

Working Paper

Changing Environmental Practice: Understanding and Overcoming the Organizational and Psychological Barriers

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Abstract

Since the early 1990s, the environmental management literature has grown from a small offshoot of mainstream academic study to become a vibrant field of its own. The contributions of this field lie in the study of corporations and their impact upon the natural world. We are impressed by the large quantity of good ideas that have developed concerning how to improve the environment in ways that are good for business. Yet we also have observed that many executives and organizations have been slow to adopt wise environmental practices. We offer insight from both behavioral decision research and organizational theory to explain the barriers to change, and suggest means of surmounting those barriers. After providing an overview of both the applied and academic areas of environmental management, we identify specific barriers to its implementation and offer direction for diffusing wise environmental management practices at a faster rate.

Introduction

Corporate environmentalism emerged as a movement in the late 1960s. Since then, it has grown and evolved through multiple iterations, driven at times by evocative and sensational environmental events such as the Cuyahoga River fire, Love Canal, Bhopal, Chernobyl, the Exxon Valdez spill, and the Brent Spar controversy. Conceptions of corporate environmentalism as regulatory compliance in the 1970s gave way to newer management conceptions of “pollution prevention,” “total quality environmental management,” “industrial ecology,” “life cycle analysis,” “sustainable development,” “environmental strategy,” “environmental justice,” and others. Media focus on these conceptions expanded from air and water in the 1970s to today’s emphasis on hazardous waste, remediation, toxics, right-to-know, ozone, global warming, acid rain, solid waste, chlorine phase-out, and environmental racism. With each conception came a more complex understanding of the intersection of business activity and environmental protection.

As corporate environmental practice evolved, a new field of academic research emerged in the 1980s to understand it, one focused on business decision-making, firm behavior and the protection of the natural environment. Relatively new among the management sciences, this area of inquiry addressed the overlap between business strategy and environmental protection (i.e., Royston, 1979; 1980). Now, as we look back at nearly twenty-five years of scholarly exploration, it is apparent that this offshoot of management research has matured into an area of study in its own right. But another question becomes important as we consider the accomplishments of the field. How much of this intellectual thought is devoted to conversation with other academics and thought

leaders, and how much of it is dedicated to engaging practitioners who are dealing with change in the professional arena?

In this article, we argue that environmental management research has much to offer practitioners, but that this diffusion has not been as successful as it should be. In contrast, corporate environmental practice has been dominated by the advice of economists and lawyers (Stern and Barley, 1996). We will make the case that management scholarship has the unique ability to identify the barriers to the implementation of wise environmental management practices and the strategies needed to surmount these barriers. We will discuss how corporate environmentalism has emerged as a phenomenon in the real world, then consider how management research has attempted to address this phenomenon. Next, we will illustrate how contributions from the fields of behavioral decision research and organizational behavior can enrich that literature, offering greater insights into the necessary ingredients for wise environmental management to make it into practice.

Corporate Environmentalism as an Empirical Domain

Over the past 100 years, society has witnessed unprecedented economic growth and human prosperity. Our industrial and intellectual pursuits have created a tripling in global per capita income (World Business Council for Sustainable Development, 1997), an increase in average life expectancy of almost two-thirds (World Resources Institute, 1994), and a populace that is significantly more literate and educated than our predecessors (World Business Council for Sustainable Development, 2002). These advancements have all been enabled by industrial sector developments in medicine,

materials, transportation, communication, and food production. Since the 1960s, however, society has begun to question some of the commonly held assumptions of development, such as the belief that the environment can be treated as an endless source of resources and a limitless depository for waste. This questioning has resulted both in the recognition of corporate activity as the source of environmental problems, and in the more recent recognition that industry can also be a part of the solution. It is in this area that research in managerial decision-making has the most to offer.

Industrial Activity as the Problem

Between 1960 and 2000, private worldwide consumption expenditures have increased fourfold to more than \$20 trillion (in 1995 dollars) (Starke, 2004). To feed this consumption, industry consumes vast amounts of material resources at ever-increasing rates. Between 1990 and 2000, the sales of the largest 100 trans-national corporations increased 50 percent to \$4.8 trillion (World Resources Institute, 2001). As much as 75 percent of the annual resources absorbed by industrial economies overall become wastes within a year (World Resources Institute, 2000a). This industrial activity has had and will continue to have a critical impact on many components of the natural environment.

Plant and mineral resource depletion. In the 1990s, the global rate of deforestation averaged 9 million hectares per year (World Resources Institute, 2001). Global wood consumption has risen by 64 percent since 1961. During this time, half of the wood consumed was burned as fuel; meanwhile, commercial logging has cleared more than one-fifth of the world's entire tropical forest cover. Demand for industrial wood fiber is projected to rise by between 20 and 40 percent by 2010 (World Resources

Institute, 1999). Significant soil degradation has occurred on as much as 65 percent of agricultural land worldwide, reducing the productivity of about 16 percent of that cropland, especially in Africa and Central America (World Resources Institute, 2000b).

Fishery depletion. Consumption of fish and fishery products (such as fish meal and fish oils) rose by 240 percent between 1960 and 2003 (World Resources Institute, 1999). In 1999, the total global fish catch was 4.8 times higher than it was in 1950. During that time, industrial fleets exhausted at least 90 percent of all large ocean predators, including tuna, marlin and swordfish (Starke, 2004). Overall, nearly 25 percent of the world's most important marine fish stocks have been depleted or overharvested, or are just beginning to recover from overharvesting. Another 44 percent are being fished at their biological limit and are therefore vulnerable to depletion (World Resources Institute, 2000b). Demand for fish as a food supply is projected to increase by up to 50 percent by 2010, a level of consumption that cannot be met by current production trends (World Resources Institute, 1999).

Fossil fuel consumption and pollution. Global consumption of fossil fuels in 2002 was 4.7 times higher than 1950 levels (Starke, 2004). Worldwide emissions of the greenhouse gas carbon dioxide (CO₂) reached 23 billion metric tons in 1999; an 8.9 percent increase since 1990 (World Resources Institute, 2003). These levels are expected to yield changes in global weather patterns as well as increases in sea levels and the migration of vector-borne diseases.

These statistics and many others illustrate how business activities negatively impact the natural environment. As environmental degradation spreads, companies will experience more and more pressure to find solutions.

Industrial Activity as Solution

In our increasingly globalized world, the impact of industrial and commercial activities has become more vivid and severe. For several reasons, the environmental problems that society faces cannot be solved without the involvement of business interests (Hoffman, 2005).

First, business decisions concerning what material, labor and energy inputs to use and how to manage product and waste outputs ultimately determine environmental quality. Therefore, industry often is directly responsible for environmental problems, and is thus most vulnerable to social and political challenges for change. *Second*, companies are generally the sources of technological evolution within society. As such, companies often best understand the technical tradeoffs that innovation choices may involve. While environmentalists and others may appreciate the impact of systemic change, companies understand the underlying technical and economic aspects of innovation. *Third*, governments no longer possess the full array of resources and knowledge necessary to dictate environmental solutions to companies. Many within policy circles now agree that companies must become participants in the environmental regulatory process if sustainable and economically efficient solutions are to be found. *Fourth*, the power of business organizations to determine the structures of social, economic, and political activity has grown to such enormous proportions that industry, both individually and through markets, now possesses the most resources needed to create more efficient coordinating mechanisms. Indeed, businesses have been developing solutions to emerging environmental problems with a number of products and services, such as:

alternative mobility systems, including gas-electric hybrid vehicles, fuel-cell vehicles, and car sharing in urban centers; alternative energy sources including wind energy, fuel cells, and micro-turbines; and alternative manufacturing materials, including bio-materials (to replace fossil-fuel-based fabrics such as nylon, polyester, and lycra) and composite woods (to replace large-stock timber. *Fifth*, as society demands that environmental problems be addressed, companies can earn new profits by finding solutions (Hoffman, 2005).

Clearly, there is a strong logic behind the need for business to play a more active role in alleviating environmental crises. To date, however, the evidence points to a slow diffusion of industry-led ideas and actions. Given that industry will be profoundly affected by new environmental protections, there is a great need and opportunity for a better understanding of this slow diffusion. In the next section, we summarize management research on the environment and promote a broader perspective.

Corporate Environmentalism as a Management Research Domain

Scholars within management schools only recently engaged in the empirical research domain of corporate environmentalism. One of the first groups of scholars interested in business and the environment, the Greening of Industry Network (GIN), was formed in 1989. GIN's international participants argued that "most regulation has not been based on a solid understanding of how industrial firms operated" and that future advances in environmental policy would require an appreciation of the "intradynamic and interdynamic processes" of organizational learning that incorporate an awareness for how

“various groups both inside and outside the firm conjointly shape its behavior and strategy” (Fischer and Schott, 1993: 372).

This first initiative to build a research community among management scholars was followed by the formation in 1990 of the Management Institute for Environment and Business (MEB, now a division of the World Resources Institute) and, in 1994, of the Organizations and the Natural Environment (ONE) special-interest group of the Academy of Management. To support this burgeoning research area, special issues on organizations and the natural environment have appeared in the *Academy of Management Review* (1995), *American Behavioral Scientist* (1999), the *Academy of Management Journal* (2000), and other publications. Academic journals dedicated to the interface between managerial action and environmental protection also emerged in the 1990s, including *Business Strategy and the Environment* and *Organization and Environment*.

Much of this research has been normative in focus, focusing on understanding and predicting why and how corporations “can take steps forward toward [being] environmentally more sustainable” (Starik and Marcus, 2000: 542). The research has identified environmental practices that also make good business sense, yet little of it has considered why these good ideas are not put into practice. For example, early research attempted to demonstrate a link between positive environmental performance and positive competitive performance. But most of this research has been inconclusive, with some studies showing a positive correlation and others showing a negative correlation (Margolis and Walsh, 2001).

Looking deeper for clues about the relationship between business success and environmental protection, significant research has addressed the relationship between

resources and environmental strategies (Shrivastava, 1995; Hart, 1995, 1996). Other research has examined the factors – public policy, market and institutional forces, and others – that could favor or retard environmentally beneficial innovation in products and production processes, both within and across firms. In coordinating this network activity, some study why certain firms adopt voluntary standards for environmental performance (Delmas and Terlaak, 2001; Andrews, et al., 2001; Delmas, 2002) and the phenomena of self-regulation (such as the Global Reporting Initiative and the Forest Stewardship Council) (Prakash, 2002). These researchers make the compelling case that it is often profitable for companies to be a step ahead of regulations (Lyon and Maxwell, 2004).

Within such networked structures, there has been a great deal of research into the dematerialization of production processes (Roome, 1998), either through the optimization of supply-chain logistics for producing goods, the development of more efficient manufacturing processes (Weizacker, Lovins and Lovins, 1998), the use of green materials and processes, or shifts from products to services in the marketplace (Lovins, Lovins and Hawken, 1999) such as leased carpets (Interface) or car sharing (Mobility or Zip Car). In each case, researchers argue that the innovation is both good for the environment and good business.

While this research offers important and vital insights, we argue that the visionaries who have generated these ideas too often seem to assume that, “If we write about it, they will follow.” Extensive research on the diffusion of innovation makes it clear that this view is naïve. We believe that we need to understand the barriers that exist to implementation and offer new insights concerning how to put wise insights into

practice. Here, organizational theory and behavioral decision research have much to offer (Hoffman, 2004).

Turning Environmental Insights into Practice

Research in the organizational behavior disciplines focuses on how social and psychological processes influence the perception and development of managerial and market structures, including managerial and market structures relevant to the natural environment. Organizational behavior's interdisciplinary, multi-level structure makes it well suited for addressing the human side of management behaviors with respect to the environment. Organizational behavior research offers multiple lenses for viewing the complexities of the intersection of business and the natural environment. More importantly, this research sheds light on tactics that can be used to integrate the insights of broader managerial research into practice.

At the individual level, organizational behavior research offers insights into how the social perception and enactment of environmental management issues occurs (i.e. Cordano and Frieze, 2000) and, therefore, highlights the fundamental mechanisms by which change can be undertaken. Behavioral research posits that individuals attempt to act rationally, but are bounded in their ability to achieve rationality (Simon, 1957; March and Simon, 1958). Armed with four decades of behavioral decision findings, researchers now are able to predict, a priori, how people will make decisions that are inconsistent, inefficient, and based on normatively irrelevant information. Individuals rely on simplifying strategies, or cognitive heuristics. While these heuristics are frequently

useful shortcuts, they also lead to a wide variety of decision biases (Kahneman and Tversky, 1973, 1979; Bazerman, 1998).

At the organizational level, behavioral research views individuals as part of larger systems of organizations and institutions (Hoffman, 1999). It examines the political and economic root causes of environmental disruption and develops a systematic approach that shows how organizations, institutions, and individuals can both push for and resist environmental protection reforms (Schnaiberg and Gould, 1994). It attends to the rise of environmental consciousness and social movements, addressing how change occurs within social systems and why. Central to this stream is a consideration of environmental risks as they relate to the macro-sociology of social change (Beck, 1992). The research takes a social constructionist approach toward these key themes, focusing on the “social, political and cultural processes” by which environmental issues, problems, and solutions are given attention and defined (Hannigan, 1995: 30).

At both the individual and organizational level of analysis, research has much to contribute toward the resolution of contemporary problems of practical relevance. The next section will discuss specific ways in which behavioral scholarship can help practitioners in policy, business, and non-profit communities put the broader management research into practice.

Understanding Cognition that Allows Environmental Degradation

A great deal of research has examined the patterns of thinking that lead to environmental degradation. In this section, we will highlight one cognitive limitation, the *mythical fixed pie of negotiation*, and end the section with an overview of how other

decision biases also negatively affect the environment and keep us from adopting wise innovations.

We begin with the story of Ben Cone, a forester in North Carolina. When he feared that the presence of endangered red-cockaded woodpeckers on his property would make him a target of the U.S. Fish and Wildlife Service, Cone shifted from a 60-year tradition of sustainable forest management to massive clear-cutting of trees (Baden, 1995). Clearly, this is not the type of solution intended by the Endangered Species Act (ESA), which protected the woodpecker. Why did Cone destroy his forest? He assumed that any outcome desired by the government would be bad for him — an assumption referred to as the *mythical fixed pie of negotiation*, or the belief that negotiators are fighting over a finite pie of resources (Bazerman 1983). The most common reason negotiators fail to find optimal outcomes is that they do not look for tradeoffs that can enlarge the pool of resources to be distributed.

It is important to note that it was not the ESA's implementation that caused Mr. Cone's hasty and drastic actions, but rather his misperceptions of it. After the story became a touchstone for ESA critics, it was revealed that endangered species considerations influenced only 15 percent of Cone's land. He was free to continue thinning trees on the remaining land as he had done for years. Furthermore, the U.S. Fish and Wildlife Service repeatedly offered Cone proposals that would have insulated him from future ESA responsibilities. He refused to cooperate, however, believing that whatever the government and environmentalists desired must be bad for his business. Cone's fear of the complete economic loss of his assets led him toward a radical protective strategy (American Spectator, 1995). His belief in the win-lose nature of

endangered species protection guided his unfortunate actions. We surmise that similar beliefs by many protagonists in environmental disputes result in similar dysfunctional results.

Solutions existed to Cone's dilemma. The ESA provides a framework, in fact, for a solution that would satisfy all sides: Habitat Conservation Plans (HCPs). HCPs provide the opportunity to enlarge the pie by giving private landowners a permit to violate the specifics of the ESA through “incidental taking” of listed species in the course of lawful development activities, provided that the landowner follows certain steps to provide for conservation of that species. HCPs can overcome the win-lose mentality by creatively developing plans that satisfy both endangered species protection and economic interests.

It is tempting to assume that if we were in Ben Cone’s position, we would reach more sophisticated conclusions. Yet, prior to the work of Walton and McKersie (1965), many brilliant negotiation scholars committed errors similar to Cone’s. To this date, competing perspectives on the relationship between economic competitiveness and environmental protection remain part of an active, highly visible debate. Splitting into polarized camps, protagonists argue whether this relationship is inherently “win-lose” or “win-win.” Win-lose proponents argue that environmental protection reduces economic competitiveness (Walley and Whitehead 1994; Palmer, Oates, Portney 1995). Win-win proponents argue that this framing of the issue is a false dichotomy and that economic competitiveness improves through environmental protection (Gore 1992; Porter and van der Linde 1995a, 1995b). These bright thinkers argue for one incomplete process or the other, overlooking the symbiotic nature of these alternatives.

On the win-lose side, Palmer, Oates, and Portney (1995) argue that environmental demands “must,” by their very nature, result in reduced profits for the firm. Walley and Whitehead (1994) add that the existence of a win-win, or cost-free, solution to environmental problems does not make sense and that any existing euphoria for the win-win scenario is not only “unrealistic” and “misleading,” but “dangerous.” Fundamentally, they state that “ambitious environmental goals have real economic costs. As a society, we may rightly choose those goals despite their costs, but we must do so knowingly. And we must not kid ourselves. Talk is cheap; environmental efforts are not” (Walley and Whitehead 1994: 2-3).

In contrast, the win-win side believes that environmental gains can complement economic objectives: “the costs of addressing environmental regulations can be minimized, if not eliminated, through innovation that delivers other competitive benefits” to the firm (Porter and van der Linde 1995b: 125). These authors argue further that “emissions are a sign of inefficiency and force a firm to perform non-value creating activities such as handling, storage and disposal . . . reducing pollution is often coincident with improving the productivity with which resources are used” (Porter and van der Linde 1995a: 105). Gore (1992) adds that “some companies have found that in the process of addressing their environmental problems they have been able to improve productivity and profitability at the same time . . . an emphasis on environmental responsibility makes good business sense” (Gore 1992: 342). Win-win proponents maintain that the key to realizing benefits lies in “a new frame of reference for thinking about environmental improvement” (Porter and van der Linde 1995b: 127).

The present debate has hardened into an ideological conflict between intractable positions. The negotiations literature teaches us that these contrasting frames of reference are not only unnecessarily polarized, but fundamentally incomplete (Thompson, 2004). And it offers an alternative model that integrates elements of both positions for a more productive outlook on the issue. Conflict between economics and the environment is a mixed-motive situation (Walton and McKersie, 1965); in other words, the balancing of environmental and economic interests is neither purely cooperative nor purely competitive. Within this mixed-motive perspective, we argue that protagonists on both sides of the environment versus economics debate miss too many opportunities to transform the contentious debate into an efficient set of solutions. That is, it would be healthier for protagonists to argue over a more optimal set of possible solutions.

When environmental advocates argue that environmentalism is good business, pro-business advocates can too easily point to poor environmental regulations that harm profitability. And when those in the win-lose camp argue their case, those in the win-win camp counter with examples of environmentally friendly behavior creating new profitability. The key to resolving this circular debate is the recognition that environmentally friendly behaviors are sometimes profit-compatible and sometimes not. When parties acknowledge this simple fact, it becomes easier to convince corporations to adopt environmental measures that are mutually beneficial. This thinking moves us beyond the simple question, “Does it pay to be green?” (King and Lenox, 2001; Margolis and Walsh, 2001). Instead, it asks us to consider how and when it pays to be green for specific companies in specific circumstances (Howard-Grenville and Hoffman, 2003).

Thus far in this section, we have focused on one bias, the mythical fixed-pie, and specified what it tells us about how to encourage parties to move beyond their limiting mindsets and adopt environmentally friendly ideas. But many other biases are also environmentally dysfunctional. *Positive illusions, self-serving interpretations of fairness, and overconfidence* are other culprits that explain environmentally destructive behaviors (Hoffman et al, 1999). Similarly, we know that people and organizations tend to *overly discount the future*. As a result, organizations too often forego upfront capital expenditures that would offer huge annual returns.

Perhaps one of the most obvious examples of the harmful impact of overly high discount rates with regards to the future is the global fishing crisis, described earlier in this article. Worldwide, 11 of the 17 largest fishing basins have been destroyed in recent decades. With the aid of high-tech equipment and government subsidies, fishers have depleted the oceans of once-plentiful species. Subsidies for the global fishing fleet have helped produce enough boats, hooks, and nets to catch twice the number of available fish. Quite simply, too many boats are chasing too few fish, leading to international skirmishes over borders and poaching. In extreme cases, disputes over fishing rights have turned violent in recent years: Canadian fishers blockaded a U.S. ferry and shot at a Spanish ship, Russians shot at Japanese fishers, Iceland forced a Danish boat from its waters, Australian forces have seized Indonesian boats, and the Portuguese Navy fired on a Spanish boat. Economic and social disruption – including the depletion of freshwater supplies, environmental pollution, and the exhaustion of natural resources – will become increasingly common as the world continues to over-harvest the oceans.

Given these woes, why do governments continue to subsidize fish over-harvesting? We believe that the psychological tendency to overly discount the future is largely to blame. Political scientists, sociologists, social psychologists, and decision researchers have offered unique insights into the management of social dilemmas. Yet policy makers have failed to apply these insights to the management of fishery crises around the world. The diffusion of wise environmental practices must include strategies for confronting these cognitive obstacles.

Understanding Organizational Biases that Perpetuate Environmental Degradation

The adoption of wise innovation is limited not just by cognitive obstacles, but also by the ways in which organizations have evolved based on market pressures and adaptive organizational responses. In this section, we focus on one such organizational limitation, the *over-reliance on regulatory standards*. We conclude the section with an overview of how other organizational properties keep us from adopting wise innovations.

Environmental protection standards are the most apparent source of pressure for organizational action in the United States and elsewhere (including, we argue, ineffective and counter-productive action). While recent regulatory innovations have sought cooperation between government and industry, businesses continue to perceive regulatory pressure largely as coercive in nature, forcing compliance by threat of penalty. But standards are also symbolic, uncertain, contested, and constitutive. Courts frequently measure compliance against “industry standards,” “business necessity,” and “the limits of current technology.” Without overlooking the coercive aspects of standards (Scott, 1995), we must also consider how they are supported by contending logics of cognitive

values and beliefs (Powell, 1996). Edelman (1990), for example, shows how abstract coercive legal mandates are typically enacted in organizational practices via mechanisms of translation and adaptation based on these supporting cognitive institutions.

Consider that the present U.S. environmental regulatory structure is founded on fundamental institutional beliefs about the nature of pollution and the appropriate methods for eliminating it. Dating from the formative days of the Environmental Protection Agency in 1970, these beliefs contribute to a stable (though at times counter-productive) policy paradigm. Three components of this regulatory culture are particularly relevant to our discussion.

First, the regulatory structure is based on a perception of environmental issues as compartmentalized by media — air, water, pesticides, radiation, solid waste, etc. An inaccurate framework for understanding the inherently trans-media nature of pollution, this conception nonetheless is perpetuated by a formal organizational structure within the Environmental Protection Agency (EPA) that is an artifact of its early formation. In 1970, many advisers to the agency's first administrator recommended an "intermedium" approach that would have regulated an industrial facility as a unit, considering the impact of its operations on the environment as a whole. But political realities forced the creation of the new agency through the consolidation of existing departments scattered through the federal government. Because these departments were based on media-specific mandates, the resultant agency was similarly structured. This structure institutionalized a framework that inhibits creative environmental problem solving by focusing on partial and fragmented solutions.

A second aspect of the regulatory structure that institutionalizes a particular conception of environmental issues is its “command-and-control” format. Many in 1970 felt that once the U.S. government set standards and began to enforce them, industry would fall in line and environmental problems would essentially disappear (U.S. Environmental Protection Agency, 1993). During its first 60 days, the EPA took five times as many enforcement actions as the agencies it inherited had taken during any similar period (Landy, Roberts, and Thomas, 1990). This focus on punishing polluters was justified on political grounds to establish credibility for the EPA, but it also set up the adversarial relationship between industry and government that exists today. This adversarial relationship supports the belief that government regulators and industry decision-makers cannot find solutions that offer mutual gain.

Finally, a third aspect of the EPA’s regulatory structure that has institutionalized our beliefs about the relationship between economics and the environment is the focus on “technological fixes” to environmental problems. Since the 1970s, regulations have been based on prescribed, technology-based standards. The EPA’s catchphrase during the early 1970s was “technology-forcing,” which describes the strategy of setting new federal rules to require industry to use new pollution-free technology; as new plants replaced old, the problem of pollution was expected eventually to disappear (Novick, 1986). Today, that mindset is manifested in regulations that prescribe “best demonstrated available technology” (BDAT) for specific environmental problems across disparate industries.

Over time, this (a) media-segmented, (b) command-and-control/adversarial, and (c) technology-based approach to environmental regulation came to provide a standard approach to understanding the nature of environmental issues, regulatory solutions, and

the “inherent” policy tradeoffs among government, industry, and activist communities. Some have begun to argue that existing standard and enforcement programs may be the biggest challenge faced by environmentalists today. While they can force behaviors that are easily monitored by oversight agencies, they perpetuate perceptions about the relationship between economics and the environment that may be contrary to the goals of both. They are based on institutions that perpetuate the view that economic and environmental interests are mutually exclusive (Hoffman and Ventresca, 1999). While government standards have historically produced results consistent with broad environmental objectives (Easterbrook, 1995), many now view this paradigm as out of date and overly restrictive of corporate environmental initiatives beyond compliance (Schmitt, 1994). But to change them will require alterations in multiple levels of systemic policy structures, individual and collective organizational cultures, and the cognitive biases of individual managers.

Tenbrunsel and colleagues (1997) argue that legal standards lock organizations into a focus on strict legal compliance rather than the attainment of environmental goals or more subtle societal interests. They suggest that decision makers may evaluate sub-optimal choices (both economic and environmental) that better adhere to a standard than optimal choices that violate the standard. Once standards are written, program managers within both government and corporations become constrained by a compliance mindset and by bureaucratic procedures, which attenuate the search for creative solutions to complex environmental problems. Standards direct attention and embody a theory of cause, effect, and solution that is often received as accepted wisdom. Across a broad spectrum of disassociated industries, a given rule structure dictates which pollutants and

sources to control, to what extent, and with which technologies. It often ignores the technological and logistical issues associated with overlapping regulatory programs, as well as the multi-media and multi-objective impacts of a particular rule of policy (Raffle and Mitchell, 1993). At times, standards can explicitly restrict environmentally optimal solutions. For example, the permitting requirements under the Resource Conservation and Recovery Act (RCRA) often restrict hazardous waste recycling initiatives by strictly regulating those wastes once they are created. Any company that creates hazardous wastes and then attempts to recycle or reuse them will be required to obtain a “Part B” permit for treatment of a hazardous waste, an extremely expensive and time-consuming process (Byers, 1991). In the eyes of many corporate managers, such as Thomas Zosel, manager of 3M’s 3P program, “RCRA permits are so extensive and expensive to develop that many companies forego recycling to cut all the regulatory hassle required by RCRA” (Ember, 1991).

Tenbrunsel et al. (1997) also suggest a motivational explanation for the “misdirected attention” effect, namely that standard-based systems can change the incentive systems for individuals and promote self-interested behavior at odds with wider societal interests (Tenbrunsel et al., 1997). Sub-optimal outcomes are the product of both unintentional and intentional actions on the part of a decision maker, within the context that frames incentives and defines options. Unintentional actions may result from individuals “just following the rules,” creativity not being rewarded, a “use it or lose it” rationale, intrinsic motivation being replaced with extrinsic motivation, or a “no law against it” mentality. Intentional actions include trying to “beat the system.” For example, the EPA listed n-methyl pyrrolidone (NMP) in 1995 as one of the chemicals for

which industry must report emissions. NMP is a common replacement in the adhesives industry for chlorinated solvents. It is non-flammable, practically non-volatile, and 80-90% recyclable. The listing was prompted by a single study citing a potentially remote health effect. Many companies decided to revert back to flammable and volatile (but non-reportable) solvents in order to avoid the reporting burden of NMP. The end result of the NMP listing requirement was a reversion to a less safe and potentially more environmentally harmful option.

As we noted earlier, standards are supported by contending logics and project-symbolic activity. To alter the meaning behind environmental standards and the tensions that exist between such mandates and the organizational processes (Edelman, 1990; Mezias, 1995), we must change both the overt (regulative) and the taken-for-granted (cognitive) institutions upon which they are based (Scott, 1995). In essence, a standard is an artifact of the wider regulatory cultures, structures, and traditions from which it originates. But existing cognitive aspects of such standards are anchored in the constellation of beliefs, organizational routines, policies, and practices that have accumulated over thirty years of organizational and programmatic routines and that have defined the nature of environmental problems and the form of their solution. Breaking down such structures will require attention to their regulative aspects, which are influenced by direct political control, as well as their cognitive aspects, which perpetuate a practical conception of the nature of environmental problems that counterpose environmental sense to economic competitiveness.

Regulatory standards are not the only source of environmentally detrimental behavior that has become established within organizations over time. Multitudes of

accompanying organizational arrangements can perpetuate environmentally damaging behavior and shield managers from perceiving opportunities to satisfy environmental interests to the betterment of the organization. *Organizational silos* keep multiple elements of organizations from seeing and implementing wise strategies that cut across the organization. Such silos are often based on *political divisions* and protective departmental interests that shield organizations from identifying the potential economic benefits of environmental initiatives. *Segmented responsibilities* within these multiple departments can also separate economic cause from environmental effect, thereby leaving opportunities on the table (Lovins and Lovins, 1997).

Capital budgets keep plant managers from making wise long-term decisions regarding total lifespan costing of plant equipment. Capital planning is supported by *economic metrics* that can perpetuate behaviors that damage the environment. For example, the gross domestic product (GDP), the foremost indicator of a nation's economic progress, measures of all financial transactions of products and services in the country, but does not acknowledge or value a distinction between those transactions that add to a country's well-being and those that actually diminish it (Redefining Progress, 1996). Other metrics, such as return on investment, net present value, and return on equity, are built upon beliefs and assumptions that overlook measures that include environmental concerns. *Financial markets*, for example, often encourage short-term goals, undervalue environmental resources, and discount the future in favor of accounting and reporting systems that do not reflect environmental risks and opportunities (Schmidheiny, 1996). Economic return on investment must support the debt load expected by lending institutions and corporate investors. These pressures will lead

forestry companies to harvest timber at rates that exceed maximum sustainable yield, thereby diminishing the natural capital asset base. The short-term payback periods of financial markets take precedent over the long-term time horizons of ecological systems.

Coordinating mechanisms within the organization, such as established *reward and incentives systems*, often mask the opportunities available through change. Where a company may claim to hold environmental initiatives as important in its mission statements, misaligned reward systems can lead individual managers toward fulfilling immediate personal goals that diverge from the broader, long-range goals of the organization and the environment (Kerr, 1995). Rewards exist on the systemic level as well. Architects and engineers are compensated with a percentage of the cost of the building or equipment that is specified at construction, not over its lifetime. These professionals often are actually penalized for eliminating equipment that may be costly at the beginning of the project, but cheaper over the long term. This has led the U.S. government to misallocate about \$1 trillion to air-conditioning equipment that would not have been necessary had the buildings been optimally designed to produce the same or better comfort at lower cost (Houghton et al. 1992).

At the deepest level, certain *taken-for-granted assumptions* are implanted in managers in their earliest education at business schools and then perpetuated through managerial structures. These assumptions include: the notion that the firm is socially and physically autonomous; the idea that profit motive is the singular objective of the firm; the omission of natural capital from market accounting systems; the perception of the natural environment as a limitless source of resources and a limitless sink for wastes; and the unquestioned necessity of economic growth (Capra, 1982; Daly, 1991; Daly & Cobb,

1994; Gladwin et al., 1995). These assumptions support actions that are detrimental to the stability of environmental (and at times, social) systems surrounding the organization.

Within organizations, the changes needed to help employees overcome these biases happen slowly and invite resistance. Resistance can come in the form of *habitual routines* that perpetuate behaviors that employees may know are damaging the environment. Often the perpetuation of habit stems from an individual's realization that changing an established habit will involve some form of short-term costs. While inefficient or inconsistent with long-term objectives, these established routines can become familiar, comfortable, and reliably predictable (Clark, 1985). Habitual routines often grow out of taken-for-granted engineering or managerial practice. *Fear of the unknown* can also drive both organizational inertia and the continued reliance on basic underlying assumptions. Both external and internal change can be upsetting for organizational constituents, particularly when the outcome or consequences of change cannot be predicted. Of course, in the real world, outcomes or consequences can never be predicted. *Resource limitations* can restrict the ability of an organization to overcome sunk costs of plants, equipment, and personnel. Sunk costs can become psychological roadblocks that prevent managers from adequately addressing demands for change. Short-term costs predominate, thus biasing the manager to over-discount the future. Finally, *threats to established power bases* can cause resistance to organizational change. Organizational culture establishes a structure of power that will bias the perceptions of those whom the existing system benefits. Any attempts to restructure the system will likely undermine these power structures and invite organizational confusion, interdepartmental rivalry, or organizational resistance (Mintzberg, 1979). Self-

preservation may override concerns for environmental or economic objectives in managerial decision-making.

In summary, organizational arrangements and cultural beliefs tend to perpetuate destructive environmental behavior. Individuals within organizations deviate from rational and self-interested behavior through the individual biases discussed in the last section, coupled with the organizational-level biases discussed in this section. Overcoming these obstacles will require alterations in the organization that integrate environmental concerns into the organization's basic underlying beliefs, recasting them in ways that are mutually beneficial to the objectives of the organization and the sustainability of the ecosystem on which it depends.

Overcoming Organizational and Psychological Barriers: The Endangered Species Act and Habitat Conservation Plans

Of all environmental legislation in the United States, the Endangered Species Act (ESA) is the most controversial, seeming to pit the interests of economic development against those of environmental protection. To critics, the idea of giving up jobs and hindering a regional economy to save owls sounds absurd; they consider protection of the human economy to be paramount. To proponents, such economic sacrifices are unfortunate but necessary to protect the 1,516 species of flora and fauna currently listed as threatened or endangered; to them, protection of natural ecosystems is priceless. This is how ESA debates most often play-out. Economic and development interests form intractable positions and fight a distributive, win-lose battle over concessionary agreements.

The mission of the ESA is to create a mechanism for the U.S. government to designate any animal or plant species as “endangered” or “threatened” and prohibit its “take” (i.e., any harm to a member of the species or its habitat). For many, the provisions of the law represent the most extreme form of coercive, command-and-control legislation in the regulatory code. Landowners in particular have viewed the law as overly coercive and built on the conception that environmental protection is at odds with economic interests (Hoffman and Ventresca, 1999). Simply put, for many, the law appears to be structured to take control of private property in order to support a public good (species protection). Some environmentalists also believe the ESA was built on the same kind of media-segmented approach that permeates other environmental laws. The law focuses particular species in discrete parcel lands instead of on ecosystem protection in contiguous and intact pieces of property.

In an attempt to move beyond these supporting beliefs and the perverse behaviors they provoke, Congress amended the ESA in 1982 and introduced Habitat Conservation Plans (HCPs) as a mechanism to encourage creative solutions that balance conservation and economic imperatives. HCPs provide an opportunity to break the existing mold of coercive command-and-control regulation and to form creative public-private partnerships that loosen regulatory strangleholds, enhance long-term regulatory predictability and species protection, and improve conservation science and technology. HCPs also mitigate the perverse incentives to conceal or destroy evidence of listed species on private lands—in the words of one landowner, to “shoot, shovel, and shut up” (Crismon, 1998).

In technical terms, HCPs permit landowners to engage in “incidental take” of protected species when pursuing otherwise lawful commercial activity. In practical terms, HCPs allow landowners to gain greater regulatory flexibility and predictability in exchange for a commitment to beyond-compliance species protection on their property. In the timber industry in particular, the long (sometimes decades-long) guarantee of an HCP is essential to commercial forest management. But in spite of the opportunities that voluntary programs such as HCPs present, key economic and environmental stakeholders have been slow to adopt this radical shift in regulatory relations (Hoffman, Riley, Troast and Bazerman, 2002). By viewing HCPs through the lens of behavioral scholarship, we can assess how this form of regulation can help overcome some of the obstacles to adoption we identified earlier, and highlight how new forms of resistance emerge (Troast et al., 2002).

In the first ten years of the HCPs’ existence (from 1982 to 1991), only 12 HCP plans were approved by the federal government (U.S. Fish and Wildlife Service, 1999).

There are many reasons for this institutional resistance:

1. *Resource constraints.* The responsible federal agencies have been understaffed and constrained by limited resources (e.g., for site visits, scientific review, program development, etc.).
2. *Fear of the unknown.* Most companies affected by the ESA know little about the HCP process, and many prefer the “devil they know” in command-and-control regulations to the “devil they don’t know.”
3. *Threats to political interests and a fixed pie perspective.* Poised for battle with commercial interests, environmental activists have condemned HCPs

as overly permissive and fundamentally flawed in their long-term design (Sabel, Fung and Karkkainen, 1999); industry interests view them as yet another costly web of government bureaucracy .

4. *Habitual distrust.* All parties possess a degree of historic, ingrained distrust for others in this negotiation process.

To overcome some of this resistance, the Department of Interior introduced the "No Surprises" policy in 1991, reassuring private landowners that the government would stand by the terms of any HCP negotiated. This policy stimulated the adoption of HCPs. By the end of 1997, there were 243 HCP agreements in 16 states, covering 6.2 million acres of land. But while the shift from command-and-control implementation of the ESA to the negotiated implementation of HCPs brought about many creative new efforts, the number of HCPs was much smaller than the number of conflicts in which an HCP could have been used as a tool to generate a better solution for landowners and the environment.

Returning to the theme of this article, why were HCPs underused, despite their potential to create value for all parties through wise trades? We argue that organizational and cognitive barriers explain this contradiction. Had the creators of HCPs considered these barriers, far more of them could have been negotiated. First, despite the potential of HCPs to enlarge the pie and create value for landowners and environmental interests, many parties continued to view their conflicts as win-lose and zero-sum, adopting the view that "If it's good for the other side, it can't be good for me." In addition, the branch of government that created the HCP legislation did not give the government employees in charge of implementation the budget or the skills needed to effectively implement HCPs.

The government employees charged with negotiating HCPs were overworked and were not trained to negotiate against wealthy landowners who could heavily finance their negotiations. Collectively, HCPs represent an excellent prototype of an environmental innovation that was limited by cognitive and organizational barriers (see Troast et al., 2002 for a more detailed analysis).

Conclusion

The field of environmental management has made great strides in the past quarter-century, building a body of research and literature that can help us understand and improve environmental performance within corporations. Yet much can be done to bring this research into the realm of practice and change corporate environmental behavior for the better. Tremendous opportunities for making wise environmental changes lie ahead of us; the low-hanging fruit remains.

To bring about wise changes, we must confront the barriers to corporate implementation. As an issue of corporate concern, environmental protection has become much more complex and requires a more sophisticated view to be managed effectively. This is an area to which organizational research can contribute. Organizational research attends to the psychological and organizational sources of environmentally damaging behavior and helps us identify solutions through alternations in systemic control structures and individual interests and biases (Winn and Angell, 2000). Research on decision making and organizational theory has implications for managers who now recognize that, to improve global environmental conditions, they need to understand how to change the behavior of business. In addition, policy-makers need to understand how to

incorporate business thinking into policy development to foster the most effective and efficient response from business.

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