond 2004), and in the evolution of human civilization as it has developed through several major epochs and eras (Elgin 1993).

Given what appear in hindsight to be previous cultural transformations, the idea that society is now in the midst of another one should not seem implausible. Contemporary global society may well be reaching a bifurcation point that could result in some kind of systemic reconfiguration that transforms, for better or for worse, some of the fundamental structures and patterns of society. A number of factors can be identified that, added together, may be propelling humanity into a new era more quickly than realized. We focus here on three broad forces driving this process, corresponding to the need, means, and demand for change, all of which are important mechanisms facilitating a process of systemic transformation.

A decade into the new millennium, the array of global challenges and threats faced by humanity is rather disconcerting: overpopulation and ungovernable mega-cities, widespread poverty and lack of access to basic necessities, environmental destruction and the possibility of climate change, massive natural disasters and the potential for nuclear holocaust, the war on terror and the war on drugs, inadequate health care systems and the risk of global viral epidemics, corporate dominance and a collapsing economy. These problems and their interrelated consequences have greatly increased the complexity of human civilization and generated the more chaotic conditions we now confront. As a result, the governance systems created in and for simpler times have been pushed to capacity, with growing awareness that existing institutional arrangements, at all levels of scale, are not able to address or resolve these problems effectively (cf. Comfort 2007; Farazmand 2007). Exacerbated by various

challenges to the legitimacy of key political, economic, religious, and educational institutions in recent years, the populace seems to be losing faith in the value or effectiveness of many of our dominant institutions. Because the problems facing the planet are not getting any easier, the mismatch between their scope and complexity and the governance systems available to address them should become increasingly clear in coming years. Thus, it is reasonable to anticipate that the felt need for significant change in these systems will continue to grow stronger as well.

The arrival of the “information age,” with the rapid development of information and communication technologies, is also having an impact on society in ways that are facilitating the transition to the ecological era. A hallmark of the “new economy” is that information has become the most valuable resource (Stewart 1997), and its easy dissemination, overabundance, and other positive-sum qualities are speeding up the pace of innovation and changing “the rules of the game” (Kelly 1998). The rapid diffusion and integration of computing and communicating technology is creating a “global brain” (Russell 1995) that enables extensive direct interaction among people and organizations around the world.

These conditions readily support the formation and development of networks (Castells 1996), and begin to obviate the need for hierarchical lines of communication. New forms of organization are proving feasible, such as the networked, nonhierarchical, open-source coding environment that produced the Linux software (Raymond 1999). Creative approaches are being utilized by organizations to generate widespread participation by insiders and/or outsiders on tasks in which their information and input can contribute to organizational decision making (Tapscott and Williams 2006). The increased accessibility to information, and the concurrent difficulty in keeping anything secret, contributes to organizational transparency and thus the potential to hold actors accountable. In short, by enabling new patterns of information aggregation, analysis, and dissemination, the new technologies of postindustrial society are providing useful means through which to carry out activities in an ecological governance system.

A last factor that should be taken into account when considering the possibility of transformation is the public will, and the depth and breadth of desire and demand for meaningful reform. In the United States, recent political protests on both the left and the right signal that the federal government is not doing a very good job of addressing the interests of either side of this political continuum, nor is it very responsive to the large number of Americans who make up the “radical center” (Halstead and Lind 2001), or to the many “cultural creatives” (Ray and Anderson 2000) whose values are not necessarily compatible with those of mainstream society. When a large majority of people are dissatisfied with the status quo, the pressure for change can stimulate the political momentum needed to enact significant policy shifts or institutional redesign (Baumgartner and Jones 1993). Calls for systemic transformation are also coming from the many people and organizations around the world who see the present political economy as essentially unsustainable and thus advocate for a “revisioning” of society’s path of development (Olson 1995).

The arrival of the “information age,” with the rapid development of information and communication technologies, is . . . having an impact on society in ways that are facilitating the transition to the ecological era.

Thousands of organizations—making up “the largest movement in the world” (Hawken 2007)—are already actively engaged in the process of developing or diffusing innovative practices and approaches that are compatible with a shift to a sustainable, ecological paradigm (Henderson 2006). As these innovations prove effective on smaller scales, demand for their implementation on a wider basis is likely to increase.

Albert Einstein reportedly once said that the significant problems we face cannot be solved at the same level of thinking we were at when we created them. The “wicked problems” confronting humanity, the legacy of the modern era, cannot be solved by modern ways of thinking and the institutions grounded in this mechanistic mind-set. As the need for reform becomes clearer, the means of transitioning become more prevalent, and the demand for change becomes more potent, the convergence of these factors could lead to a rapid diffusion of ecological consciousness that would diminish attachment to the principles and practices of modernity and enable the development of ecological governance to proceed much more quickly. Just as resistance to modernization would have been futile, it may soon become apparent that the momentum

behind this transformation to the ecological era is essentially unstoppable. It will be interesting to see, in 2020, how much progress we have made in this direction.

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