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## ECOLOGICALLY SUSTAINABLE ORGANIZATIONS: AN INSTITUTIONAL APPROACH

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Our main objective in this article is to join the growing group of "green" organization theorists by demonstrating the usefulness of institutional theory as an approach to ecologically sustainable organizations. Institutional theory helps to understand how consensus is built around the meaning of sustainability and how concepts or practices associated with sustainability are developed and diffused among organizations. We extend institutional theory by offering hypotheses in four different areas: (a) the incorporation of values into organizational sustainability, (b) the study of institutions as distinct elements within systems, (c) the study of institutions as distinct spheres, and (d) the construction of paradigms that support organizational sustainability. We then offer possible modifications to institutional theory that are suggested by the extension to a new area of study. Among them are the consideration of natural constraints on sense making and paradigm construction, the study of regional networks, and the recognition of the role of individual actors. Finally, we discuss possible avenues for future research by drawing on research that we are currently conducting.

"Ecologically sustainable organizations" is the topic of this special forum on the environment. Ecologists maintain that two opposing world-views anchor our approaches to organizations in ecosystems: At one end is frontier economics, at the other end deep ecology (Colby, 1990; Lovelock, 1979; Passmore, 1974; Ruether, 1992). According to the expansionist view of frontier economics, organizations act in a global economic system that is independent of the ecological system, searching out limitless markets to exploit and exhaust; according to the ecological view, organizations act in an economic system that is inextricably intertwined with and dependent on the ecological system, all actions having deeper, ecological consequences. As a popular saying among ecologists goes, "Ecosystems support economies, not vice versa" (Daly & Cobb, 1994).

Organization theorists' opinions are not quite so firm. In the past, organization theorists (e.g., Barnard, 1938; March & Simon, 1958;

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Thompson, 1967) seemed to see the difficulty of creating ecologically sustainable organizations as simply a subclass of the larger problem of effectiveness; that is, of creating effective and efficient firms that can survive in changing niches. Currently, organization theorists are trying to transport principles of ecology directly into different theoretical subdomains like leadership (Egri & Frost, 1994), organizational learning (Mylonadis, 1993), and organizational design (Ostlund & Larsson, 1991). Some thinkers are considering how to replace the expansionist notions underlying their theories with ecological concepts such as sustainability and stewardship (Post & Altman, 1992; Shrivastava, 1992, 1994).

Our objective in this article is to join this growing group of "green" organization theorists by demonstrating the usefulness of institutional theory<sup>1</sup> as an approach to ecologically sustainable organizations. Institutional theorists are interested in "a rule-like, social fact quality of an organized pattern of action" and "an embedding in formal structure" (Zucker, 1987: 444) or, in other words, the process by which items become institutionalized and the role of institutions in society (Scott, 1987). In institutional theory, addressing topics like "ecologically sustainable organizations" requires first understanding how consensus is built around the meaning of "sustainability" and then understanding the ways in which concepts or practices associated with sustainability are developed and diffused among organizations. In other words, addressing the sustainability issue does not simply require us to discover the best definition of sustainability and then to identify the best organizational practices, but it helps us to understand how definitions of sustainability are constructed and accepted and then how practices encouraging sustainability are created and adopted over time by organizations, that is, how they come to have a "rule-like, social fact quality" and how they become "embedded" in institutions and organizational fields.

Our first objective, then, is to extend institutional theory to a new area of study; however, the process of extending institutional theory requires that some of the assumptions of institutional theory be reexamined and new lines of research be considered. Therefore, a secondary objective of this article is to suggest possible modifications to institutional theory and directions for future research. Natural ecology maintains that any sectors in which organizations interact, whether technical or institutional, are circumscribed by the carrying capacity of the natural system (also see Carroll & Hannan, 1995). It also views the organizational fields in which action takes place in spatial or regional terms. Finally, according to natural ecology, change is nonlinear and discontinuous, perhaps following some principles of chaos—certainly not as a strictly linear, cumulative, and predictable path. We are currently engaged in research

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<sup>1</sup> The term *institutional* is used throughout this article; some authors use *neoinstitutional* or *new institutional*, but we follow the more generally accepted terminology.

that not only tests some of the hypotheses that we propose in this article, but also relies on some of these modifications.

We will begin by examining what organization theorists and ecologists believe "ecological sustainability" of organizations is and the best ways to create it. We then offer an institutional view of ecological sustainability and sustainable organizations that draws upon ecological perspectives. In the body of the article, we will theorize about four different areas of institutional theory that can be used to address the sustainability question. In each area, we offer testable hypotheses based on institutional theory and relevant research. In the conclusion, we discuss potential modifications to institutional theory and a few avenues for future research.

### WHY USE INSTITUTIONAL THEORY?

Studying ecologically sustainable organizations requires the reader to consider at least two important questions: (a) what is ecological sustainability? and (b) what role do organizations play in achieving it? Organization theorists and ecologists have already spent some time considering both questions. To understand the value added by an institutional approach, it is necessary to review some of the current thinking about sustainability.

#### Current Organizational and Ecological Views of Sustainability

Table 1 contains a simplified summary of the current thinking about the role of organizations in sustainability. In the first row, we see that organization and management theorists see sustainability, at one extreme, as a subtopic of "organizational effectiveness," and, at the other extreme, as a unique goal for organizations that involves all organizations and their environments. Traditional organization theorists (e.g., Barnard, 1938; March & Simon, 1958; Thompson, 1967) seem to see the difficulty of creating ecologically sustainable organizations as simply a subclass of the larger problem of effectiveness, that is, of creating effective and efficient firms that can survive in changing niches. Consequently, current organization theorists have tried to pull accepted definitions of sustainability down to the level of an individual organization's effectiveness (e.g., Schmidheiny, 1992), where ecologically sustainable organizations are those that can survive and profit over the long run in both economic and natural environments. The most accepted definition in the organization theory community seems to be the definition of the World Commission on Environment and Development (WCED), the "Brundtland Commission": "sustainability is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987: 43).

Organization theorists taking a systems or a culture approach have broadened their view of sustainability. Shrivastava (1992, 1995) sees

**TABLE 1**  
**Comparing Organizational and Ecological Views of Sustainability**

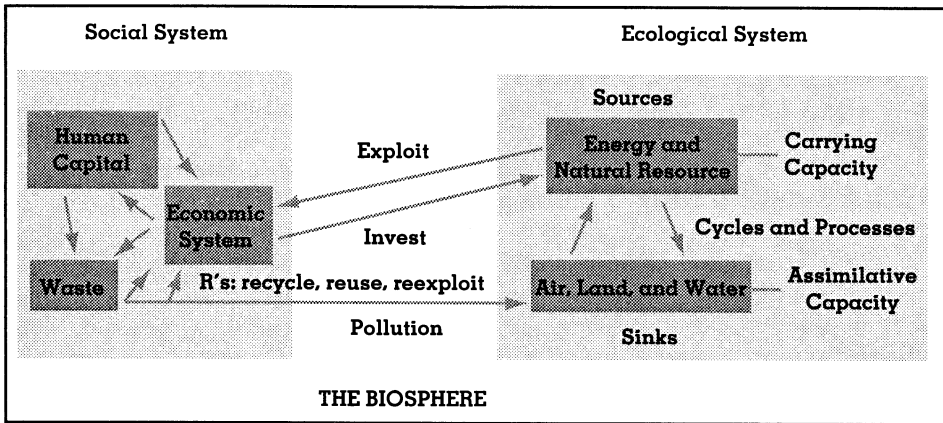
	Definitions of Sustainability	Role of Organizations
<b>Organization Theory</b>	Organization-specific (e.g., effectiveness)	Technical innovations Specific practices Strategies
	Brundtland definition	Organizational culture
<b>Ecological Theory</b>	Brundtland definition	Diversity Grassroots innovation
	Simple feedback model of sustainability	Regional networks
	Complex, dynamic models	Accountability/feedback

sustainability as an overarching concept to which organizations may contribute, but in which other factors, such as population growth, have an equally important role. Shrivastava offers organizational strategies that make the firm a player in different types of ecological and market niches, from least cost producer to new market developer. Egri and Pinfield (1995), in their review of organizational approaches to the environment, suggested that sustainability also requires fitting organizational systems into broader social and ecological systems in such a way that each contributes to sustainability. However, few of these theorists have gone far in reconceptualizing sustainability.

**Ecological views.** In ecology, "organizational sustainability" is a subset of the larger concept, "sustainability," which, in turn, is directly related to the long-term carrying capacity or survival of a system. Although the most recognized and accepted definition of sustainability is that offered by the WCED, this definition has been attacked for advocating two apparently irreconcilable objectives as well as for being too disconnected from the natural ecology and for lacking operational goals and guidelines for action (e.g., see Rees, 1991; Schmidheiny, 1992). Our own reading of ecology leads us to believe that "sustainability" is a concept embedded in a larger theory about how the ecological system and the social system must relate to each other in order to remain intact over long periods of time.

Figure 1 contains a simple model of sustainability. The biosphere represents the earth and encompasses all the elements of both the social and the ecological system. The ecosphere contains sources and sinks, which according to ecologists are the primary linkages between the ecological and the social system. Sources are the energy and natural resources (also referred to as natural capital), which are transferred from the various ecosystems (which make up the whole ecological system) to the economy (a subsystem of the social system). The sinks are the physical components of the natural environment (air, land, and water) for the assimilation of materials and energy, which are transferred from the eco-

**FIGURE 1**  
**Relationship of Ecological and Social Systems**



conomic system back to the ecological system as wastes. Sustainability is achieved when resource extraction from the ecological system occurs within the carrying capacity (or sustainable yield) of the resource base and when waste transfer to the physical components of the ecological system does not exceed the assimilative capacity of the particular ecosystems (Brown, 1994; Daly & Cobb, 1994; Rees, 1991).

More complex models of sustainability exist in the ecology literature. Under the umbrella of the "ecosystem approach," attempts are being made to model the complex interactions between ecological and economic systems. By applying system theory, thermodynamics, cybernetics, and chaos theory, these modeling attempts try to embrace the inherent complexity and unpredictability of the natural world around us (Costanza, Wainger, Folke, & Maler, 1993; Holling, 1978; Kay & Schneider, 1994).

**Current Views on the Role of Organizations**

In organization theory, the method of achieving sustainability is through the process of adaptation. Adaptation can range from very specific responses to switches in general strategy (see Table 1, column 3). The first methods theorized about and applied have been direct responses to environmental pressure for ecological change. Table 2 categorizes the standard responses that can be found in the literature. Each program has specific steps for attaining sustainability. Often these steps were developed within the context or culture of a particular organization, such as total quality environmental management (TQEM) at 3M through their Pollution Prevention Program (3P), or an environmental ethic at The Body Shop, but over time, these programs have been rationalized and adopted by other firms to some degree. The most standardized programs at this point are probably life-cycle analysis, environmental impact assess-

ments, environmental audits, and environmental labeling. According to Williams, Medhurst, and Drew (1993: 137–140), there are likely to be four generic responses in the future: (a) environmental audits, the prerequisites for any strategy; (b) technical responses based on the firm's and industry's core technologies; (c) waste management, with waste audits as a means of calculating costs; and (d) product review using consumer input.

"Greening" organization theorists have modified existing models of organizational strategy to include environmental pressures and organizational responses, with the aim of making firms more proactive. More proactive firms are believed to be more sustainable firms. For example, Schmidheiny (1992) has examined ecoefficiency within a strategic framework for the organization. There is also Arthur D. Little's five-phase model for strategic innovation, which moves from clearly defining organizational strategies to creating information and control systems for implementing those programs (Post & Altman, 1992). Similarly, Post and Altman (1992) offered a three-stage "development model of corporate greening" that incorporates some of the implications of strategic change. If organizations are to respond strategically, they require more sweeping changes, including changes in overall strategy and its implementation, changes in both core and peripheral operations associated with the firm's structure, and changes in learning systems, and double-loop learning will become critical to proper adaptation. Companies that are able to push their strategic initiatives deep into the learning systems of corporations and create congruence across the strategic, structural, and learning systems will become more sustainable.

Theorists have also begun to consider "ecological sustainability" in terms that go beyond strategic adaptation of individual firms (Fischer & Schot, 1993). For example, Hunt and Auster's (1990) five-stage continuum model for corporate cultures builds on some notions of strategy as well as culture, but it does not really tap into the deeper culture underlying both the firm and its environment. Shrivastava (1992, 1994) and Throop, Starik, and Rands (1993) advocated the sweeping integration of organizational and ecological principles. The core culture of firms and systems of learning must be based on ecological assumptions concerning nature and reality and the role of humankind. Egri and Pinfield (1995) also argued for a change in "deep culture" or in paradigms as a precursor to systems-level action by organizations.

**Ecological views.** "Reformist" paradigms (Egri & Pinfield, 1995) have some common principles about the role of organizations.<sup>2</sup> Table 1 shows four important ones. First, ecologists believe that organizations as a

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<sup>2</sup> Colby (1990) argued that there are three intermediate paradigms between deep ecology and frontier economics, in which efforts to model sustainability are focused: the eco-development, resource management, and environmental protection paradigms.

**TABLE 2**  
**Recognized Programs and Techniques for Sustainability**

Programs	Sources	Programs	Sources	Programs	Sources
Total quality environmental management	3M	Environmental impact assessment	Most countries	Environmental labeling	German Blue Angel, Canadian Environmental Choice, Green Cross
Life-cycle analysis	EPA; Dutch chemical industry	Environmental audit	Ciba-Geigy, Royal Dutch/Shell Groups, 3M	Responsible care	Chemical industry
Product stewardship	IBM, Noika Data, BMW, Du Pont, McDonald's, and Alcan	Environmental officer	Siemens, IBM, Ciba-Geigy, Bayer	Environmental codes of conduct	Petroleum and mining industry
Ecoefficiency	Schmidheiny, 1992	Environmental accounting	Unilever, Deutsche Bank	Environmental public relations and marketing	Esprit, Opel, AEG, Johnson Wax, Océ
Pollution prevention and waste-management strategy	3M, Dow chemicals, Proctor & Gamble, The Body Shop, BMW	Environmental and social reporting	Migros; Norsk Hydro	Principles for sustainability	International chamber of commerce
Environmental risk and liability management	Colonia	Environmental information system	IBM, Luthansa, Daimler-Benz	Green industrial architecture	The Body Shop, Sainsbury
Environmental banking and investment	Hypo-Bank, Acorn Ethical Unit Trust; Deutsche Bank	Environmental ethic or philosophy	Siemens, IBM	Environmental awards	UK, Germany



whole must act within the model of sustainability to help achieve some balance between the ecological and the social system (Daly & Cobb, 1994). Sustainability for society in ecological terms must be adopted as a goal by all firms, but it is only the aggregate mix of organizations that must be sustainable. In other words, organizations may play different roles in creating sustainability than they do in the adoption of sustainability as a societal goal. This allows for a diversity of functions and actions on the part of firms in finding an equilibrium for extracting, processing, and recycling resources.

Second, ecologists tend to believe in grassroots innovation; that is, individuals, particular organizations, and sectors—generally in this order—must pioneer ecological innovation (Bramwell, 1989). The “state” is certainly not the place for creating new practices, just for codifying existing ones. For instance, organic farming was started by entrepreneurial individuals on small-size farms as experiments. They used different crop mixes and growing cycles, as well as different types of marketing principles, from bartering to slick, new-age advertising. As the number of organic farms grew and the techniques became more established, the public began to recognize the existence of a sector or niche called “organic” (Egri, 1993).<sup>3</sup>

Third, ecologists tend to believe in bioregional action for organizations. If individuals, firms, and sectors are the source of action, then it follows that the location of that action is going to be around the communities in which these actors are embedded. Whatever innovations regarding sustainability are made by these actors will be tied directly to these local environments. Because of this dependence on the local environment, new practices for sustainability must be nurtured at this level. This level typically extends beyond the organization or community to the region, because many biophysical processes are rarely bounded by one corporation or settlement. Furthermore, a principle of ecology is that it is nearly impossible to transfer all of the successful biophysical processes from one community to another without changes (Odum, 1993). This means that not only do processes have to be developed and nurtured regionally, but also different regions must be responsible for setting up their own areas where sustainable practices can develop.

Finally, ecologists tend to believe in accountability for all actors, but especially organizations. The model of sustainability in Figure 1 makes it clear that all processes affect one another, and the systems only function properly when a variety of negative and positive feedback loops are in

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<sup>3</sup> Nevertheless, ecologists do not place their faith in the ability of organizations alone to create sustainability: “If every company on the planet would adopt the best environmental practices of the leading companies, the world would still be moving towards sure degradation and collapse. So if the world’s most intelligent managers cannot model a sustainable world, then environmentalism as currently practised by business is only part of an overall solution. It is not a management problem, but a design problem” (Hawken, 1993: 55).

place (Odum, 1993). The problem is that these effects through feedback may take a long time or may be indirect, taking place in specific regions of the world before they are felt elsewhere. Individual organizations are relatively short-lived, localized creations compared to many of the processes in the biosphere. Consequently, they may not feel the impact of their actions in any direct sense or immediate time frame. However, as the source of much resource extraction, processing, and consumption, organizations are responsible for most of the depletion of natural capital in the model. Therefore, organizations must be made accountable for where and in what they invest.

### **Enter Institutional Theory**

Our review of organization theory and ecology using Table 1 makes it clear that organization theory and natural ecology have overlapping, but different views of sustainability and how organizations can contribute to it. Ecologists suggest that individual organizations cannot become sustainable: Individual organizations simply contribute to the large system in which sustainability may or may not be achieved. Ecologists also suggest that individual organizations do not contribute to sustainability as much as regional networks of organizations or local industries that target areas of the ecosystem for improvements. Therefore, adding more complex models of sustainability and considering regional organization networks, accountability, and grassroots innovation would make organization theory more complete in its explanation of sustainability.

Some organization theorists, like Egri and Pinfield (1995), point to systems theory and organization culture as two macro-organization theories with enough scope to include these additional ecological principles. However, our current economic system is not actually sustainable; that is, these theories would not be good at describing a sustainable system, because such a system is a goal or normative outcome rather than a reflection of current reality. Therefore, theories that focus on the process by which organizations contribute to sustainability and by which society becomes more sustainable are more useful for describing the current state of the world. Furthermore, theories that make some separation between the process of achieving sustainability versus the content or actual details of what sustainability is deemed to be by society will avoid some of the accusations that we are building prescriptive models.

Institutional theorists are interested in the process by which items become institutionalized and the role of institutions in society (Scott, 1987). Because of its focus on how items become rule-like or become social facts, institutional theory is useful for understanding how definitions of ecological sustainability are generated and accepted both inside and out of organizations (Meyer & Rowan, 1977; Zucker, 1987). Because it focuses on the process by which these items become embedded in institutions or accepted practice, institutional theory is useful for describing how organization activities may, over time, come to contribute to sustainability.

Moreover, because it emphasizes the final acceptance or legitimation of some social practice or social goal, institutional theory can be used to back-cast from such an outcome to current practice in order for people to consider what might be done to encourage this institutionalization process (Scott & Meyer, 1994). Studies of other successful institutionalization attempts shed some light on how this process might be shaped. This goes beyond simple description toward policy.

Institutionalized items can also become "deinstitutionalized" (Oliver, 1992). The structure or form may disappear, but more important, the meaning and organization of value it offered may become extinct or transformed into qualitatively different items. Because deinstitutionalization is part of institutional theory, the theory can be used to hypothesize about and help detect the breakdown and replacement of current organizational activities and even paradigms. Existing studies of other deinstitutionalization processes may offer insights into mechanisms that may hasten such a breakdown, if, once again, a person wished to move from explanation to policy.

Given the possibilities offered by institutional theory, our next step is to extend it to the study of ecologically sustainable organizations. We think the clearest way to extend institutional theory and to demonstrate the implications for research is by offering testable hypotheses and relevant research areas about the process of institutionalization and about institutions that might support ecologically sustainable organizations. In addition to looking at the process of institutionalization, we offer hypotheses about the content of what is institutionalized, that is, hypotheses about what "organizational sustainability" might mean and what practices and institutions encourage it. Some of the hypotheses we develop are similar to those found when using institutional theory in any other area of study; other hypotheses, however, are very specific to the sustainability question, for we try to go beyond merely applying institutional theory. Following this presentation, we will further discuss the implications of extending institutional theory to ecological sustainability; in particular, we consider what areas of institutional theory might be modified and avenues for future research.

### EXTENDING INSTITUTIONAL THEORY TO THE SUSTAINABILITY QUESTION

The two types of phenomena in which institutional theorists are interested—the process by which items become institutionalized and the role of institutions in society—are quite broad and have some overlap. Scott (1987) broke these phenomena or domains down for study further into (a) institutionalization as a process of instilling value, (b) institutionalization as a process of creating reality, (c) institutions as classes of distinct elements within systems, and (d) institutions as social systems. The first two categories are used to consider the construction of meaning or

development of new rules or practices that aid understanding and support the belief system; the second two categories are used to consider the creation of fields or institutions and the diffusion and enforcement of practices.

Although the categories in each set cohere to some degree and the two sets seem to follow in some natural progression (e.g., from the less to the more observable), all four categories are quite interrelated; in fact, the second category (the construction of reality or new paradigms), though it occurs simultaneously with all these processes, might even be considered the outcome of all institutionalization processes or institution building. Therefore, we discuss the construction of new realities or paradigms after the other three categories.

### **The Process of Instilling Value into "Organizational Sustainability"**

Institutionalists view the term *organizational sustainability* as a socially constructed term. The meaning of any socially constructed term is refined over time through a series of progressive steps directly dependent on human actors, particularly on their discourse and their politics. People begin with some conscious recognition of the idea in some part of their everyday life. Then there is objectification of the idea through the use of language—labeling some items as "sustainable" and others as "unsustainable." A scheme of typifications is thus built up, designating relationships among principles in the concept and among subconcepts and linguistic items. The scheme is directed from concrete and directly relevant ideas to particular world experiences to highly abstract ideas that encompass several domains of meaning. In other words, the greater the association between the concept of "sustainability" and essential daily activities of organizations, the more recognized, widespread, and legitimate the concept becomes among them.

Acceptance of the scheme as a means of classifying and categorizing reality leads to some institutionalization of the ideas and practices associated with its components. At the very least, the analytic designation of processes and terms in a scheme contributes to the further rationalization of the set of life experiences associated with the concept; that is, using a detailed definition of a term and all its subcomponents at least serves to distill and organize the complex set of events surrounding the relationship of the social and ecological systems (e.g., see Freidson's, 1986, work on the evolution of professions). If through the scheme theorists are also able to tap other realms of meaning, such as religious or moral aspects, then it becomes symbolic and mythic, further enhancing its meaning and power to guide action (Berger & Luckman, 1967; Habermas, 1970; Meyer & Rowan, 1977; Schutz & Wagner, 1970). Therefore, the more typified and rationalized the concept of "sustainability" becomes, the greater the likelihood that some of its components will be accepted and legitimated by action in society, including business organizations.

**Sources of meaning.** The meaning or value of sustainability as a term comes from two main sources. First, human beings have a strong need to construct their relationship with the surrounding world in partially biological and ecological terms (Berger & Luckman, 1967; Kluckhohn & Stadbeck, 1961; Schein, 1987); therefore, concepts like "sustainability," which helps humans to bridge between the ecological and the social system, become meaningful or valued. Second, "sustainability" is currently becoming associated, to varying degrees, with "modernity" (Meyer & Scott, 1983). Members of modern nations look not only for economic development, but also for balanced social development within local ecosystems. Research by Meyer and Scott (1983) has shown that once a nation accepts the principles of modernity, as reflected in symbols such as the nation's constitution, it is also likely to adopt other modernizing elements, such as universalistic education systems.

The United Nations, the G-7, the European Economic Union, and other supranational bodies have endorsed sustainability to some degree (Brown, 1994; Keating, 1973; WCED, 1987). At present, the most accepted, legitimate definition is the one previously quoted from the Brundtland Commission. It suggests the following:

*Hypothesis 1: The greater the association between "sustainability" and "modernity" that is made by the state, the more widespread the acceptance of the concept by organizations within the country.*

Organizational research is being done on a cross-national basis to examine whether firms accept and understand the principles of sustainability (Ernst & Young, 1994; Kolluru, 1994; Schmidheiny, 1992). Different surveys of large firms in developed countries (Kolluru, 1994) have shown that sustainability is understood in operational terms, that is, in terms of practices that the firm can adopt to promote long-range sustainability. For instance, environmental audits are done by many firms (at least in some of their subsidiaries) and are expected to contribute to developing strategies. However, if a person examined at least one recent, cross-national survey of large companies (Ernst & Young, 1994), he or she would find that a *deeper understanding* or valuation of sustainability is lacking. Sustainability is adopted for compliance reasons; it is interpreted legalistically or in terms of market incentives; it is not interpreted as often as a social good; and it is certainly not interpreted as a critical means of understanding the biological world in which we live.

During the 1980s, the term *Gaia* was proposed by ecologists as an alternative concept of sustainability, one that helped to bridge between ecological and social systems and, thus, was believed to involve a deeper understanding. The Gaia hypothesis stated that the global biosphere can be viewed as one large, self-regulating organism, which exists in a dynamic steady state through the feedback mechanisms inherent in natural processes (Lovelock, 1979). Gaia refers to a distant, more idyllic past be-

cause of its classical reference, and it also is based on a very modern phenomenon—one's ability to see the whole planet from space. The Gaia hypothesis signals two avenues for further development, first, delineating the complex systems involved in maintaining the biosphere, and, second, determining how a dynamic steady state is maintained over long periods of time (Lovelock, 1979). Gaia has a richer set of meanings than the Brundtland definition of sustainability because it ties in directly with the ecological system and puts both the ecological and social systems within the biosphere (Figure 1). Those organizations that subscribe to this concept will, by definition, be more innovating and progressive organizations.

*Hypothesis 2: The greater the association between "sustainability" and "Gaia" (or its related concepts), the deeper the meaning and valuation of "sustainability" within an organization.*

The two hypotheses (1 & 2) suggest a fundamental paradox about meaning: The more widespread it becomes, the shallower or less recognizable the term's or concept's value may be, and the stronger the association of a term with basic life processes, the deeper but less transferable its meaning. Fortunately, the present discourse around sustainability is both rich and complex. Some of the dialogue is indicated by the terms, subconcepts, and practices listed in Table 2. In a sense, Table 2 represents the typification schemes that were produced around the meaning of sustainability. As such, the items are a catalogue of concepts and practices that organization theorists could take into consideration in research on sustainability (Jennings, Zandbergen, & Clark, In press). Each of these items or practices could be traced from development to diffusion, and we could then try to measure its impact on ecological sustainability. For instance, during the 1990s, the term *greening* has appeared more often in the North American popular press. Its roots lie partly in the development of Green Party politics in Europe (Bramwell, 1989), whose impact has been felt in other countries involved in the Rio Conference. *Greening* covers any active attempt to improve sustainability in any process, from recycling in households to the adoption of environmental philosophies in corporations (Doern, 1993). In other words, this term has produced a detailed scheme of typification.

### **Distinctive Institutional Elements in Systems for Sustainability**

A critical juncture in the institutionalization process is just after the concept and its components have been elaborated by a group of actors and some guidelines or practices have been developed, but before the concept or practices have gained widespread acceptance or legitimacy. Acceptance of these practices will depend on (a) the construction of societal and organizational fields and (b) the diffusion of the concepts, rules, or practices within them. These fields make up a set of distinctive elements in a larger system and help promote sustainability.

Theorists have conceptualized fields in two different ways: (a) Bourdieu and Wacquant (1992) and Giddens (1984) argued for societal level fields in which the individuals, corporations, and states all participate and help define and extend the meaning of different "capitals" (social, cultural, and material) and (b) Scott and Meyer (1994) and DiMaggio and Powell (1991) have theorized about "organizational fields," which are based on interorganizational relationships that may help compose societal-level fields or "institutions themselves," but may also be what Bourdieu would think of as a subfield (or something involved only partly in the creation of capital, whether cultural or material). The distinction between *societal* and *organizational* fields is analogous to the distinction between the *general* and the *task* environment in standard organizational design literature (Daft, 1992). Both types of fields are important for organizational action. Each type of field has properties and structures that influence the relationships among organizations within them, which, in turn, have a strong influence on the types of practices that are likely to diffuse among firms.

**Societal fields.** The broader societal fields of Bourdieu and Giddens are characterized by constant turmoil and have no transhistorical laws for predicting what will happen. External sources for the structuration of fields tend to be based on supra-organizational bodies that have the power to designate the actors and activities that comprise a subfield. These actors may then unilaterally, or in conjunction with subfield members, define standards and set up structures to process for monitoring activities. Internal sources of structuration may be through the struggle of participants to define the meaning of some processes or outcomes. The struggle to define new approaches may lead to the formation of collective movements that cross these institutional boundaries, breaking outside of defined avenues for interaction, like the workplace, home, or family.

Structure tends to develop within societal fields. Great, enduring asymmetry in resources or types of "capital" (power) tend to exist across vertical levels within societal fields, which can create subfields beneath subfields—or, in other words, hierarchy. Nevertheless, there are also similarities among resources or capital across vertical levels, which tend to compress areas of the field and make horizontal relations important. If subfields are highly distinctive for structural (or technical) reasons, then there is great "specialization" or "heterogeneity" in the field; however, if subfields are not very distinctive structurally or technically, the field becomes "nonspecialized" or "homogeneous." Although structure may develop in fields, structure does not develop across them, primarily because there is no "field of fields" (Bourdieu & Wacquant, 1992). At most, a person can speak of some overlap among fields at any given moment in time.

Currently, societal fields around sustainable values or practices are shaped by at least three forces: (a) the nation state, (b) social movements, and (c) innovations among sets of organizations, such as industries. Of these three, the state's impact is the greatest: The state has become a

large institution in most societies and it has pervasive effects on all aspects of life in industrialized countries. The state has an impact through its framework for governance, which sets up different types of organizations involved in sustainability within societal fields. In addition, the state has an impact through the type of enforcement or sanctions it uses, such as litigious or penal styles of enforcement versus consensual or conciliatory styles.

In a societal field, but not necessarily within the state itself, the framework for governance is either market based, command and control, or a mixture of the two (Huestis, 1993; Scott, 1994). Market-based incentives include fees for effluent discharges, tradable emission permits, and the creation of market opportunities for environmentally friendly products. In contrast, governance by command and control relies on legislation, policy, and sanctions to control the activities of organizations. The impact of a command-and-control framework among organizations is typically the creation of some hierarchy or vertical structure in the field and among organizations within it; in contrast, the impact of a market-driven framework is horizontal differentiation within the field, with some specialization developing among subgroups of organizations (Bourdieu & Wacquant, 1992; Huestis, 1993; Meyer & Scott, 1983).

For instance, the use of legislation, policy, and sanctions in a command-and-control framework, such as that found in the United States, has encouraged the development of layers of consulting agencies and scientific organizations outside of the federal or state government's formal structure. These organizations add to the interpretation of legislation and the application of standards in different types of natural environments. In contrast, the use of market-based approaches, such as those to develop alternative energy sources, has encouraged a great deal of specialization and the development of niche players, in this case, solar energy, wind turbine energy, gasohol, and geothermal power.

In contrast to the state movement, social movements and innovating organizations tend to create less differentiation in a societal field. A field's structures developing out of the interactions of organizations involved in the movements or the diffusion of innovation tend to be emergent (Burt, 1980; Rogers, 1983; Simmel, 1908). Generally, the stability that a societal field develops is built on network characteristics. Some typical network characteristics include the existence of a center and a periphery, the formation of cliques, differences in the type and amount of resource and information flows across cliques compared to the flow within them, and, eventually, some stratification (Burt, 1980; Rogers, 1983).

For example, Egri (1993) has studied the development of organic farming in British Columbia, Canada. The original organic farms developed as independent entities using very diverse practices and different types of crops. But as the market for organic produce emerged, farmers organized around supplying the market and guaranteeing the quality of produce. Larger organic farms became noticeable, and they were even considered



by some local, organic farmers to have lost their original focus as alternative organizations. The farmers also formed farm associations, and between these associations and the Provincial Government of BC, they negotiated regulations concerning what produce could be defined as "organic." Interestingly, the ideology behind the organic farming movement emphasized collectivism and nongovernment interference, yet the result of the process was a more hierarchical network with active government involvement. Therefore, we set forth the following hypothesis:

*Hypothesis 3: In a societal field, as networks develop among organizations involved in sustainability, stratification also is likely to develop among the organizations, partly reflecting the power relations within the societal field.*

**Organizational fields.** Organizational fields of the type described by Meyer and Scott (1983) or DiMaggio and Powell (1991) are centered around market organizations and work within the boundaries set by societal fields and the state. An *organizational field* is defined as "those organizations that, in the aggregate, constitute a recognized area of institutional life: key suppliers, resources and product customers, regulatory agencies, and other organizations that produce similar services or products" (DiMaggio & Powell, 1991: 64–65). The field is created through a process of structuration, which has four crucial steps: (a) an increase in interaction among organizations, (b) the emergence of sharply defined interorganizational structures of domination and patterns of coalitions, (c) an increased information load with which organizations in the field must contend, and (d) the development of mutual awareness among participants that organizations are involved in common enterprises (DiMaggio, 1991: 277). The resulting fields can be represented by complex, fluctuating network patterns that extend horizontally to positions or actors of similar power, in a similar area, or with some other similarity based on symmetry. This network pattern also extends vertically to positions or persons in dissimilar circumstances based on asymmetries like differences in resources (Day & Georgison, 1994; Meyer & Scott, 1983; Warren, 1967). Unlike societal fields, organizational fields can combine to create larger fields. In part, this is because there is rationalization and modernization in many different nations, which has provided a seedbed for organizational fields to flourish (Scott, Meyer, & Associates, 1994).

Nevertheless, in the case of ecological processes, each organizational field tends to have some grounding in a particular locale; for example, the largest organizations in the field tend to be in the same cities. Take the case of the organizational field for paper recycling by households. The organizational field includes all those involved with recycling or waste management, such as paper producers, paper purchasers, paper recyclers, local governments supporting recycling, and consumers who recycle. This organizational field is not equivalent then to the *population* of all

paper recyclers, but to all the different local communities of organizations that are involved in paper recycling in different biophysical areas (Astley & Fomburn, 1987; Selznick, 1947, 1948). Such communities tend to be centered in particular locales by their interactions, information flows, and awareness, yet they also extend beyond specific locales insofar as they directly involve other nonlocal organizations that act as buyers, suppliers, regulators, or competitors. The most important recycling communities are the largest communities that have developed intricate recycling principles, such as Seattle, Washington.

*Hypothesis 4: An organizational field for a sustainable value or practice tends to be local rather than nonlocal, centering on those communities with organizations most deeply involved in the value or practice.*

As fields grow and proliferate, they become linked, increasing the chance of overall ecological sustainability. The totality of all fields, it might be argued, becomes the "suprafield" for ecological sustainability: This suprafield is undeniably global. This argument implies that the reflex action of many ecologists and organizational practitioners to create small, closed systems around sustainable subfields, although well intentioned, is misguided. The social system has already become global, and only by proceeding rapidly to interlocking subfields of sustainable practices will progress be made toward maintaining the carrying and assimilative capacity of the ecological systems (see Figure 1).

*Hypothesis 5: As different organizational and societal fields related to sustainability grow and become linked at the local, regional, and global levels, the chance of achieving ecological sustainability increases.*

**Diffusion of values and practices for sustainability.** The primary importance of societal and organizational fields is that they connect micro- and macroprocesses in a system and that they allow for the diffusion of innovations across different units. Diffusion occurs within fields for classic reasons, such as interaction, dependence, and similarity among subunits. Diffusion also may occur because fields allow for identification or "theorization" of such similarities among the types of units at risk, for example, the underlying principles relating those units, such as modernity (Strang & Meyer, 1994). Once these units or actors "at risk" of adopting an innovation are identified, then the units may act according to the principles of isomorphism set forth by DiMaggio and Powell (1991); that is, units may adopt practices because of coercive pressure, normative influence, or mimicry.

In the case of ecology, the main reason for adopting practices within both societal and organizational fields has been direct or indirect coercion—the need to comply with standards set by the state (Ernst & Young, 1994; Kolluru, 1994). Whether coercion is direct or indirect depends on the type of enforcement under either the market- or rule-based frame-

works used by the state in the societal field. Enforcement can be consensual, conciliatory, and consultative (involving bargaining and negotiation) or it can be sanction oriented (characterized by a litigious or penal style of enforcement) (Huestis, 1993). Many authors have discussed the pros and cons of regulatory approaches, market-based incentives, and voluntary or partnership agreements (Bernstein, 1993; Hopfenbeck, 1992; Hull & St-Pierre, 1990; Kolluru, 1994). Regulators and scholars recognize that the historical precedents for land-ownership and land-use policy in a country tend to drive the current regulatory framework in the field, but at this point there is no consensus as to the most effective or efficient way to achieve compliance in the case of environmental laws, rules, or incentives. Institutional theorists suggest that stronger sanctioning power of state agencies will result in better compliance with environmental legislation by organizations (Powell & DiMaggio, 1991; Scott, Meyer, & Associates, 1994; Zucker, 1987). Nevertheless, such enforcement leaves few incentives to adapt mandated activities in the way that would be best for the local firm and the environment (Rolfe & Nowlan, 1993).

For instance, the U.S. environmental legislative framework has been typical of the sanctioning method of enforcement within a very centralized command-and-control framework. In the United States, the federal government has a range of sanctions that it can use against corporations and individuals to encourage them to comply with environmental laws. These sanctions come through the top-down system set up by the federal government. The Environmental Protection Agency (EPA) was established in 1970 as the independent agency responsible for establishing and enforcing the environmental standards and for maintaining consistency among national environmental goals.<sup>4</sup> The National Environmental Policy Act (NEPA) has required federal agencies to assess the environmental impacts of their programs and actions and includes the requirements for environmental impact studies. In addition, local states have only been free to legislate new standards and means of compliance within the established national norms (Cameron, 1993; McLoughlin & Bellinger, 1993).

In contrast, the Canadian framework has been dominated by a command-and-control framework with different layers of administration, each employing a conciliatory, consensual, and consultative method of enforcement (Cameron, 1993; Huestis, 1993). This framework in Canada is a strong reflection of Canada's general approach to public policy in land-use and environmental issues, which, increasingly, over the last two decades has evolved around participatory, consensus-based decision

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<sup>4</sup> Prior to 1970, environmental laws in the United States basically consisted of common-law tort principles supplemented by a few rudimentary federal and state legislative provisions. This changed in 1970 with the passage by Congress of the Clean Air Act, which was quickly followed by other regulatory statutes targeting water pollution, hazardous waste, and toxic substances.

<sup>5</sup> Specific examples of such approaches are the national, provincial, and regional

making.<sup>5</sup> However, given the apparent success of coercive pressure, the interest in and use of tightly regulated standards is growing. This does not mean that compliance itself necessarily involves direct coercion or command; it simply means that actors within the societal field are forced by the state to use the same means of negotiating environmental outcomes, even participatory ones (Scott, Meyer, & Associates, 1994).

*Hypothesis 6: The more coercive the pressure for diffusion, the more likely that the form or structure of the practice will be adopted by organizations in a field.*

In institutional theory the elements diffused—practices or structures or activities—tend to lose their original value or meaning if coercive forces and rules for compliance are the basis of that diffusion. For instance, current environmental regulation in the United States touches virtually all aspects of daily life and every facet of manufacturing; practically all chemicals must pass federal scrutiny before being released to the market, and attempts are made to control toxic substances from cradle to grave. But the focus of enforcement has been mainly on the control of production inputs, whereas assessment of ecological impacts has usually been at the “end-of-pipe” stage (Meiners & Yandle, 1993: ix). None of the environmental statutes focus directly on the environment, leading analysts to note a paradox: “environmental outcomes are more likely a by-product of a gigantic process designed to produce something else” (Meiners & Yandle, 1993: x). In contrast, the negotiated, conciliatory approach to regulatory compliance in Canada contains more ambiguity than in the United States (Jain, 1994). In the face of this ambiguity, normative pressures and mimicry play a larger part in the diffusion of practices. This ambiguity, in turn, allows for more leeway in the interpretation or meaning that is transferred. Environmental impact assessments provide a good example of how different actors in the system negotiate meaning (Cotton & McKinnon, 1993). Nevertheless, ambiguity also can lead to more exploitation and conflict.

*Hypothesis 7: The more coercive the pressure for diffusion, the less likely that its content or meaning will be adopted by organizations in a field.*

Within organizational fields, normative and mimetic forces are much more at work than coercive forces when the coercive pressure of the state is not directly involved. In such cases, the question is: Does normative or mimetic force have more impact on the diffusion of concepts and practices

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Round Tables on the Environment and the Economy, and the consultation processes for new environmental legislation (British Columbia Ministry of Environment, Lands, and Parks [BCMOELP], 1993; British Columbia Round Table on the Environment and Economy [BCRTEE], 1993; National Round Table on the Environment and Economy [NRTEE], 1993). These activities are ongoing and are expected to strongly influence decision making in environmental issues (Canadian Bar Association, 1990; Hughes, Lucas, & Tilleman, II, 1993).

related to sustainability? Surveys of business organizations show that medium- and large-sized business firms adopt a wide range of practices related to sustainability (Ernst & Young, 1994; Jennings, Zandbergen, & Clark, In press), from recycling to environmental management systems to green marketing. Although many of these practices are related to the impact of the state, others appear to be adopted because they give the firm competitive advantage or are considered to be standards in the industry. In other words, if a practice comes to have some recognized value or is believed to be a new industry standard, such as recycling of parts in the auto industry or recycling of printer cartridges in business offices, the organization will simply mimic similar organizations in the industry rather than questioning the practice's value.

For instance, a great deal of mimicry is involved in environmental marketing programs. Organizations have rushed to put green labels on their products without doing marketing studies of the impact, simply to keep up with the "Joneses." Certainly, there is not a strong technical basis for deeming that these products contribute to sustainability, because the efficacy of many of these "green products" has been challenged. The ONE-L network has recently debated the environmental soundness of The Body Shop products, which implies that all similar cosmetic lines that have adopted a "green approach" (e.g., Rialto) have an even weaker technical basis for their marketing approaches.

*Hypothesis 8: Mimicry is more likely than normative pressure to influence organizations in a field to adopt concepts and practices related to ecological sustainability.*

Nevertheless, the normative pressure does have some influence on the possibility of adoption within an industry. For example, the chemical industry in North America has adopted "sustainability" in its mission statements and worked in unison to develop particular programs for sustainability (e.g., responsible care). In fact, it is difficult to determine where beliefs in competitive advantage, which drive mimicry, end, and where the need to conform to industry standards in order to keep one's business, starts. Whenever an organization is a member of an association, both pressures appear to be at work.

### **Institutions as Distinct Spheres**

The third area for extending institutional theory to sustainability is "institutions as distinct spheres" (Scott, 1987). Institutions are "symbolic and behavioral systems containing representational, constitutive, and normative rules together with regulatory mechanisms that define a common meaning system and give rise to distinctive actors and action routines" (Scott, 1994: 86). They are relatively enduring systems, and they tend to be associated with varying functional arenas within society (e.g.,

religion, work, the family, or politics). They may be central actors in the institutionalization process, as we have just seen in the case of the "state," or they can be the result of the institutionalization processes discussed previously in the section on instilling value.

Institutions form for more complex reasons than the simple values or practices that they may embody. Unlike values or practices, major institutions often fill some large functional need in a society; they are also created for political reasons (Bourdieu & Wacquant, 1992; Jepperson, 1991). The existence of these two very different sources for institutions creates a constant struggle in and around institutions over their use. Politics among different interest groups typically decides constitutive rules like who is defined as a legitimate representative of a corporation—the board of directors, the CEO, or top managers? The groups whose interests underlie these politics also transfer their normative standards into the institution. For instance, the EPA as an agency was strongly influenced by the need for high scientific standards held by many of the policy makers and researchers promoting the original idea; currently, the normative standards of the EPA may be more influenced by the need for due process, a reflection of the legal background of many of its supporters.

**Rules in institutions.** Because politics and the functional needs of a society both affect the types of rules embedded in institutions, there may be a greater distance between the constitutive and normative rules of the institution and the natural (ecological) context in which the first actors developed these rules. Unlike paradigms and values, the naturalistic base of the bundle of rules defining an institution may be quite difficult to discern. Even though we believe all institutions have rules associated with how the institution relates to the natural environment or ecological system, these rules may not form the fundamental bundle of representational, constitutive, or normative rules for the institution. For instance, a central institution of finance in the world polity, such as the World Bank, has a charter that addresses global development, but the bank's operating rules are not based on enforcing ecologically sound practices, like ecological audits of all investments (Daly & Cobb, 1994).

Nevertheless, there are many specific institutions whose representational, constitutive, or normative rules are directly associated with the connections between the social and the ecological system. The most obvious institutions of this type are organizations like the EPA or Greenpeace. These organizations were built because an organizational field had already formed, allowing their existence. The field conferred some degree of legitimacy and importance on their early activities, making the organizations more than just agencies or nongovernment organizations. However, these institutions went beyond the dictates of the organizational and societal field and developed their own identity. They rebundled some of the constitutive, normative, and regulatory rules in a way that

differed from other organizations in the field. In other words, we think that some institutions exist that are devoted explicitly to creating and interpreting rules that connect the social and ecological systems.

For instance, the path for the existence of Greenpeace was paved by the creation of the Sierra Club and similar institutions. These institutions thrived in conjunction with the U.S. National Forest service and essentially established an organizational field for managing the recreational environment. Greenpeace tried to extend this protected wilderness concept to areas of the sea and to new areas of the land not formally designated as parks. Currently, Greenpeace is not just involved in land or water use disputes, but it is a political organization with its own agenda (Pearce, 1991).

*Hypothesis 9: The more tightly coupled representational, constitutive, and normative rules are to sustainability, the more likely the institution will be perceived as unique and will have an impact on sustainability.*

**The structure of institutions.** Large, legitimated organizations devoted to sustainability, like the EPA or Greenpeace, have elaborate internal structures. The structures are partly defined by constitutive rules, which designate members and their status, and partly by normative rules, which set up internal governance mechanisms. For instance, the original U.S. environment legislation in the 1970s was proposed as a means of rationalizing the relationship between clean air and clean water standards and for providing better enforcement mechanisms. The impact of having closely linked constitutive and normative rules was to create a more tightly coupled set of structures and activities.

However, successive rounds of legislation and the introduction of initiatives like the Superfund program for toxic waste cleanup have complicated the original arrangement, leading to what seems a haphazard array of agency activities and enforcement policies. In Canada, coupling among environmental agencies is even looser. The federal and provincial governments have separate jurisdictions over subject areas as set forth by the Constitution Act, 1867.<sup>6</sup> At the same time, municipalities and other regional or local governments have no constitutional power, but they can be delegated powers from either level of government. The province of Ontario recently passed more comprehensive legislation to help rationalize the relationships between environmental standards, and Brit-

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<sup>6</sup> The federal government has jurisdiction over criminal law, navigation and shipping, fisheries, federal lands, and lands reserved for native peoples, which allows it to pass legislation in matters that touch upon environmental matters (Cotton & McKinnon, 1993). Most environmental law and regulation, however, are carried out within the authority of the provinces. In particular, s.92(13) of the Constitution Act, 1867, gives each province jurisdiction to enact laws respecting property and civil rights in the province. Under this power, a province may regulate land use and most aspects of mining, manufacturing, and other business activity, including the regulation of emissions that could pollute the environment.

ish Columbia is in the process of creating new legislation for the same reason, but within its own interpretation. The effect of this loose coupling seems to be lower compliance rates in Canada versus the United States (e.g, see Huestis, 1993).

*Hypothesis 10: The more tightly coupled an institution's activities and structures concerning sustainability, the more likely the institution will be perceived as unique and have an impact on sustainability.*

Nevertheless, institutions that must continue to function in the societal field of capital (the economic sphere) as well as in an ecological sphere find it very difficult to tightly couple their daily activities with sustainability. First of all, they do not have as many representational, constitutive, or normative rules associated with sustainability. This means there is not a very direct relationship between their activities in the social system and their effects in terms of human capital and waste on the ecosystem (see Figure 1). For instance, the world's largest manufacturers and biggest banks absorb and cast off workers without consideration of the impact on the human habitats created by those workers; they also try to minimize the direct linkages between their economic activities and wastes as a by-product. In addition, because these institutions straddle two or more societal fields at once, they must employ strategies that are in keeping with the demands of each field. If these institutions internalized all activities of the social and ecological systems, they would succeed ecologically but fail economically.

Finally, even if there were a large number of institutions with tightly coupled *rules* and *structures* related to sustainability, that number only would not be sufficient to create sustainability. Sustainability requires at least the culmination of all three processes discussed thus far: instilling values around that term, constructing societal and organizational fields, in which practices for sustainability can be diffused; and building more and more institutions that have sustainability as part of their constitutive, normative, and regulative rules. This culmination may begin to shift the existing paradigm that supports sustainability.

### **Constructing Paradigms that Support Organizational Sustainability**

Every society and every organization within it relies on some belief system or "paradigm" that guides daily understanding and action. As in the process of instilling value in individual items, these belief systems and paradigms are developed out of the need for human actors to make sense of their worlds, especially to understand the cataclysmic events that disrupt the daily routines. This need to make sense drives the objectification and rationalization process (Berger & Luckman, 1967; Weick, 1969). Actors develop habits, routines, and rules that allow them to handle these small and large events. When the habits, routines, and rules coalesce and become assumptions, they form a new belief system or paradigm in society.



Because concepts, practices, and institutions only have their full effect if they are made part of a larger belief system or paradigm, it is important to understand which paradigms might support the concepts, practices, and institutions for "ecological sustainability" and how such paradigms are constructed. Ecologists and organization culture theorists tend to believe that each society has some underlying paradigm that speaks directly to the relationship between the social and the natural world (Burns & Stalker, 1968; Burrell & Morgan, 1979; Colby, 1990; Schein, 1987). Within the Western world, people who subscribe to notions of paradigms believe that society relies on "expansionist" (Colby, 1990), "paternalistic" (French, 1985), "warrior-culture" (Eisler, 1987), or "dominant-social-paradigm" (Dunlap, 1980) frameworks. Standing in opposition to these paradigms are the "ecological," "maternalistic," "magician culture," and "new environmental" paradigms.

Researchers have measured these paradigms by observing how society's members perceive and value the natural environment. For instance, surveys of values have been used to construct scales for whether respondents believe more strongly in the "dominant social paradigm" (DSP) or the "new environmental paradigm" (NEP) (Dunlap, 1980; Dunlap & Van Liere, 1978; Shetzer, Stackman, & Moore, 1993). Because of the important role that organizations play in constructing paradigms (Egri & Frost, 1994; Eisler, 1987; Frost & Egri, 1991; Morgan, 1980), these theorists also believe that measures of the organization's culture or belief system will detect the existence of one paradigm versus the other.

*Hypothesis 11: The greater the proportion of organizations in society that are devoted to sustainability, the more likely a new paradigm in society for sustainability is being developed.*

**Building new paradigms.** The process of constructing a new paradigm and of replacing an existing paradigm is complex. Some institutional theorists who have examined belief systems (Selznick, 1947, 1948; Thomas & Meyer, 1984) maintain that localized cultures or communities develop belief systems or nascent paradigms, such as new religious sects. The physical and social boundaries to these communities are strong and color any process of development and diffusion. For instance, communities or enclaves like the Mondragon System in Spain and the Monteverde Forest of the Clouds in Costa Rica are isolated and able to develop their own approaches to the relationship of the social and ecological world. The paradigms for sustainability are manifested in these enclaves.

However, other institutionalists (Meyer & Scott, 1983; Scott, Meyer, & Associates, 1994) believe that paradigms or belief systems evolve out of a more widespread, cumulative process that involves instilling values, diffusing practices, and building institutions. Modernization is an example of such a process. We maintain an intermediate position: Enclaves must exist so that the deeper values of the paradigm can be articulated and

preserved, but only the spread of these values as part of a larger process similar to modernization or rationalization will allow for the shift of a paradigm. Furthermore, this process will not have an easily understood path, partly because at the end of the process there will be a discrete, nonlinear shift to a new paradigm. Such shifts are often violent or revolutionary (Meyer & Rowan, 1977; Meyer & Scott, 1983).

*Hypothesis 12: The more enclaves of organizations devoted to sustainable values and practices, the more likely a society will be able to shift to a new paradigm for sustainability.*

Research on the subject of environmental paradigms has not yet helped researchers to address this hypothesis in much depth. Logically, it would seem that the proliferation of different enclaves devoted to sustainability would precede the spread of values, practices, and institutions throughout society. Empirically, researchers would be required to examine the number of enclaves devoted to sustainability (e.g., cooperatives for sustainability, alternative natural parks) versus the proportion of organizations and institutions in the mainstream and practices in the mainstream devoted to the issue. Then researchers would measure public belief about sustainability using pretested DSP/NEP instruments.

Deinstitutionalization is also a very important part of shifting to new paradigms. The fundamental assumptions of existing paradigms must be challenged by crises before new paradigms can be adopted (Burns & Stalker, 1968; Burrell & Morgan, 1979; Kuhn, 1970; Oliver, 1991). The crises in the Western world that have begun to challenge the expansionist paradigm include (a) the energy crisis, which has questioned the "limitless resource frontiers" assumption; (b) Three Mile Island, Chernobyl, and other nuclear accidents, which have questioned the "technology as the solution" assumption (Perrow, 1984); and (c) spills like the Exxon Valdez and disasters in the chemical industry, like Bhopal (Dembo, Moorehouse, & Wykle, 1990), which have questioned the ability of human actors to police themselves within the current system. Additionally, global ecological threats such as the depletion of the ozone layer and the greenhouse effect have urged researchers to question ecological crises as local problems that can be treated simply as externalities.

As in the construction of paradigms, organizations play a significant role in their destruction. Organizations are often involved in crises (or the cause of crises) concerning a paradigm. Clear examples of areas in which crises have undermined the activities of a great number of organizations are nuclear energy and ozone-depleting substances. Research on nuclear energy (Shrivastava, 1995) has shown that the strong belief system around the efficacy of nuclear power that existed in the 1950s and early 1960s in many advanced countries has been replaced by equally strong beliefs in the danger of nuclear power. Ecological crises like Three Mile Island undermined those organizations directly involved in the disasters and also caused the withdrawal of the government's legitimacy from numer-

ous nuclear projects (Perrow, 1984). The depth of the change is apparent because even in the face of the oil embargo of the 1970s, rather than returning to nuclear power as a source of energy, the government and private organizations sought many other, alternative sources of power. In the case of ozone-depleting substances, the discovery of the harmful effects of Chlorofluorocarbons (CFCs) on the protective stratospheric ozone layer in the 1980s resulted in a global campaign to eliminate their production and use, endorsed in the Montreal Protocol. The crises in the expansionist paradigm mentioned in the prior paragraph threaten all the organizations working within that framework. Therefore, we offer the following hypotheses:

*Hypothesis 13: Ecological crises associated with an organization's activity undermine not only the legitimacy of that organization's activity, but also the activities of all similar organizations and the dominant social paradigm itself.*

*Hypothesis 14: Each crisis will give rise to new sets of organizational actors who begin to promote alternative paradigms.*

## MODIFICATIONS AND FUTURE RESEARCH

Our main objective in this article has been to convince the reader that institutional theory has some value for helping us understand how sustainability is defined and how practices based on sustainability are generated and adopted across organizations. Our secondary objective is to offer possible modifications to institutional theory suggested by extending it to ecological sustainability.<sup>7</sup> We also wish to discuss some avenues for future research, particularly the work in which we are currently engaged. Some of this work will be mentioned under areas for modification, because we have already gained some insights into how to overcome problems that have arisen while extending institutional theory.

### Areas for Modification

Several areas of modification became apparent to us as we tried to apply and extend institutional theory. First, we found that forming and testing hypotheses was made difficult because the units of analysis in each set of theories differed fundamentally. Next, when we were assessing values and, later, paradigms, it became apparent that the content of both, according to institutional theorists, did not automatically entail a

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<sup>7</sup> Of course, even if institutional theory incorporates some of these modifications based on ecology, the theory is still unlikely to overcome certain drawbacks. Because institutional theory is highly descriptive and historically oriented, many public policy analysts may not be as interested in its models and findings as they would be in approaches based on rational choice models.

naturalistic component. Similarly, organizational fields and networks for the diffusion of concepts lacked a spatial character, particularly one associated with ecosystems. An additional problem associated with the diffusion process as envisioned in institutional theory was its heavy reliance on the principle of isomorphism, which seemed to contrast with the reliance on ecosystem diversity in ecological theory. When we arrived at the section on paradigm construction and replacement, we commented on two areas for clarification: how paradigms relate to the other three areas of institutional study and whether paradigm construction is cumulative and paradigm replacement gradual. These considerations raise an additional concern about sources for change in institutional theory; in ecology, there is a large role for individual interpretation and innovation (the role of an individual actor), which institutional theorists may need to incorporate to some extent.

**Units of analysis in two different theories.** Institutional theory focuses on items that can become institutionalized (e.g., values, practices, and rules), on institutions, and on belief systems. The units of analysis cross all levels, from individual to group to organization to nation-state. Ecological theory focuses on ecosystems, from local ecosystems, such as watersheds, to global ecosystems. These ecosystems are nested and interrelated, and local ecosystems are always interacting with and affecting nonlocal ones. In terms of Figure 1, these differences in units of analysis are because one theory is about the sociosphere and the other is primarily about the ecosphere, yet the hypotheses must connect the two theories and test them according to similar units of analysis.

There is no neat, simple solution to this problem. We have learned ways to approach the dilemma through our current work with ecologists and other social scientists in a large project of modeling ecosystem health according to both its natural and social determinants. As a partial solution, project members have tried to recognize the boundaries of their units, yet tie them together by picking small units that mostly overlap. For instance, there are some social communities that live within one watershed subsystem, making it possible to study their impact more clearly. An opposite strategy is used by at least one of the project's teams: the study of the planet as an ecosystem combined with the study of the impact of similar subregions in two different nation-states (Rees & Wackernagel, *In press*). Although either approach could be used by institutionalists, the second strategy suggests that institutional theorists should try to take a cross-national approach whenever the ecosystem of interest might vary by country or extend outside of one nation. Furthermore, many of the most interesting hypotheses about societal fields and state involvement are cross-national by nature, meaning the ecosystem problems to be studied should be relatively large and require state-level action.

**Natural constraints on sense making and paradigm construction.** In spite of our discussion of the importance of the natural world for sense making and paradigms, current institutional theory does not focus much

upon the constraints imposed by the physical or natural world on the construction of reality or of instilling value. The theory has its roots in philosophies like phenomenology, which recognize the role of crises in affecting the relationship of human beings to nature, as filtered through the socially constructed lifeworld (Berger & Luckman, 1967; Schutz, 1970). However, current theory (e.g., Powell & DiMaggio, 1991; Scott, Meyer, & Associates, 1994) emphasizes these processes less.

One older, institutional approach could be revived and incorporated more fully into current theory—that of Selznick (1947, 1948). Selznick maintained that institutionalization is the infusion of value beyond the technical bounds, but he noted that technical bounds always function as constraints on meaning. People are not free to call sustainability just anything and, at the same time, hope that the term will have some attachment to the functioning of the ecological system within the biosphere. How these technical bounds work within the innovation process, from objectification to typification to acceptance by the organization of new terms, rules, or practices, needs in-depth study. We have suggested that *sustainability* as a term might be examined by researchers (e.g., see Colby, 1990). Similarly, the development of specific programs, like 3M's Program for Pollution Prevention (3P), would be an interesting study of the combined effects of institutionalization and natural (technical) constraints.

In addition, the work of Selznick and this article both imply that there may always be some technical or natural limit to institutional sectors (Meyer & Scott, 1983). In institutional sectors, actors are not free to associate just any output measure with input or throughput measures in order to satisfy external constituents. For instance, even paper used by universities as a by-product of the publication process, which satisfies the external academy, may eventually become a constraint on the publishing process. Even though current paper production and paper use does not appear to influence the sustainability of universities or outside organizations in any direct way, ecologists believe that paper use in the next century will have to decrease significantly from current rates (particularly as computers have started generating so much extra hardcopy!).

**Regionalized networks.** A great deal of the diffusion in which both institutionalists and ecologists are interested occurs at the interorganizational and community levels of analysis. Institutional theorists often study organizational fields or interorganizational networks, but the networks are not conceptualized in spatial terms. Furthermore, these networks are not viewed as being centered around communities. In part, this tendency can be traced back to the difference in the units of analysis between institutional and ecological theory, but institutional theorists *could* study these localized fields of networks, even if they were not looking at ecological processes—they just tend not to do so.

As an example of how this could be done, we refer to Egri (1993) and some of our research. Egri examined the evolution of organic farming as

a concept and practice in different farming communities. The networks supporting organic farming are regional and centered around large farms or large cooperatives. The impact of connectedness and size on farm productivity—and by extension a farm's ecological by-products—is also measurable. In our own interdisciplinary study of the creation of sub-fields concerning water quality within one region of Canada, the evolution of different sets of regulatory organizations and actual polluting activities are being mapped spatially and over time. The "flows" among network members around particular issues, like water-quality standards, will be studied using survey and interview methodologies. Secondary sources, combined with various measures of aquatic ecosystem degradation, can be used to associate some members with ecological impact.

**Isomorphism and diversity.** The issue of compliance raises an important question: How does one encourage diffusion of similar concepts and practices while simultaneously stimulating innovation across them? Institutional elements in a system and institutional rules increase isomorphism in fields, which means institutional theory may be less useful for understanding diversity of forms or practices within those fields or across them (Carroll & Hannan, 1995), yet the presumption that a diversity of organizations and activities is best for innovation and diversity is a fundamental tenet of ecology (McIntosh, 1985). How, then, can a diversity of approaches to sustainability be preserved while society sorts among these approaches by testing them on sustainability in different societal or organizational fields?

One avenue for encouraging diversity is to incorporate notions of interfield or intersectoral variation into institutional theory and method. We think the development of organizational fields around different communities and around different issues related to sustainability (e.g., waste management) may create some diversity. Different interpretations of sustainability will develop in each field, and the interpretations will be linked to local incentives to modify practices in the way that is best for that region. The existence of a strong state with a consensual approach to local organizational issues, as found in Canada and Sweden, also allows for other forces in the development of fields and the diffusion of practices. Over time, isomorphism may still occur within one field or industry, yet there is still likely to be enough variety to generate new concepts, techniques, and practices.

**The process of paradigm replacement.** The current institutional approach also could benefit from researchers' more active consideration of terms, concepts, and belief systems that are ecologically grounded and how these are replaced. For example, rather than discussing the bureaucratic and legal framework under the capitalist mode of production as the goal of the rationalization process in Western society (Scott, Meyer, & Associates, 1994; Weber, 1968), institutional theorists could make some attempt to consider the relationship of the rational-legal paradigm to

those elaborated in natural ecology. After all, ecologists are equally concerned with the consequences of the encroachment of capitalistic business practices on all aspects of life.

In the case of paradigm replacement, it is clear that deinstitutionalization can occur partly as a result of crises in major organizations in the field, but it also can happen for other social, political, and functional reasons (Oliver, 1992). Crises undermine faith in limitless frontiers, technological solutions, and human intention (Perrow, 1984). Therefore, deinstitutionalization of current economic practices must be studied in the context of broader processes of deinstitutionalization if researchers and practitioners are to understand how these processes undermine current paradigms. One context often missing in studies is that of the ecological ramifications of the deinstitutionalization process, especially in cases when deinstitutionalization does not appear to have any direct effects. For instance, the change from large, bureaucratic organizations to smaller, decentralized ad hoc organizations during the last 30 years may appear to be a strategic design issue, but it also eventually may have an influence on the coordination of environmental policy across different organizational subunits and different geographic locales.

Finally, the process of paradigm replacement implied by institutionalists seems too cumulative. In institutional theory, the creation of new concepts and practices, their acceptance in different fields, and the building of institutions seems to snowball into paradigm change (but see Zucker, 1987). However, the relationship between paradigm change and the more observable aspects of institutionalization and deinstitutionalization is very unclear. Work by institutionalists on societal and organizational culture (Meyer & Scott, 1983; Thomas & Meyer, 1984) suggests that each belief system or paradigm must be studied in a specific historical context, with few if any transhistorical laws applying to paradigm shifts. Going further, natural scientists and social scientists subscribe to revolution as the mechanism for paradigm shifts, probably because of the great influence of Kuhn's work on the subject (1970). Institutional theorists must reconsider which of these avenues for paradigm replacement is the more likely one for ecological sustainability.

**Individual interpretations and innovations.** Finally, for all its emphasis on sense making and innovation, institutional theory does not provide many mechanisms for changing accepted behaviors and outcomes. Even the initial stage of practice adoption is often ignored. It is simply assumed that a wise firm has adopted a sustainable practice, or will eventually be weeded out. However, people do not seem to do what is prescribed by theories of rational behavior. Moreover, every day people must enact paradigms that connect ideas and action (Weick, 1969), and in so doing, they often choose to modify practices or adopt new ones. Rather than assuming that people will act in strongly unconscious ways and submit to normative systems, institutionalists should study the degree to which this is the case in the area of ecological sustainability. Institutionalists might

be able to draw upon the work of social psychologists and political scientists in the area of sustainability. For instance, according to one recent study of the meaning of "ecological risk" (Axelrod & McDaniels, 1995), individuals have a much more multidimensional concept of risk when considering ecological systems than when considering just human health. Some of these dimensions of risk held by individuals when viewing the ecological system are based on a conscious concern for particular ecological outcomes (like the outcome of nuclear war), whereas others show a subconscious avoidance of assessing risks (such as in the gradual destruction of ecosystem habitat by urbanization). This finding suggests that individuals' choices tapping dimensions demanding conscious risk assessment will proceed very differently from their choices that do not; that is, if a person is very conscious of an ecological risk, he or she will make a very different decision than if he or she is not.

Finally, institutional theorists could benefit from recognizing the contribution individual actors can make to innovation processes. For example, the study of organic farming has highlighted the role that innovative champions have in innovation (Egri, 1993). The role of motivated and interested individuals in bringing about changes is especially important in the normative approaches, such as consensual multistakeholder decision-making processes (Dorcey, 1991).

### **Future Research**

The hypotheses developed in this article and our suggested modifications to theory provide avenues for future research. We have embarked on an interdisciplinary research project on ecological sustainability that will be discussed here to help us make our hypotheses and modifications of institutional theory more concrete and applicable. As mentioned previously, we are studying the role of organizations in the development and implementation of policies concerning water quality in the Lower Fraser (River) Basin (LFB) in British Columbia, Canada. We examine the water-quality issues in particular because the aquatic resources in the LFB represent a tremendous ecological abundance and diversity that is in dramatic conflict with the increasing human activity in the region.

To understand how ecological sustainability is interpreted or instilled with value, we are focusing on the use of scientific information about water quality and ecosystem health in the creation of regulatory standards by organizational actors. As in many other areas, there is significant pressure in the LFB on the scientific community to set out clear and simple rules for ecosystem management; decision makers and managers require such rules in order to address the ecological problems in the region. These demands, however, are based on a vision of science that assumes that science provides firm knowledge, and that the only way of obtaining this knowledge is through the traditional scientific method (Kay & Schneider, 1994), but this method is suited for only very simple systems, whereas our biosphere is a very complex system. If we further accept that



scientific information itself is the outcome of a decision-making process among scientists from different disciplines who are trying to interpret complex ecological systems, then the role of scientific information becomes ambiguous. In our study we examine the process of knowledge creation and interpretation under ambiguity (Latour, 1987, 1993)—particularly the interpretation by the nonscientific community.

The different organizational fields involved in water quality are also examined. The networks of exchanges around water-quality issues are being studied using survey and interview methodologies. The adoption and impact of practices related to water quality over time will be judged in a subgroup of these organizations through multiple methods, from participant observation of the interpretation of water-quality standards to archival work on corporate compliance. We also may study the compliance area longitudinally in the area of water quality in the same way that it has been studied with regards to equal employment opportunity/affirmative action programs in the United States (Edelman, 1992). The diffusion of water-quality standards based on recent legislative changes and the compliance patterns with these standards could be examined to see what differences exist across sectors, regions, and types of organizations. These differences in compliance would inform us about the ability of command-and-control systems and sanctioning enforcement to create real changes in water quality.

The institutional framework for the governance of aquatic resources is also part of the study. One of the most comprehensive analyses of the governance system in Canada and BC has been provided by Rueggeberg and Dorsey (1991). Although some significant legislative renewal has taken place since then, most of the descriptive information on the field is still very much applicable to today's system in the LFB. Rueggeberg and Dorsey have described in detail the historical development of the jurisdictional divisions and the administrative structure of the various levels of government and the processes and mechanisms by which water supply, water quality, and waste discharge are managed.

In addition, beginning in the mid-1980s, a new wave of environmentalism has resulted in the emergence of multistakeholder processes in environmental policy and management. Although there is no necessary logical or causal relationship between the ideas of sustainable development and multistakeholder consultations, there appears to be a very strong affinity between the two concepts among core actors in the environmental policy community (Hoberg, 1993). The first experiments with multistakeholder processes in Canada were the development of the Canadian Environmental Protection Act, enacted in 1988, and the National Task Force on Environment and Economy. Since then, multistakeholder forums have become standard operating practice in almost every policy initiative at both federal and provincial government levels. The system is still based on bargaining but represents a fundamentally different policy

style because it involves a much wider spectrum of societal interest in the bargaining process.

Ultimately, we think that the changes in the LFB are occurring in small, nonlinear steps, rather than through sudden and dramatic paradigmatic shifts (Weick, 1969). Although paradigmatic changes may occur, these are more likely the result of the complex interactions of many actors and subsystems than from local subsystem development. In fact, our research group's activities (our very method of studying water quality in the LFB) demonstrates this premise of incremental change cycling through many interactions and building a newer paradigm for understanding. For example, the theoretical component on which we are working contains one organization theorist and one resource ecologist. This component is part of a larger set of components in which groups are examining other aspects of the region from both the natural sciences and the social sciences views, including fish ecology, agricultural practices, demography, social movements, and public policy decision making. The dialogue that we have between the organization theorist and ecologist in our component is magnified by the dialogue among participants in the other components, all working in research groups under the same umbrella organization. The result of this interaction will be a partly integrated geographic information system (GIS) model of local ecosystem health over time. This model is only the most recent step that the project teams have made in the last 10 years of research on water quality in the LFB. So this model and the microcosm in which it is being produced represent one of many endeavors and small changes that may shift us and our organizations to a new paradigm for ecological sustainability.

## REFERENCES

- Astley, W. G., & Fombrun, C. J. 1987. Organizational communities: An ecological perspective. *Research in the sociology of organizations*, vol. 12: 607-621.
- Axelrod, L., & McDaniels, T. In press. Ecological risk perception. In M. Healey & J. Robinson (Eds.), *Resolving the dissonance sustainability in the power Fraser*. Vancouver, BC: University of British Columbia Press.
- Barnard, C. 1938. *The function of the executive*. Cambridge, MA: Harvard University Press.
- Berger, P. L., & Luckman, T. 1967. *The social construction of reality: A treatise in the sociology of knowledge*. New York: Anchor Books.
- Bernstein, J. D. 1993. *Alternative approaches to pollution control and waste management: Regulatory and economic instruments*. Washington, DC: The World Bank.
- Bourdieu, P., & Wacquant, L. J. D. 1992. *An invitation to reflexive sociology*. Chicago: University of Chicago Press.
- Bramwell, A. 1989. *Ecology in the 20th century: A history*. New Haven, CT: Yale University Press.
- British Columbia Ministry of Environment, Lands and Parks (BCMOELP). 1993. *Stewardship of the water in British Columbia: A review of British Columbia's water management policy and legislation*. Victoria, BC: Author.

- British Columbia Round Table on the Environment and the Economy [BC Round Table]. 1993. *Sustainability: From ideas to action: A strategic plan for discussion and action to the citizens of British Columbia*. Victoria, BC: Author.
- Brown, L. R. 1994. *State of the world 1994: A Worldwatch Institute report on progress toward a sustainable society*. New York: Norton.
- Burns, T., & Stalker, G. M. 1968. *The management of innovation* (2nd ed.). London: Tavistock.
- Burrell, G., & Morgan, G. 1979. *Sociological paradigms and organizational analysis*. London: Heinemann.
- Burt, R. S. 1980. Models of network structure. *Annual review of sociology*, vol. 6: 79–141. Palo Alto, CA: Annual Reviews.
- Cameron, D. R. 1993. *Environmental concerns in business transactions: Avoiding the risks*. Toronto: Butterworths Canada.
- Canadian Bar Association. 1990. *Report of the Canadian Bar Association committee on sustainable development in Canada: Options for law reform*. Ottawa, ON: Author.
- Carrol, G. R., & Hannan, M. T. 1995. *Organizations in industry: Strategy, structure, and selection*. New York: Oxford University Press.
- Colby, M. E. 1990. *Ecology, economics, and social systems: The evolution of the relationship between environmental management and development*. Unpublished doctoral dissertation, University of Pennsylvania.
- Costanza, R., Wainger, L., Folke, C., & Maler, K. 1993. Modelling complex ecological economic systems: Toward an evolutionary, dynamic understanding of people and nature. *Bioscience*, 43: 545–555.
- Cotton, R., & McKinnon, K. M. 1993. An overview of environmental law in Canada. In G. Thompson, M. L. McConnel, & L. B. Huestis (Eds.), *Environmental law and business in Canada*: 3–30. Aurora, ON: Canada Law Book.
- Daft, R. L. 1992. *Organization theory and design* (4th ed.). St. Paul, MN: West.
- Daly, H. E. 1992. Steady-state economics: Concepts, questions, policies. *Gaia*, 6: 333–338.
- Daly, H. E., & Cobb J. B., Jr. 1994. *For the common good* (2nd ed.). Boston: Beacon Press.
- Day, J. C., & Georgison, J. P. 1994. *Institutional arrangements for water quality management in British Columbia: Recommendations for improvement*. Burnaby, BC: Simon Fraser University.
- Dembo, D., Morehouse, W., & Wykle, L. 1990. *Abuse of power: Social performance of multinational corporations: The case of Union Carbide*. New York: New Horizons Press.
- DiMaggio, P. J. 1991. Constructing an organizational field as a professional project: U.S. art museums 1920–1940. In W. W. Powell & P. J. DiMaggio (Eds.), *The new institutionalism in organizational analysis*: 267–292. Chicago: University of Chicago Press.
- DiMaggio, P. J., & Powell, W. W. 1991. The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. In W. W. Powell & P. J. DiMaggio (Eds.), *The new institutionalism in organizational analysis*: 63–82. Chicago: University of Chicago Press.
- Doern, G. B. 1993. *Green diplomacy: How environmental policy decisions are made*. Toronto, ON: C. D. Howe Institute.
- Dorcey, A. H. J. (Ed.). 1991. *Water in sustainable development: Exploring our common future in the Fraser River Basin*. Vancouver, BC: Westwater Research Centre, University of British Columbia.
- Dunlap, R. E. 1980. Paradigmatic change in social science: From human exemptions to an ecological paradigm. *American Behavioral Scientist*, 24: 5–14.

- Dunlap, R. E., & Van Liere, K. 1978. The new environmental paradigm: A proposed measuring instrument and preliminary results. *Journal of Environmental Education*, 9: 10–19.
- Edelman, L. B. 1992. Legal ambiguity and symbolic structures: Organizational mediation of civil right laws. *American Journal of Sociology*, 97: 1531–1576.
- Egri, C. P. 1993. *Power, politics and the innovation process: Analysis of an organizational field in agriculture*. Unpublished doctoral dissertation, University of British Columbia, Vancouver, BC.
- Egri, C. P., & Frost, P. J. 1994. Leadership for environmental and social change [Special issue]. *Leadership Quarterly*, 5: 195–312.
- Egri, C. P., & Pinfield, L. 1995. Organizations and the biosphere: Ecologies and environments. In S. R. Clegg, C. Hardy, & W. Nord (Eds.), *Handbook of organization studies*. Newbury Park, CA: Sage.
- Eisler, R. 1987. *The chalice and the blade: Our history, our future*. San Francisco: Harper & Row.
- Ernst & Young. 1994. *Survey of environmental management in Canada*. Toronto, ON: Author.
- Fischer, K., & Schot, J. (Eds.). 1993. *Environmental strategies for industry: International perspectives on research needs and policy implications*. Washington, DC: Island Press.
- Freidson, E. 1986. *Professional powers. A study of the institutionalization of formal knowledge*. Chicago: University of Chicago Press.
- French, M. 1985. *Beyond power: On women, men and morals*. New York: Ballentine Books.
- Frost, P. J., & Egri, C. P. 1991. The political process of innovation. In L. L. Cummings & B. M. Staw (Eds.), *Research in organizational behavior*, vol. 13: 227–296. Greenwich, CT: JAI Press.
- Giddens, A. 1984. *The constitution of society*. Berkeley: University of California Press.
- Habermas, J. 1970. *Towards a rational society*. Boston: Beacon Press.
- Hawken, P. 1993. A declaration of sustainability. *Utne Reader*, September/October: 54–61.
- Hoberg, G. 1993. Environmental policy: Alternative policy styles. In M. M. Atkinson (Ed.), *Governing Canada: Institutions and public policy*: 307–342. Toronto: Harcourt Brace Jovanovich.
- Holling, C. S. 1978. *Adaptive environmental assessment and management*. New York: Wiley.
- Hopfenbeck, W. 1992. *The green management revolution: Lessons in environmental excellence*. New York: Prentice Hall.
- Huestis, L. B. 1993. In G. Thompson, M. L. McConnel, & L. B. Huestis (Eds.), *Environmental law and business in Canada*: 243–274. Aurora, ON: Canada Law Book.
- Hughes, E. L., Lucas, A. R., & Tilleman, W. A., II. (Eds.). 1993. *Environmental law and policy*. Toronto: Emond Montgomery.
- Hull, B., & St-Pierre, A. 1990. *The market and the environment: Using market based approaches to achieve environmental goals*. Ottawa, ON: Conference Board of Canada.
- Hunt, C. B., & Auster, E. R. 1990. Proactive environmental management: Avoiding the toxic trap. *Sloan Management Review*, 31(2): 7–18.
- Jain, R. K. 1994. Regulatory framework: United States and Canada. In R. V. Kolluru (Ed.), *Environmental strategies handbook: A guide to effective policies and practices*: 67–117. New York: McGraw-Hill.
- Jennings, P. D., Zandbergen, P. A., & Clark, V. In press. Organizations and ecosystem sustainability: An institutional study of water quality in the Lower Fraser Basin. In

- M. Healey & I. Robinson (Eds.), *Resolving the dissonance: Sustainability in the Lower Fraser*. Vancouver, BC: University of British Columbia Press.
- Jepperson, R. L. 1991. Institutions, institutional effects, and institutionalization. In W. W. Powell & P. J. DiMaggio (Eds.), *The new institutionalism in organizational analysis*: 143–163. Chicago: University of Chicago Press.
- Kay, J. J., & Schneider, E. 1994. Embracing complexity: The challenge of the ecosystem approach. *Alternatives*, 20(3): 32–39.
- Keating, M. 1993. *The Earth Summit's agenda for change: A plain language version of Agenda 21 and the other Rio agreements*. Geneva, Switzerland: Centre for Our Common Future.
- Kluckhohn, F., & Stodtbeck, F. L. 1961. *Variations in value orientations*. Evanston, IL: Ros, Peterson.
- Kolluru, R. V. (Ed.). 1994. *Environmental strategies handbook: A guide to effective policies and practices*. New York: McGraw-Hill.
- Kuhn, T. S. 1970. *The structure of scientific revolution* (2nd ed.). Chicago: University of Chicago.
- Latour, B. 1987. *Science in action*. Cambridge, MA: Harvard University Press.
- Latour, B. 1993. *We have never been modern*. Cambridge, MA: Harvard University Press.
- Lovelock, J. E. 1979. *Gaia: A new look at life on earth*. Oxford, England: Oxford University Press.
- March, J. G., & Simon, H. A. 1958. *Organizations*. New York: Wiley.
- McIntosh, R. P. 1985. *The background of ecology: Concept and theory*. Cambridge, England: Cambridge University Press.
- McLoughlin, J., & Bellinger, E. G. 1993. *Environmental pollution control: An introduction to principles and practice of administration*. London: Graham & Trotman.
- Meiners, R. E., & Yandle, B. 1993. Preface: Taking the environment seriously: What do we mean? In R. E. Meiners & B. Yandle (Eds.), *Taking the environment seriously*: vi–xiv. Lanham, MD: Rowman & Littlefield.
- Meyer, J. W., & Rowan, B. 1977. Institutional organizations: Formal structure as myth and ceremony. *American Journal of Sociology*, 83: 340–363.
- Meyer, J. W., & Scott, W. R. 1983. *Organizational environments: Ritual and rationality*. Beverly Hills, CA: Sage.
- Morgan, G. 1980. Paradigms, metaphors, and puzzle solving in organization theory. *Administrative Science Quarterly*, 25: 605–622.
- Mylonadis, Y. 1993. *Environmental concerns as a source of organizational learning*. Paper presented at the annual meeting of the Academy of Management, Atlanta, GA.
- National Round Table on the Environment and the Economy (NRTEE). 1993. *Annual review 1992–93*. Ottawa, ON: Author.
- Odum, E. P. 1993. *Ecology and our endangered life-support systems*. Sunderland, MA: Sinauer Associates.
- Oliver, C. 1991. Strategic responses to institutional processes. *Academy of Management Review*, 16: 145–179.
- Oliver, C. 1992. The antecedents of deinstitutionalization. *Organizations Studies*, 13: 563–588.
- Ostlund, S., & Larsson, R. 1991. *The greening of strategic alliances: The institutionalization*

- of **environmental compliance**. Paper presented at the annual meeting of the Strategic Management Society, Toronto.
- Passmore, J. 1974. **Man's responsibility for nature**. New York: Scribner.
- Pearce, F. 1991. **Green warriors: The people and the politics behind the environmental revolution**: London: The Bodley Head.
- Perrow, C. 1984. **Normal accidents: Living with high-risk technologies**. New York: Basic Books.
- Post, J. E., & Altman, B. W. 1992. Models of corporate greening: How corporate social policy and organizational learning inform leading-edge environmental management. **Research in Corporate Social Performance and Policy**, 3: 3–29.
- Powell, W. W., & DiMaggio, P. J. (Eds.). 1991. **The new institutionalism in organizational analysis**. Chicago: University of Chicago Press.
- Rees, W. E. 1991. **Understanding sustainable development**. Vancouver: School of Community and Regional Planning, University of British Columbia.
- Rees, W. E., & Wackernagel, M. In press. Where of the earth is the Lower Fraser Basin? In M. Healey & J. Robinson (Eds.), **Revolving dissonance: Sustainability in the Lower Fraser**. Vancouver: University of British Columbia Press.
- Rogers, E. M. 1983. **Diffusion of innovations**. New York: Free Press.
- Rolfe, C., & Nowlan, L. 1993. **Economic instruments and the environment: Selected legal issues**. Vancouver, BC: Westcoast Environmental Law Research Foundation.
- Rueggeberg, H. I., & Dorsey, A. H. J. 1991. Governance of aquatic resources in the Fraser River Basin. In A. H. J. Dorsey (Ed.), **Water in sustainable development: Exploring our common future in the Fraser River Basin**: 201–240. Vancouver: Westwater Research Centre, University of British Columbia.
- Ruether, R. R. 1992. **Gaia and God**. New York: HarperCollins.
- Schein, E. H. 1987. **Organizational culture and leadership**. San Francisco: Jossey-Bass.
- Schmidheiny, S. 1992. **Changing course: A global business perspective on development and the environment**. Cambridge, MA: MIT Press.
- Schutz, A., & Wagner, H. R. (Eds.). 1970. On **phenomenology and social relations: Selected writings**. Chicago: University of Chicago Press.
- Scott, W. R. 1987. The adolescence of institutional theory. **Administrative Science Quarterly**, 32: 493–511.
- Scott, W. R. 1994. Institutional analysis: Variance and process theory approaches. In R. W. Scott, J. W. Meyer, & Associates (Eds.), **Institutional environments and organizations: Structural complexity and individualism**: 81–99. Thousand Oaks, CA: Sage.
- Scott, W. R., Meyer, J. W., & Associates (Eds.). 1994. **Institutional environments and organizations: Structural complexity and individualism**. Thousand Oaks, CA: Sage.
- Selznick, P. 1947. Foundations of a theory of organizations. **American Sociological Review**, 13: 25–35.
- Selznick, P. 1948. **TVA and the grass roots: A study in the sociology of a formal organization**. Berkeley: University of California Press.
- Shetzer, L., Stackman, R. W., & Moore, L. 1991. Business-environment attitudes and the new environmental paradigm. **Journal of Environmental Education**, 22(6): 16–21.
- Shrivastava, P. 1992. Corporate self-greenewal. **Business Strategy and the Environment**, 1(3): 9–22.

- Shrivastava, P. 1994. *Greening business: Toward sustainable corporations*. Cincinnati, OH: Thompson Executive Press.
- Shrivastava, P. 1995. Ecocentric management for a risk society. *Academy of Management Review*, 20: 118–137.
- Simmel, G. 1908. On the significance of numbers in social life. In K. Wolf (Ed.), *The sociology of Georg Simmel*: 87–104. New York: Free Press.
- Smart, B. (Ed.). 1992. *Beyond compliance: A new industry view of the environment*. Washington, DC: World Resource Institute.
- Strang, D., & Meyer, J. W. 1994. Institutional conditions for diffusion. In R. W. Scott, J. W. Meyer, & Associates (Eds.), *Institutional environments and organizations: Structural complexity and individualism*: 100–112. Thousand Oaks, CA: Sage.
- Thomas, G. M., & Meyer, J. W. 1984. The expansion of the state. *Annual review of sociology*, 10: 461–482. Palo Alto, CA: Annual Reviews.
- Thompson, J. D. 1967. *Organizations in action*. New York: McGraw-Hill.
- Throop, G. M., Starik, M., & Rands, G. P. 1993. Sustainable strategy in a greening world: Integrating the natural environment into strategic management. *Advances in Strategic Management*, 9: 63–92.
- Warren, R. L. 1967. The interorganizational field as a focus for investigation. *Administrative Science Quarterly*, 12: 396–419.
- Weber, M. 1968. *Economy and society: An interpretive sociology* (3 vols.). New York: Bedminster. (Original work published in 1924)
- Weick, K. E. 1969. *The social psychology of organizing*. Reading, MA: Addison-Wesley.
- Williams, H. E., Medhurst, J., & Drew, K. 1993. Corporate strategies for a sustainable future. In K. Fischer & J. Schot (Eds.), *Environmental strategies for industry: International perspectives on research needs and policy implications*: 117–146. Washington, DC: Island Press.
- World Commission on Environment and Development [WCED]. 1987. *Our common future*. Oxford, England: Oxford University Press.
- Zucker, L. G. 1987. Institutional theories of organization. *Annual review of sociology*, 13: 443–464. Palo Alto, CA: Annual Reviews.

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