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ENVIRONMENTAL SOCIOLOGY AND THE EXPLANATION OF ENVIRONMENTAL REFORM

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This article makes the case that environmental sociology is in the midst of a significant shift of problematics, from the explanation of environmental degradation to the explanation of environmental reform. In this article, the author suggests that there are four basic mechanisms of environmental reform or improvement: environmental activism/movements, state environmental regulation, ecological modernization, and international environmental governance. He suggests further that although "green consumerism" is one of the most frequently discussed mechanisms of environmental improvement within environmental sociology and in movement discourse, green consumerist arguments generally tend to rest on one or more of the other four mechanisms of environmental reform. One of the main tasks of environmental sociology will be to assess which of these four mechanisms is the most fundamental to environmental reform. The author concludes with the hypothesis that environmental movements and activism are ultimately the most fundamental pillars of environmental reform.

Keywords: *environmental movements; environmental regulation; ecological modernization; environmental policy; international environmental regimes*

The field that is now known as environmental sociology largely began in the United States, and the number of environmental sociologists in the United States is considerably greater than in any other country, or region, for that matter. For these reasons, mainstream environmental sociology has generally reflected the tendencies of U.S. environmental sociology. There is a certain diversity to U.S. environmental sociology. But it is important to note that until about the early 1990s, most mainstream American environmental sociology tended to share some common views on its intellectual goals. There were two such interrelated goals that deserve mention here. The first was the commitment by most environmental sociologists to rectify what they saw as the lack of attention to the biophysical environment in mainstream sociology (see, e.g., Catton & Dunlap, 1978;

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306

Goldblatt, 1996; Martell, 1994; Murphy, 1994). Their aim was to show that the biophysical world was relevant to sociological analysis as both a causal factor shaping social change as well as an outcome of social structures or social processes. The second commitment on the part of mainstream environmental sociologists was the notion that the key research question of environmental sociology was to explain the causes of environmental degradation or environmental problems.

Most major theories in mainstream environmental sociology thus proceeded to focus on the task of explaining what powerful social forces led to environmental destruction. In general, environmental degradation was seen as being an intrinsic or fairly automatic consequence of the key social dynamics of 20th-century capitalist-industrial civilization. The most well-known theories in environmental sociology were those that posited a key factor (or a closely related set of factors) that had led to enduring environmental crisis; these well-known theories included Schnaiberg's (1980) theory of the "treadmill of production," Logan and Molotch's (1987) theory of the urban "growth machine," Catton and Dunlap's (1980) theory of the "dominant social paradigm" and of the "age of exuberance," and Murphy's (1994) theory of the irrationality of capitalist-industrial rationality. Because of the stress placed on explaining theoretically why the United States and other advanced industrial societies were inexorably tending toward environmental crisis, mainstream North American environmental sociology found itself in an increasingly awkward position; most environmental sociologists had given so much stress to explaining why environmental destruction and disruption were inevitable, given the major social institutions within which we live, that there remained little room for recognizing how a more sustainable society might be possible or how social arrangements could be changed to facilitate environmental improvements.

To be sure, many environmental sociologists—even those whose theories made environmental disruption sound essentially inevitable and beyond the ability of groups and societies to deal with it directly—began to devote attention to how societies could find their way out of the "iron cage" of environmental despair. Many of these attempts actually date from as early as the late 1970s and early 1980s. Allan Schnaiberg's acclaimed *The Environment*, published in 1980, contains a chapter on environmental movements that is still well worth reading today. Although Schnaiberg's emphasis in his discussion of various types of environmental movements was on why they had serious shortcomings as vehicles for reversing the "treadmill" and its environmental destruction, he nonetheless argued that the mobilization of organized environmental movements was the only plausible way that the treadmill could be slowed or reversed. Likewise, although the theoretical work of Riley Dunlap and William Catton (e.g., Catton, 1976, 1980; Catton & Dunlap, 1978; Dunlap & Catton, 1994) tended to stress the extraordinarily powerful momentum in the direction of environmental destruction, Dunlap in particular has remained strongly committed to the notion that the "new environmental paradigm" is compelling and likely to catalyze environmental citizens movements across the globe (Dunlap & Van Liere, 1984; Dunlap, 1993).

There are, in my judgment, several reasons why environmental sociologists have begun to modify or reconceptualize their views about the automaticity of environmental degradation. One factor is arguably that objectivist-realist environmental sociology that privileged explanation of the automaticity of environmental problems had essentially run its course by the early 1990s. An emerging antirealist environmental sociology (e.g., Hannigan, 1995) tended to stress that environmental group mobilization and restructuring had little connection with the objective seriousness of environmental problems and that to see environmental groups mainly as

bearers of environmental science data into the political process was to miss the fact that the major dynamic behind these movements often was a process of identity formation and identity seeking. A considerable amount of environmental sociology during the mid- to late 1990s was actually explicitly antirealist in its orientation (e.g., Macnaghten and Urry, 1998). A second factor is that mainstream U.S. environmental sociology tended to have in mind a limited repertoire of hypotheses and comparative data about environmental social movements. Also, given that environmental movements were stressed as essentially the only efficacious mechanism of environmental improvement, there was often a tendency to see these movements in either utopian ways or as heroic but doomed efforts because political-cultural conditions were not propitious for their success. A third reason for the deemphasis on theorizing the automaticity of environmental degradation was that many sociologists, particularly those from the ecological modernization school discussed later, believe that there are concrete processes already in place that are leading to solutions to environmental problems.

A fourth reason for the deemphasis on theorizing the automaticity of environmental degradation was the general desire of many environmental sociologists that their work should be seen as useful, not only so that their work could be seen as being of use to the environmental cause but also so that environmental sociology could appeal to university students, university administrators, and granting agencies. The need to continue to reassess the state of mainstream environmental sociology is thus not only an intellectual one. Ultimately, environmental sociology's contribution to the human community will need to be whether it can help to think through how humanity's environmental future can be enhanced. Until the late 1990s, however, environmental sociologists had made only modest contributions to identifying likely or possible mechanisms that can yield a positive environmental future. The new environmental sociology of environmental improvement and reform has a considerable contribution to make to this agenda.

Finally, the deemphasis on the explanation of environmental degradation has much to do with the ongoing internationalization of environmental sociology. Recent events, such as the arrogant dismissal of the Kyoto Climate Change Treaty by the United States' Bush administration in 2001, symbolize the fact that of the advanced industrial countries, the United States is among the most recalcitrant in terms of eschewing innovative and effective environmental policies and the extraordinary expansion of raw materials and energy consumption. Thus, although it is understandable that the emphasis in environmental sociology written in the United States ought to be on theorizing the causes and consequences of these formidable forces of environmental degradation, the situation is less bleak elsewhere. The internationalization of environmental sociology has led to a more comparative environmental sociology and thus to a more diverse collection of theories. It is thus no accident that much of the impetus for a new environmental sociology of environmental improvement and reform comes from outside of the United States.

The remainder of this article will focus primarily on exploring the changes that are now under way in environmental sociology as scholars have come to emphasize the explanation of environmental improvement (rather than mainly explaining environmental degradation) and as they have diversified their approaches to understanding ways that a sounder environmental future can be made possible. The portions of the article that follow will be organized around the four key mechanisms that environmental sociologists have tended to identify as strategies or routes to environmental improvement. These four strategies are (a) mobilization of environmental movements, particularly "new" or novel movements that expand on (or

complement or compete with) mainstream environmentalism; (b) sustaining or enhancing the environmental regulatory capacity of governments, (c) “ecological modernization,” the notion that modern industrial societies can solve environmental problems through intensified development of innovative industrial technology, through ecological efficiencies in production and consumption, and through green marketing and other strategic environmental management practices; and (d) “environmental internationalism,” the notion that due to the intrinsically global scale of environmental problems and the importance of globalized socioeconomic institutions, the most efficacious route to environmental protection is through international environmental agreements, international environmental regimes, and international intergovernmental organizations.

This article has three overarching purposes. The first is to systematize what has thus far been a relatively ad hoc environmental sociological literature on what may be termed *environmental reform*. The second purpose is to identify the strengths and weaknesses of each of the environmental-sociological traditions of scholarship on environmental reform. Third, I will provide my own assessment of the four main traditions of theory and research. I will suggest that instead of the more novel traditions of scholarship on environmental reform that emerged over the past decade or so, the most fundamental mechanism may in fact be that of environmental movements, which have been theorized and researched within environmental sociology from the very beginnings of the subdiscipline.

ENVIRONMENTAL MOVEMENTS, OLD AND NEW: THE SOCIAL MOVEMENT IMAGE OF OUR ENVIRONMENTAL FUTURE

Analyses of environmental movement organizations and of the movement have arguably been one of the few topics that have been stressed from the earliest days of environmental sociology to the present.¹ Even so, the sociological analysis of environmental movements has gone through tremendous shifts over the past decade or so, for several reasons, a number of which pertain to the role that environmental movements will play in shaping our environmental future.

As noted earlier, in mainstream U.S. environmental sociology, it was almost universally held that the overarching mechanism for achievement of environmental integrity revolves around the role of environmental social movements. In addition, the environmental-sociological logic behind emphasizing the role of environmental movements was also based on the presumption that they would ultimately catalyze national environmental regulation. But there are several reasons why many contemporary environmental sociologists have come to believe that there are strategies for environmental improvement other than mobilization of the kinds of environmental movements that currently predominate. There is also reason to argue that environmental mobilization does not necessarily lead to parallel national policy changes.

One reason for reconsidering the role of environmental movements in the future is the recognition that these movements, particularly the mainstream ones that focus on affecting environmental policies of the U.S. federal government and of international organizations and regulatory bodies, are being increasingly challenged by environmental countermovements (Austin, 2002).² As Schnaiberg and Gould (1994, p. 148) pointed out, one of the increasingly powerful types of environmental movements is that of the antienvironmentalist movement. The antienvironmentalist movement involves a range of organizations such as the Wise

Use Movement, the Property Rights Movement, and several groups such as the Climate Council, Business Roundtable, and the Global Climate Coalition that fought to prevent the U.S. federal government from cooperating with the negotiations at the 1997 Kyoto Round (the Third Session of the Conference of the Parties) and the 2000 Hague Round (the Sixth Session of the Conference of the Parties) of the United Nations Framework Convention on Climate Change (FCCC). The antienvironmentalist movement has developed a persuasive ideological position—that the problem is more so environmental alarmists than it is environmental problems and that the market is already doing a sound job of allocating resources—and has a well-funded network of think tanks and support groups (such as the Hudson Institute and the Cato Institute).

A second major reason for reevaluating the role of environmental movements is the observation by many environmental sociologists (e.g., Mol, 1995) that radical environmentalism, long viewed by many environmental sociologists as the type of social force needed to counter rampant environmental destruction (see Schnaiberg, 1980), is perhaps becoming increasingly irrelevant in dealing with modern environmental issues. These observers believe that environmentalists can be most effective if they engage in collaborative relationships with industrial corporations and other entities whose actions have an impact on the environment. More broadly, one of the strong tendencies among sociological observers of environmental movements over the past decade or so is for them to express reservations that one or another major segment of environmentalism is wrongheaded in its strategy and destined to fail. Gottlieb's *Forcing the Spring* (1993), for example, is a hard-hitting critique of highly professionalized East and West Coast environmental groups and a brief on behalf of a more locally based, grassroots environmentalism.

There is now much more attention to the specific mechanisms according to which environmental movement activities lead to environmental reforms or improvements (e.g., Banerjee, 2000; Beamish, 2001; Carmin & Balzer, 2002; Weinberg, 1997). Early in the development of environmental sociology, there was a presumption that, at least over the long term, there would be a relatively automatic tendency for environmental collective action to occur for one or more reasons. Many environmental sociologists had presumed that evidence about and public awareness of environmental problems would eventually lead to citizen mobilization, as Brulle (2001, p. 234) has pointed out. Other observers have suggested that as the United States and other industrial societies become increasingly affluent, the growth of the educated middle class would increase the base of support for environmental protection (Inglehart, 1990).³

The third factor advanced by environmental sociologists and other scholars as a reason to look beyond conventional environmental movements as mechanisms for advancing the cause of environmental protection is that some of the most promising strategies in this regard have little or no relationship to mainstream national and global environmental movements or local movements. These strategies, which include options such as industrial ecology, strategic environmental management, dematerialization of production, and delinking of growth and deenvironmental degradation, will be discussed later in this article.

The linkages among affluence, environmental problems, and citizen environmental mobilization are by no means automatic, however. Consider, for example, the fact that the nature and extent of environmental problems are far better understood today than they were three decades or so ago but that there has been little landmark environmental legislation passed in recent years, at least by comparison with the 1970s (Kraft, 2001, chap. 4). Thus, in addition to the need for scientific docu-

mentation (or a parallel process of popular or lay documentation of an environmental issue) to mobilize people to be concerned about an issue, these concerns need to be incorporated within environmental discourses or ideologies and be seized upon by one or more environmental organizations. The attractiveness of an issue for media coverage is also a significant factor in shaping the extent to which the problem generates public interest and concern and becomes incorporated within the agenda of one or more environmental groups (see also Hannigan, 1995).

Another reason why the role of environmental movements has come to be reassessed is that these movements are increasingly being challenged—and often overwhelmed—by anti- or counterenvironmental groups. Austin (2002), Rowell (1996), and Thornton (2000), for example, have documented the growing trend toward well-funded antienvironmental organizations' being formed to contest the efforts by environmental organizations to advocate for environmental control or reform policies. Typically, these groups are funded by private corporations or by conservative philanthropies, although there are instances in which antienvironmental groups have emerged relatively spontaneously at the local level or are unaffiliated with conservative corporate interests (McCarthy, 1998). Antienvironmental organizations are most effective in the areas of land-use regulation and control of toxic chemicals, in the sense of their being a consistent and influential voice for reducing the "regulatory burden." Antienvironmental groups have been particularly influential in congressional and other domestic discussions of policies for controlling greenhouse gas emissions. Thus, one of the critical dimensions of the role played by environmental movement organizations and of the movement as a whole is the capacity of these groups to contend with antienvironmental groups at various levels.

The environmental movement has also undergone increasing differentiation. The movement is far more complex than it was at the dawn of environmental sociology as a recognized sociological specialty. In particular, there is now increased differentiation between the large Washington, D.C.– and New York–based national and international environmental groups, on one hand, and much smaller local environmental groups on the other. Also, there has been continual ideological differentiation among these groups: Witness, for example, the vast gulf between the relatively conventional, if not conservative, conservation groups such as the National Wildlife Federation and Audubon compared to much more radical organizations such as the "deep ecology" group Earth First! and the relatively militant groups such as Friends of the Earth and Greenpeace.

Brulle (2001) has studied the discourses—the major premises and claims—of major U.S. environmental groups and has based his research on the notion that studying common patterns in discourses can help to identify the major types of environmental groups that have existed over time. Brulle has noted that from the mid-19th century until the 1960s, there were only two major types of proenvironmental discourses and groups in the United States: preservation groups (e.g., the Nature Conservancy and Wilderness Society), advocating the preservation of wilderness and other natural areas, and conservation groups (such as the National Wildlife Federation and Isaac Walton League), advocating the reduction of resource waste through proper management and application of science to natural resource policy making. Over the past 35 or so years, however, there have been four major new types of environmental movements that have emerged in the United States. These new types of environmental movement discourses include the ecocentric, political ecology, deep ecology, and ecofeminist discourses.

Ecocentric environmental groups—typified by the Natural Resources Defense Council, the Cousteau Society, and Zero Population Growth—adhere to the view that natural systems are the basis of humanity, that human survival is linked to ecosystem survival, and that human ethics should be guided by ecological responsibility. The political ecology discourse is guided by a view that the domination of humans by other humans leads to the domination of nature and that political and economic power creates major environmental problems. Solutions to environmental problems require fundamental social change based on empowering subordinate groups such as local communities and poor people within these communities. Examples of well-known political ecology groups have included the Citizen's Clearinghouse for Hazardous Wastes during the 1980s and early 1990s and the Government Accountability Project in recent years. Deep ecology groups' discourses are based on the fundamental principle that the richness and diversity of all life—including nonhuman life forms—have value and should be protected and that human life should be privileged only to the extent required to satisfy humans' vital needs.⁴ The militant group Earth First! has been the classic deep ecology group, whereas Rainforest Action Network and Wild Earth are two more recent deep ecology environmental movement organizations. Finally, ecofeminism is based primarily on the notion that ecosystem destruction is based on androcentric or patriarchal concepts and institutions and that eradication of androcentric institutions is the lynchpin of solving environmental and other social problems. World Women in Defense of the Environment and Women in Environment and Development are typical ecofeminist groups.

The past decade has witnessed the rise of other new—and often highly innovative or provocative—environmental movement organizations and movements such as the environmental justice movement, the grassroots environmental movement, and radical ecological resistance movements in the developing world (Peet & Watts, 1996; B. R. Taylor, 1995). The closely related grassroots environmental movement and the environmental justice movement in the United States, “new social movements” in European countries (Beck, 1987, 1992; Scott, 1990), and “global social movements” (Cohen & Rai, 2000) are particularly notable instances of new types of environmental movements worth discussing here.

There is a tendency when thinking about the environmental movement to focus largely on the major national and international environmental groups because of their visibility. But it is the case that Americans who are actually directly involved in environmental activism are much more likely to do so within local rather than nationally or globally focused environmental groups. The grassroots environmental movement is a particular, highly activist, component of the groups that operate mainly in particular communities or regions.

The principal impetus for the grassroots environmental movement was the discovery of widespread toxic chemical pollution in the Love Canal neighborhood near Niagara Falls, New York (see Levine, 1982; Szasz, 1994). The grassroots environmental movement has continued to stress toxic chemical and related issues (toxic waste dumps, contamination of water supplies, radioactive wastes, factory pollution, and siting of hazardous waste disposal facilities and garbage incinerators). Grassroots environmental groups also deal with broader issues of the protection of public health.

To some extent, grassroots groups focus on issues that the more visible organizations in the environmental movement tend to ignore. Over the past 15 or so years, the more visible parts of the environmental movement have tended to emphasize global-scale or transboundary environmental issues, and in so doing, they have gen-

erally deemphasized relatively local kinds of problems such as toxic wastes, land use, and so on. Grassroots environmental groups fill the void created by mainstream groups that have moved toward the national and international policy arenas. Grassroots environmental groups differ from more mainstream ones in ways other than their stress on public health and toxic substance issues. Although the large groups' members are mostly White and middle class, grassroots group members are from a broader cross section of class backgrounds. Grassroots groups are especially likely to have women and volunteer leaders. Grassroots group members are also much more likely to distrust government and scientists and to take strong or uncompromising stands than are the national environmental groups. There are tendencies toward antagonism between the two groups, a good share of which comes from grassroots group members' tending to "perceive the nationals as remote, overly legalistic, and too willing to accommodate to industry's concerns" (Freudenburg & Steinsapir, 1992, p. 33).

The environmental justice movement (see, e.g., Berry, 2003; Bullard, 2001) is a particularly innovative and prominent form of the grassroots environmental movement (Szasz, 1994) with considerable potential to affect our environmental future. The environmental justice movement was inspired by grassroots environmental mobilizations but was catalyzed by the U.S. civil rights community, particularly the components of the faith community committed to social justice. It is thus a joint civil rights, social justice, and environmental movement. The environmental justice movement is based on the claim that many types of environmental destruction—particularly those involving toxics, pollution of the workplace, and polluting factories, waste dumps, and nuclear processing facilities—tend to have their most adverse impacts on minority communities and the poor in general. Environmental protection is thus seen as a civil rights or social equity issue. Environmental reform and redirection of the processes for siting waste dumps and other polluting facilities have thus come to be redefined as social and racial justice concerns. What has given the environmental justice movement its force is the fact that it blends the themes of environmentalism and social and racial justice in a way that can bring forward an impressive level of mobilization around local and regional environmental issues. Environmental justice issues can also fall under civil rights and equal protection laws as well as under environmental laws.

Environmental movement organizations are changing as a result of new coalitions and alignments among various related movements. For example, there are now increasingly close alliances between environmental movement organizations and other movements with which environmentalists were once thought to have very little in common. Environmental groups are now increasingly engaging in coalitions with organizations from movements such as the antiglobalization movement, the labor movement, the sustainable agriculture movement, the consumer movement, the antibiotechnology movement, the genetic resources conservation movement, the human rights movement, and so on. A set of interrelated issues regarding globalization and trade has increasingly led environmental groups into unprecedented alliances with other movements.

The best illustration of these new patterns of coalition among movements is the role played by environmental social movement organizations both before and after the November 30, 1999, protest at the World Trade Organization (WTO) Seattle Ministerial Conference, which was held to kick off the Millennial Round of negotiations over extending the WTO. The "Battle in Seattle" was the culmination of a more than decade-long tendency toward what I (Buttel, 1992) have called "environmentalization." Environmentalization is the process by which a formerly

nonenvironmental issue such as trade or human rights comes to be defined substantially as an environmental issue. During the 1990s, as trade liberalization policies such as the WTO and the North American Free Trade Agreement (NAFTA) were enacted and implemented, these policies' potential environmental consequences were noted.

There has been considerable concern, for example, that trade liberalization policies such as WTO and NAFTA might have negative implications for the United States' ability to control environmental problems, for two major reasons. First, trade liberalization policies are aimed at phasing out barriers to trade by defining certain types of trade restrictions to be illegal restraints on trade. WTO enables countries to challenge each others' laws if these laws can be seen to constitute a "nontariff barrier to trade." Many of these types of newly forbidden restrictions on trade are environmental policies. A good example is the U.S. Marine Mammal Protection Act, which restricted imports of tuna that was not produced using "dolphin-safe" procedures that minimize dolphin deaths in the harvesting of tuna on the high seas. Mexico filed a complaint with the WTO, which ruled in favor of Mexico and forced the repeal of the U.S. import restriction.

A second and closely related concern is that trade agreements such as WTO and NAFTA may result in a downward harmonization of regulations across the world; in other words, WTO and NAFTA could result more often in countries' watering down their regulations on imports than countries' increasing their health, safety, and environmental standards on imported goods. As an example, in 1997, a WTO ruling led to overturning part of the U.S. Clean Air Act (the part that prevented the import of low-quality gasoline with a high potential for air pollution).

When NAFTA and the WTO were originally considered for ratification by the U.S. Congress (in 1993 and 1994, respectively), most major U.S. environmental groups either supported or were neutral about NAFTA, and only five opposed ratifying the WTO agreement (Jaffee, 1999).⁵ Since that time, however, virtually all major U.S. environmental groups have come to have grave reservations over free trade policies because of their potential environmental impacts or their implications for effectively repealing U.S. environmental legislation. The potentially negative impacts of trade liberalization on the environment have proved to be critical in stitching together the surprisingly broad coalition of movements that joined the Battle of Seattle. Trade, along with certain other issues such as opposition to genetically modified food products, has proven to be a bridging issue that serves to bring together a far broader coalition than might otherwise be possible. The wide range of environmental, labor, consumer, farmer, international development, human rights, antibiotechnology, and related groups that joined forces in Seattle has often had little in common before. Their opposition to trade liberalization (as well as their opposition or ambivalence toward genetic engineering) served to unite these groups into a relatively harmonious coalition that has had a decisive impact on the politics of international trade liberalization. Although it was largely taken for granted in 1998 and early 1999 that the WTO was well established and, if anything, would be strengthened in the Millennial Round negotiations, the strengthening of WTO during the early years of the 21st century now appears to be problematic. It is useful to note that although conventional environmental groups (such as the Sierra Club, Greenpeace, and Friends of the Earth) were major actors at the Seattle protest and although there was a pronounced environmentalization of most of the issues stressed by the activists, the mobilization at Seattle was by no means an environmental movement protest. Environmental groups were in coalition with many other groups. The protest action was largely polycephalous in its leadership structure and

segmented and coincident in its ideological productions. For this reason, most observers believe that the explanation of the Seattle protest must be mainly a new social movements or a global social movements one (see, e.g., Cohen & Rai, 2000).

Finally, developing-country environmental movements, some of which are very radical and closely aligned with social and international justice concerns, are a further instance of innovative and potentially transformative environmental movements. Some developing-country environmental movements are relatively similar in their membership characteristics and goals to preservationist or ecocentric movements in the developed countries of the north. The most innovative and dynamic developing-country movements, however, are those that have their origins as much or more in social justice concerns as in the impulse to preserve biodiversity or sensitive ecozones. Many of these developing-country environmental movements, for example, have been organized around advocacy of the rights of indigenous peoples and peasants, particularly in the context of struggles over access to land. Other developing-country movements have been highly involved in the international processes of negotiating treaties, protocols, and other international agreements relating to biodiversity, forest conservation, and control of greenhouse gas emissions. Developing-country environmental groups usually weigh in on these discussions by advocating agreements that involve fairness to the developing world and to indigenous societies, poor people, and peasants.⁶ It should also be noted that developing-country environmental movements very often have close organizational and financial linkages to counterparts in the north, leading not only to coalitions but also to cross-fertilization of ideas.

The social movement image of our environmental future is essentially threefold: Environmental issues, concerns, and experiences shape human identity; environmental movement organizations and related coalitions of new social movements and global social movements groups shape and reshape identities and build political momentum; and political mobilization serves to place pressure on state officials and private decision makers to respond to the environmental agenda. The essence of this image of the future is that as justifiable and rational as environmental protection might seem in the abstract, there is such a strong tendency for private interests to favor expansion of production and consumption that there must be constant political pressure from mobilized citizenries to keep public as well as private decision makers environmentally accountable. There is clearly no necessary relationship between environmental movement mobilization and proenvironmental outcomes. Nonetheless, the recent history of environmental movements around the globe suggests an innovative diversification of approach and tactics, and perhaps a reasonably well-functioning division of labor, that will be at the heart of any environmental progress to be made in the future.

THE ENVIRONMENTAL REGULATORY STATE AND OUR ECOLOGICAL FUTURE

The notion that government or state regulation of environmentally related private decision making, particularly by industrial corporations, would be central to a promising environmental future is an old one. Numerous histories of the early origins of environmentalism and environmental protection success stories in the United States and elsewhere point to the fact that the quest for resource conservation was, more often than not, very closely associated with supportive, if not catalytic, actions from government agencies and officials. At the turn of the 20th century in the United States, for example, much of the thrust behind what we now

would call environmental protection came from nascent government agencies such as the Forest Service and Department of the Interior. The Progressive Era conservation movement at the turn of the 20th century was as much a federal government-sponsored movement among government agency-based resource managers armed with new developments in the sciences such as forestry, fisheries, and agriculture as it was a social movement among citizens. To be sure, conservation organizations in civil society such as the Sierra Club and Isaac Walton League, along with professional resource management associations such as the American Forestry Association, played major roles in encouraging government officials to take steps to improve the conservation performance of America's natural resource sectors. But it has been repeatedly documented that the impetus for conservation programs often came from within government circles (Andrews, 1999; Hays, 1987; Kraft, 2001).

Skowronek (1990), in his now-classic study of the development of the American federal government, has noted that the rise of the natural resource management agencies and of the regulatory apparatus that went along with them was one of the most critical changes in the modernization of the American state. As recently as the late 19th century, the American state was a government of "courts and parties," in which a conservative Congress strongly protected states' rights and blocked attempts to have a stronger federal role in the economy and society, while a conservative court system staunchly protected the prerogatives of property. At the time, there was little impetus or mechanism for collective interests or concerns to be reflected in national governmental policies, especially if doing so might involve significant public expenditure, reduction of states' rights, or federal intervention in the decision making of private capital. Ultimately, however, many of the accumulating excesses of the United States' highly decentralized governmental system created massive social and natural resource problems that could not be dealt with through the traditional governmental order of courts and parties. Farmers, among many other groups, agitated for protection from railroad, farm machinery, and other monopolies that had been permitted to develop to an extraordinary degree under protection of a conservative property-protecting judiciary. Middle-class reformers clamored for federal laws that would protect the young and the working class from the problems of an unregulated workplace. Most significantly for present purposes, there was a growing voice in support of the need for federal regulation of the activities of loggers, miners, and others who were seen to be despoilers of the country's natural bounty and patrimony (Hays, 1959, 1987). Many scholars thus take what we now call the rise of the environmental regulatory state to be one of the central and defining features of the development of the modern form of liberal democratic government in the Western countries.

There can be little doubt that the environmental regulatory state in the United States has contributed richly to environmental protection in America. Kraft (2001, p. 87), for example, has identified the 26 major federal environmental laws in the United States since 1964 (16 of which were enacted in the 1970s, and none enacted since 1990). Essentially all of these laws, particularly the truly landmark laws passed in the 1970s, involved "nationalizing" environmental policy. Kraft noted that

environmental policy was "nationalized" by adopting federal standards for the regulation of environmental pollutants, action-forcing provisions to compel the use of particular technologies by specified deadlines, and tough sanctions for non-compliance. Congress could no longer tolerate the cumbersome and ineffective pollution control procedures used by state and local governments (especially

evident in water pollution control). Nor was it prepared to allow unreasonable competition among the states created by variable environmental standards. (p. 87)

The nationalization of environmental regulation depicted by Kraft clearly bore fruit. Virtually all of the national-level legislation identified by Kraft has yielded significant results. In particular, there was great progress during the 20th century in adding and protecting wilderness, forests, and sensitive habitats within nature reserves such as those of the U.S. Park Service. Also, since the late 1960s, there has been considerable progress in air and water pollution control (particularly relative to what could have been the state of air and water quality if the trends in production, consumption, and pollution after World War II would have continued until the end of the century) and in workplace health and safety. It is often noted, in fact, that the 1970s were a kind of Golden Age of American environmental protection policy, in that this was the most significant epoch of environmental policy innovation in U.S. history.

Why is it that political systems such as the U.S. federal government have become increasingly involved in environmental regulation over the 20th century? Many scholars argue that the federal regulatory role resulted partly from the pressures placed on government by the environmental movement (see, e.g., Kraft, 2001, chap. 4). But it is also apparent that there was a definite momentum behind the nationalization of responsibility for environmental control and protection well before the mobilization of the late 1960s and early 1970s environmental movement. Thus, it must be the case that, at least to some degree, there has been some impulse toward federal environmental regulation that originated independently of environmental movement pressures.

In the industrialized countries of North America, Europe, and Oceania, the modern form of institutionalizing environmental tasks in state policies and politics generally dates back to the 1960s. From the 1960s through the 1980s, the state rapidly expanded the span of its activities and powers in environmental protection and occupied a "comfortable" and unquestioned position in dealing with environmental problems. In the United States, for example, the expansion of the scope of federal responsibility for environmental protection coincided with the establishment of the Environmental Protection Agency by Executive Order in 1970.⁷

Scholars and other observers, of course, pointed out repeatedly at the time that government responses to environmental problems, challenges, and crises were very uneven and often inadequate (e.g., Rosenbaum, 1973). But during the heyday of national government environmental regulation, concerns about the limited successes of government natural resource and environmental protection policies invariably led to calls for more rather than less state activity and intervention in the economic processes of investment, production, and even consumption. The nearly universal reaction among environmental management professionals and scholars was that there was no realistic alternative to assigning to the state the key role in ensuring environmental "public goods." There was also broad consensus that the only way to realize societal demands for high environmental quality and minimized environmental risks was for a stronger state to better counterbalance the power of corporate capital. Even where the capitalist economy was seen as one of the major causes of environmental deterioration, more active intervention of the nation-state in the essential economic decisions in the private sector was believed to be the only plausible remedy. This consensus behind the necessity of an interventionist environmental state was cemented further by the more general view in the 1960s and

1970s, particularly in Europe, of the desirability of developing an activist welfare state.

A useful perspective on the origins of national-governmental environmental regulatory capacity and the historic consensus about its role can be based on the notion that one of the intrinsic roles of governments in a societal division of labor is to rationalize social arrangements in the interest of order and efficiency. The government or political system can be distinguished from other social institutions in that the government or state is the only institution with the ability, and thus ultimately the responsibility, to make possible what might be called the rationalization of society. Most other institutions in society, particularly economic institutions, are based on private incentives or group interests, many of which are represented before the branches of government in pursuit of (narrow) group benefit. The state, by contrast, is constituted with the expectation (or, at a minimum, with an ideology) of providing collective benefits and with the prerogative to foster changes in society that make it function more smoothly, efficiently, or rationally.⁸ Environmental protection can be thought of as the textbook case of a policy arena in which government agencies and officials are in a distinctive position of being able to take steps to rationalize institutional rules and societal behaviors to create a level of ecosystem protection that benefits citizens as a whole (at least from their perspective; Buttel, 1998). Thus, many sociologists suggest that the national (and other levels of) government tends to take on the role of environmental protection because government is the only institutional sphere that has the capacity and the potential legitimacy to provide collective benefits and public goods such as environmental protection. Responsibility for ensuring environmental protection (or at least some modicum of it) is inherent in the state's role in a societal division of labor. Environmental movements clearly can increase the level of demand and pressure on the state to increase its commitment to environmental protection, but movement pressure cannot itself establish the fact that state managers and agencies can legitimately take steps to intervene on behalf of resource conservation and maintenance of environmental quality.

A recent spate of impressive histories of 20th-century American environmental policies (Andrews, 1999; Hays, 2000; Kraft, 2001) has converged on the notion that a society's ability to make possible environmental protection is essentially a function of the nation-state's capacity to enact and implement regulations of private behaviors. Thus, it is not surprising that as a result of the enactment of 1970s and subsequent environmental regulation policies, and following on ever more conclusive evidence that these policies have more or less worked, many social scientists have felt that the development and maintenance of the state's capacity to regulate private resource decision making comprise the critical factor in our environmental future. There has thus tended to be a presumption in many quarters that environmental protection can go only so far as there is capacity of government resource management and environmental agencies to implement an environmental regulatory and control agenda.

In the 1980s, however, the comfortable state of affairs of the continually expanding responsibility of national governments to enact and implement regulations to protect the environment came under serious scrutiny and pressure for the first time. The conservative regimes of the 1980s—especially those in the United States (Reagan) and the United Kingdom (Thatcher)—were heavily inspired by neoliberal scholars who argued for and legitimized strong deregulation and privatization programs. These neoliberal tendencies affected a wide range of policy fields, including the environment (cf. Simon, 1982; Vig & Kraft, 1984). In addition, Reaganism and

Thatcherism indirectly but substantially influenced the political cultures and regimes of a variety of countries around the world and led to similar deregulatory demands elsewhere.

Thus, although there is still considerable recognition that the government role in environmental protection remains critical, in the late 20th and early 21st centuries the future of environmental regulation—particularly in the U.S. federal government's key environmental regulatory agency, the Environmental Protection Agency (EPA)—has come under considerable doubt. For one thing, expansion of the American government's responsibility in environmental regulation and protection was never complete. Many historical analyses of the rise of the American regulatory state, especially its environmental regulatory apparatus, have noted that the rise of this regulatory system did not involve displacing the previous system of subsidy to resource consumption and protection of private property rights. Thus, the regulatory system was superimposed on the United States' decentralized governmental system, leading to endemic conflict among federal agencies and among the three branches of government over the implementation of environmental policies (Hays, 1987; Kraft, 2001). The EPA, which has become the most important U.S. federal environmental protection bureaucracy, has never acquired cabinet status and tends to have far less influence in the federal government than do agencies such as the Departments of Defense, Treasury, and State.⁹ Thus, many critics of the traditional environmental regulatory state feel that the subordinate stature of the environmental agencies means that they can be only reactive. The unevenly developed U.S. environmental regulatory state has arguably led to theoretical treatments, such as by Schnaiberg (1980) and Foster (2000), that see the principal role of the American state as being a junior partner, alongside capital, in a treadmill of production process.

Perhaps the most unsettling area of doubt about the future role of government environmental regulation is that the conventional form of environmental control—what is often referred to as “command-and-control” regulation—is increasingly seen as being outmoded. Murphy (1997), for example, has argued that command-and-control regulation tends not to be very innovative or dynamic because it cannot escape the limits of “end-of-the-pipe” control; that is, conventional environmental regulation cannot go beyond setting standards for regulating corporate behavior in terms of the levels of emissions of pollutants of various kinds and litigating when these standards are not met. This style of regulation accordingly presumes that firms will continue to pollute, albeit less so. Mandating use of specific pollution control structures will often merely shift contaminants from one place to another (e.g., from water to the land). This form of regulation, in Murphy's view, provides little or no incentive for firms to make innovative changes in their production practices that could result simultaneously in reduced costs and reduced resource usage.

Another commonly expressed variant of the conventional critique of command-and-control regulation is that it is inflexible and inefficient. Some of this criticism is based on empirical studies showing, for example, that most command-and-control regulation sends inefficient signals “at the margin” so that firms often respond to regulations in ways that reduce employment or national income (see, e.g., Freeman, 2000). Also, command-and-control regulation can be cost-inefficient because it often mandates costly pollution abatement equipment when overall pollution levels could be reduced more cheaply through some market mechanism such as pollution trading permits. Regulations can become obsolete very rapidly in industries in which there is a brisk pace of technological innovation. There has also been a trend toward rising government outlays and privately incurred costs associated with envi-

ronmental regulation (Rosenbaum, 2000, p. 175). Command-and-control regulation is also argued to foster more adversarial relations between agency staff and private decision makers than is necessary or desirable.

It should also be noted that much of the hesitation about national government environmental regulation has had to do with the fact that conservative think tanks and related groups have felt that their future lies with a more globalized world in which national regulations, as well as other government interferences such as corporate taxation and restrictions on investment and trade, play a decreased role. Thus, the title of Fred Block's (1996) book *The Vampire State* indicates how there has been a general "demonization" of the role of government on the part of many corporate officials, conservative think tanks, and associated intellectuals. The antienvironmental movement has been a major voice contributing to the demonization of the state as a whole and to the demonization of centralized environmental rule making in particular.

Beginning in the 1980s, these various criticisms of national environmental regulation led to attempts by conservative governments to achieve "regulatory relief" for their supporters and clients—or, in other words, to reduce the role of the state in regulating the environmental performance of their private sectors—with varying degrees of success. In the United States, for example, the first Reagan administration achieved a very substantial rollback of environmental state activities and influence, as indicated by the fact that EPA expenditures declined in real (1997) dollars from \$24.4 billion in 1980 to \$18.2 billion in 1984; as late as 1998, environmental agency spending in constant 1997 dollars remained below the 1980 pre-Reagan expenditure level (Vig & Kraft, 2000, p. 396). Although the environmental deregulatory impulse was particularly strong in the United States and the United Kingdom and had considerable influence abroad, its impacts were quite variable internationally. Environmental policies in the Netherlands, for example, were hardly affected by the wave of deregulation and privatization of the 1980s.

Over the past several years, there has been an intensifying debate in the United States over whether centralized or nationalized command-and-control regulation is desirable for environmental protection, or, in other words, over whether state environmental regulation should be thought of as the necessary centerpiece of a desirable environmental future. On one hand, it is now clearly established in the United States that the trend in environmental policy is toward deregulation. Rosenbaum (2000), for example, argued that the EPA has acquired a "battered agency syndrome," in that it has been the target of a range of interest groups (as well as the bulk of Congress and the Republican Party) and has become halting and indecisive in its role and on the defensive about command-and-control regulation and centralized environmental rule making. The EPA has thus taken on what Rosenbaum referred to as the "gamble with regulatory reinvention." The EPA's regulatory reinvention has included steps such as developing industry-specific standards (rather than standards being applied to all industries), giving the states more responsibility in environmental protection, and developing market incentives for pollution control (e.g., administering a national market for sulfur oxide emissions through the 1990 Clean Air Act Amendments and promoting a new type of "market environmentalism"). The EPA has also widely implemented risk-assessment procedures that replace mandatory pollution control with a cost-benefit assessment of regulatory decisions and standards. There have been some notable successes associated with these reforms, but there are significant concerns that these shifts are not supported by the EPA staff and will reduce the long-term capacity of the government to control major environmental problems (Andrews, 1999; Rosenbaum, 2000).

On the other hand, there are emerging economic analyses of American environmental regulations suggesting that claims of the cost-inefficiency and inflexibility of national command-and-control regulation are exaggerated if not incorrect (Cole & Grossman, 1999). Many sociologists have also suggested that it is unrealistic to expect that the environmental role of governments can become as consensual, efficient, and innovative as is implied in many of the critiques of government regulation. There is now a growing tendency to think of government environmental regulation by employing the terminology of the "environmental state" (Mol & Buttel, 2000). The notion of the environmental state means not only that the government is the key agent of environmental control and rationalization and that there is a corresponding tendency for governments to take on the major responsibility for ensuring environmental protection. The notion of the environmental state also suggests it is to be expected that as the state's responsibility for environmental protection grows, it becomes inevitable that its activities will involve conflict and contradictory responsibilities. The essence of these contradictory responsibilities is that, on one side, states face strong pressures to expand production, consumption, and living standards and thereby the state is implicated in causing environmental destruction, mostly indirectly but sometimes directly through its public works and other programs. On the other side, and just as fundamentally, the state is being expected by citizens and various social groups to ultimately be the key entity ensuring environmental conservation. There is thus something of an inescapable contradiction between causing and being responsible for ameliorating environmental problems, and this contradiction leads to an environmental state that functions in an indefinite pattern of ambivalence and internal struggle.

Defenders of the national-state role in ensuring a promising environmental future do not confine their advocacy to defending command-and-control regulation. There has been particular enthusiasm in recent years for innovations in regulatory practice such as applying the "Precautionary Principle" (PP) to regulatory decision making. The PP is now being looked to by most environmental groups and many in environmental regulatory agencies around the world as playing a particularly important role regarding regulation of the approval and introduction of new foods, drugs, and chemicals.

In January 1998, a group of scientists, government officials, lawyers, and activists met at the Wingspread Conference Center in Racine, Wisconsin, to develop a "Wingspread Statement on the Precautionary Principle." The PP, which is relatively widely recognized as the guiding principle for regulation of chemicals and potentially hazardous practices in the European Union, has two major components. First, it involves a shift in the burden of proof from government regulatory agencies to private firms; thus, under the PP, it is not the obligation of government to prove that a new product or production practice is harmful but rather an obligation of private firms to prove that it is safe. Second, the scientific standard for implementing the PP in regulatory decision making is a more encompassing one. Products or practices could be disapproved if there is evidence of any harm and/or if there is a plausible scientific rationale that approval could lead to negative health or environmental effects. In addition, the Wingspread conferees generally supported the notion advanced by the ecological economist Robert Costanza of the University of Maryland that firms introducing new technologies, chemicals, and production practices should be required to provide "assurance bonds," a procedure he calls the "4P approach to scientific uncertainty."¹⁰ Assurance bonds would be based on a worst-case scenario of the costs of a new technology, process, or chemical and would be forfeited, at least partly, if there are eventually found to be damages associated with

the practice. Bonds would be returned to firms with interest if and when harmlessness was proven over time.¹¹

Conceptualization and advocacy of the PP comprise is but one of a large number of strategic and policy innovations that have been pursued within the governmental and civil-society communities interested in enhancing the role of environmental regulation. Another exciting frontier of environmental policy thought is that of the growing interest in national environmental accounting and in providing information on corporate environmental performance through modalities such as the Toxic Release Inventory (Milani, 2000; Murphy, 1994; Sachs, Loske, & Linz, 1998).

It is useful to note in this regard that although environmental agencies in a number of world nations (particularly those in Europe) have been receptive to the PP, the impetus for institutionalizing the PP in national law and international agreements has come largely from environmental movements. Environmental groups and related nongovernmental organizations have also played pivotal roles in advocating expansion of the role of the PP in national environmental policy making (see Hardi & Zdan, 1997). These innovations suggest that although a reevaluation of theoretical presumptions about the role of environmental movements and environmental regulation has long been overdue in the field, there exist an extraordinary vitality and dynamism in environmental policy thought. Furthermore, the critical role played by environmental movements is apparent. Accordingly, researching the nature of the relations between environmentalism and regulatory practice represents a high priority for environmental sociologists interested in exploring our environmental future.

THE ECOLOGICAL MODERNIZATION IMAGE OF OUR ENVIRONMENTAL FUTURE

In contrast to those who believe that either environmental mobilization and movements or national governmental environmental regulation are the ultimate guarantors of a secure environmental future are ecological modernizationists who have far less faith in either movements or states as agents of a sounder environmental future. Ecological modernization theorists are basically of the view that as much as environmental problems in the past have been caused by an industrially driven process of expanded production and consumption, the solution to environmental problems cannot be found in radical movements that seek to restore the lower levels of output and consumption that prevailed years ago or in centralized command-and-control regulation. Rather, in the ecological modernization perspective, the solution to environmental problems caused by industrialization requires more industrialization—or “superindustrialization”—albeit industrial development of a far different sort than that which prevailed during most of the 20th century.

Ecological modernizationists are critical of both radical environmentalism and conventional environmental regulation for several reasons. First, ecological modernizationists have observed that such radical environmental movements aimed at reversing the process of modernization—what they often call “countermodernity” movements—have not tended to be very successful. These radical movements have attracted very little public support and are mostly ignored by government officials and private decision makers. Second, ecological modernizationists suggest that it is largely infeasible to go back to some imagined utopia of a less industrialized past. Most people—those in the industrial countries and many of the privileged in the developing world—will be unwilling to reduce their living standards significantly even if doing so might make possible major

improvements in the health and sustainability of the environment. Also, most of the processes that have led to ecological deterioration (e.g., capital-intensive industrial expansion, corporate competition, and international competition) are so powerful that they are not likely to be restrained or reversed even if there was a broad consensus in favor of environmental protection. Industrialization, for example, has led to such extraordinary advantages in terms of life expectancy, safety, comfort, and so on that rolling back the industrialization process around the world seems inconceivable. Finally, the ecological modernizationists raise many of the concerns about the inflexibility and inefficiency of command-and-control regulation that were previously discussed.

In particular, the ecological modernization image of our environmental future is based very strongly on the observation that some of the core features of a more environmentally secure tomorrow are already emerging or already in place, even though they seem less visible than radical environmentalism or government standard setting. Ecological modernizationists see several hopeful trends or processes. One such process, which I discuss at greater length below, is that there are now definite areas of production and consumption in which improvements are being made that are resulting in reduced use of resources and lower levels of pollution. These areas of improvement are best typified by industrial ecology advances in manufacturing sectors such as in European chemical and paper production (Mol, 1995). Industrial ecology practices go far beyond reduction of pollution emissions at the "end of the pipe." Industrial ecology practices involve drastic restructuring of production processes to tighten recycling loops inside and outside of the factory. These tight or closed loops are such that waste in any given production process (e.g., by-products in making paper) becomes a valuable input in another production process. In addition to the increasingly widespread use of industrial ecology practices and other ecoefficiency measures, ecological modernizationists also see the global spread of green marketing and strategic environmental management as evidence that there is an ongoing process of environmentally friendly modernization.

The ecological modernization image of the future has elements of both automaticity and political specificity. That is to say, on one hand, there are some respects in which ecological modernizationists believe that the tendency toward a more environmentally friendly future is essentially a more or less automatic extension of well-established institutional patterns of social change. Private industry, for example, has an interest in efficiency. Industrial ecoefficiency can be achieved by being more sparing in the use of resources and raw materials (or, in other words, by minimizing production costs) and by minimizing the ancillary costs of production, such as pollution control expenditures or the actual potential external costs of production (in other words, the environmental and other costs of production that are externalized onto society at large). Likewise, being able to market green products (e.g., products such as organic foods, recycled paper, or dolphin-safe tuna) gives firms an advantage in the marketplace. Furthermore, industrial-ecological production practices, cultivation of a positive proenvironmental image, and associating the corporate or brand name with environmentally friendly practices may serve to build brand loyalty and reduce expenses associated with lawsuits, liability, and litigation. The continual competition faced by private industry provides an ongoing incentive that can reinforce the incentives for proenvironmental decision making.

But if we accept that there are some sound management reasons why environmentally friendly corporate behavior can occur, why is it that corporate environmental accountability and improved ecoperformance are far from universal or far from the norm? Here, ecological modernizationists have observed that it is not sim-

ply corporate competition and capacity for innovation that are necessary and sufficient conditions for more positive environmental outcomes in the future. Ecological modernization thus must also involve political specificity; there must be a modernization of politics that reshapes the competitive corporate environment to make the pursuit of environmentally friendly production and management decisions more rational and more likely. One of the conditions for the modernization of politics is the persistent presence of a strong and effective environmental movement (see also Sonnenfeld, 1998, 2000). But in contrast to the views of many of those who believe that a positive environmental future will largely rest on environmental movements becoming more radical in their demands and more comprehensive in their vision, ecological modernizationists feel that a strong movement (as measured by the number of supporters and the degree to which their claims are strident and their demands are uncompromising) may not in and of itself yield significant ecological improvements. Radical, uncompromising movements may catalyze active corporate opposition or reinforce counterproductive regulatory practices by government agencies. Thus, for example, if aggressive, uncompromising environmental movement groups force governments to increase their command-and-control regulations, corporate behavior may shift more toward evading regulation (e.g., by moving to "pollution havens" or engaging in litigation) than by making positive moves toward compliance.

Ecological modernizationists have observed that the region of the world in which the most positive changes are occurring in environmental policy and performance is that of northern and northwest Europe. The ecological modernization image of the future is that two interrelated institutional changes, both of which have occurred most extensively in northern Europe, are needed to ensure that environmental sentiments and the impulse of governments to regulate and rationalize will have positive consequences. First, Mol (1995, 1997) has observed that in European countries such as the Netherlands and Germany, governments have modernized themselves by moving away from command and control and toward more collaborative relationships with industry. Government regulatory officials thus devote more of their efforts to collaborating with private corporations and to bringing more ecologically efficient, less risky, and more profitable alternatives to the attention of corporate officials than they do to setting, monitoring, and litigating over end-of-the-pipe standards. Second, the ecological modernizationists believe that environmental groups will be more effective to the degree that they work with industry to achieve environmental goals rather than putting the bulk of their effort into inducing government agencies to take stronger regulatory action.

Note, though, that the ecological modernization image of our environmental future, although very hopeful and optimistic, is not a naïve one. Ecological modernizationists do not assume that corporate, government, and environmental movement decision makers will normally be in complete agreement or that collaboration and compromise are easy to achieve. Even as ecological modernization processes proceed, for example, environmental groups will reserve the right to "go public" and organize campaigns against firms that are recalcitrant in improving their environmental performance. Thus, it is presumed that the public-private collaboration process is contested and partly conflictual, at least beneath the surface. The overall argument, however, is that a modernized government oversight and guidance process is more likely to create an atmosphere of corporate innovation and environmental citizenship than the largely adversarial relations that characterize command-and-control structures.

Ecological modernizationist thought tends not only to support selective deregulation (away from command-and-control), but it also embraces another notion that has tended to be the antithesis of much conventional environmental-regulationist thought. Environmental modernization thinking has involved endorsing the concept of increased reliance on market mechanisms of environmental protection. It was noted earlier that the United States and other Western governments have taken steps to introduce market mechanisms such as the national market for sulfur oxide emissions that was created through the 1990 Clean Air Act Amendments. The intention behind a market in pollution permits is to ensure that reductions in pollution at any given time will tend to be in areas, or on the part of firms, where the costs of pollution control are the least. But the type of market mechanism that ecological modernizationists are most enthusiastic about is that of green taxes. Green taxes are government levies on the extraction of raw materials, on energy consumption, or on pollution emissions. Green taxes are thus designed to internalize what would otherwise be the external costs of environmental degradation and resource depletion. The types of green taxes that are given most attention as we enter the 21st century are taxes on the sulfur or BTU content of fossil fuels. Fossil fuel taxes are an attractive focus for green taxes because reduced use of fossil fuels induced by higher prices can aid in reducing greenhouse gases. In addition, because fossil energy is implicated in most production and consumption activities, fossil fuel taxes will create an incentive to spend less on environmentally destructive activities of all types and to allocate incomes and funds toward nonenvironmentally destructive areas (e.g., services, leisure, acquisition of information).

While fossil fuel taxes and taxes on pollution emissions are the most direct and efficacious kinds of environmental taxes, ecological modernizationists generally support consumption taxes such as the consumer sales tax imposed by most state and some city governments in the United States and, particularly, value-added taxes such as those in Canada and most European countries. Not only will broad consumption taxes tend to dampen consumption below what it otherwise might be, but the logic behind consumption taxes is that these taxes are or can be substituted for taxes on labor income. Thus, not only will consumption taxes tend to reduce consumption, but they will also reallocate income and other benefits toward workers and be beneficial on social equity grounds.

Ecological modernization is in one sense a quite specific perspective on social and environmental change. But there are also several prominent variants on the theme of ecological modernization that employ similar assumptions or concepts. One parallel terminology is that of "dematerialization." Those who hold an ecological modernizationist image of our environmental future believe that there can be, and in many ways there already is, an overall tendency toward production processes being dematerialized. Dematerialization means that for each unit of output (say, for each automobile, each ton of steel, or each container of breakfast cereal), there will be progressively fewer environmental resources required as inputs into production. Dematerialization thus implies that environmental inputs such as energy and raw materials become replaced by other inputs such as industrial-ecological factory designs, by more use of labor, or by better information, organization, and management skill. At a highly aggregated level, dematerialization of production leads to societies and economies becoming decoupled from resource use (see, e.g., Sachs et al., 1998). Decoupling involves income growth and improvements in living standards becoming less and less dependent on inputs of natural resources and environmental services. Optimistic assessments of dematerialization suggest not only that

ecological modernization, decoupling, and dematerialization are feasible, but also that they can be a source of economic growth over the long term (Weale, 1992, p. 76). Other advocates envision the possibility of a future ecological service economy that is equitable as well as environmentally friendly (Milani, 2000, p. 86).

One of the most interesting arenas of research for ecological modernizationists (and their critics) is that of estimating environmental Kuznets curves. Environmental Kuznets curves involve exploring empirically whether social change and development across the world tends, on balance, to have environmentally positive (e.g., dematerializing or decoupling) effects. This is a particularly critical issue as to how the lower-income regions of the world will fit into an overarching environmental future. If, for example, shifts toward improved living standards and increased development in the lower-income countries of the south will inevitably involve substantially increased pressure on global environmental resources, an environmentally concerned person, group, or nation might have reservations about whether to promote development in the south or to have any optimism about the prospects for an environmentally sane future for the world as a whole.

Environmental Kuznets curves are a variant of the notion of Kuznets curves, which have been a common concept in the sociology of international development. The term *Kuznets curve* reflects the notion, named after the famous Nobel Prize-winning development economist Simon Kuznets, that as very low-income societies begin to develop and become middle-income countries, their levels of income and wealth inequality will temporarily worsen; that is, the degree of income inequality will generally increase as developing countries' incomes rise from \$300 to \$500 per capita per annum (the level that many of the poorest countries in the world are at as we enter the new millennium) to \$3,000 to \$8,000 per capita per year. Kuznets received his Nobel Prize, in part, for documenting the fact that there was a general pattern, among both the highly industrial countries as well as late industrializing countries in the south, that continued per capita income growth after middle-income status had been achieved tended to be followed by lower levels of income inequality. A Kuznets curve, then, is a graphical depiction of the hypothesis that income inequality takes on an inverted-U shape over the course that a society takes as it moves from a low level of development to middle income and ultimately to high income.

An environmental Kuznets curve involves the same type of graphical portrayal as the more standard notion of Kuznets curve except that it is a hypothesis about societies' environmental impacts rather than their levels of income inequality. Thus, an environmental Kuznets curve is a graphical depiction of the notion that as countries move from low income to middle income, their impacts on the environment will become increasingly negative or destructive because of the expansion of production, their still-growing populations, and the inefficiencies associated with obsolete production practices and equipment. But as the development process proceeds to a high level of per capita income, one can expect that environmental performance will progressively improve due to private incentives to dematerialize, to the fact that environmental movements will increasingly organize to address environmental concerns and risks, and because governments will improve their capacity to militate against environmental degradation. High-income societies are considered to be the best able to allocate scarce public and private investments to environmental protection. The environmental Kuznets curve image of our environmental future is thus a doubly optimistic one. Not only does the notion of Kuznets curve imply that high(er) living standards can be environmentally positive, but it also suggests

that there will be environmental benefits if steps are taken to facilitate development in the low-income countries of the south.

Although the notion or future image of ecological modernization does not necessarily rise or fall along with empirical evidence on whether the environmental Kuznets curve hypothesis has empirical support, it is worth noting that the evidence available thus far has been mixed. There has been evidence that there is an environmental Kuznets effect with regard to pollutants such as CO₂ and other greenhouse gases (Selden & Song, 1994). CO₂ emissions per unit of national income have been found to increase as national income rises from low to middle-income levels and then decrease as nations grow further to higher income levels.¹² But Opschoor (1997) noted that the process of delinking economic and income growth from the demand on the biosphere for materials and services in the industrial countries is currently too slow to yield a Kuznets curve-type response. Opschoor, in fact, suggested that the most recent evidence suggests that there may have even been a relinking process between income, pollution, and resource consumption among rich nations in the early 1990s. Opschoor (1997, p. 284) concluded his review article on environmental Kuznets formulations by suggesting, contrary to the notion widely embraced by ecological modernizationists, that more rather than less state intervention and environmental regulation will be required to induce this pattern of change in our environmental future.

INTERNATIONAL ENVIRONMENTAL AGREEMENTS AND OUR ENVIRONMENTAL FUTURE

There can be little doubt that the most significant shift in environmental thought in the late 20th century was that of viewing environmental problems and their potential solutions in global context. It is seldom that a major scholarly book in environmental science or environmental studies fails to make note of the fact that global environmental problems, such as global warming, atmospheric ozone depletion, loss of biodiversity, and transboundary movement of toxic wastes, are among the most serious challenges to face humanity. Accordingly, since the late 1980s, the notion that global environmental problems are the most significant, serious, and challenging ones has become commonplace in the social sciences, including but not limited to sociology (Redclift & Benton, 1994; P. J. Taylor & Buttel, 1992). There has thus been a clear trend in recent decades toward seeing our environmental future as being premised on our ability to deal with these global-scale ecological processes and concerns.

It should be noted, however, that the notion that environmental problems—particularly, our most pressing or challenging ecological concerns—are essentially global in nature is hardly new. Ever since the rise of the modern environmental movement beginning in the late 1960s, the mainstream environmental movement has premised much of its thinking and strategy on global conceptions of environmental problems. Paul Ehrlich's famous book, *The Population Bomb* (1968), for example, was perhaps the single most important inspiration and guide for environmentalism in the late 1960s and early 1970s. In *The Population Bomb*, Ehrlich popularized the notion that there exists a global population, with its own global dynamics, and that the essence of the human role on the Earth is that this global population is threatening planetwide Malthusian-style environmental catastrophe. The strongly Malthusian flavor of the environmental movement at the time was due in no small measure to the great influence that Ehrlich's notion of the "population bomb" had on movement leaders.

During the early and mid-1970s, another global conception of environmental problems, that developed in the Meadows et al. (1972) book *The Limits to Growth*, came to be even more prominent in academic and activist environmental thought. Meadows et al. argued that because of the strong tendency for economic expansion to lead to insoluble pollution and resource depletion problems, there was a need to adopt "limits to growth" policies at a global level. The search for feasible strategies to limit global growth, and thereby to reduce the degree to which humans were affecting the integrity of the natural world, came to be the overarching goal of the movement. The reasoning of Meadows et al. about the limits to growth also played a significant role in the discussions at the 1972 Stockholm Conference on the Human Environment, which strongly framed environmental discussions (in the developed industrial countries at least) during the 1970s.

Note, though, that despite the long-standing tendency for environmental thought to have a significant global dimension, it was the case that both Ehrlich's notion of the population bomb and Meadows et al.'s notion of limits to growth failed to catalyze durable environmental mobilization. Global notions of environmental problems and their solutions have long been associated with north-south tensions. These tensions were manifest at the 1972 Stockholm Conference and particularly at the 1974 World Population Conference at Bucharest, Romania. In large part, these tensions emerged because the notions of population bomb and limits to growth implied that the developing countries of the south were major causes of environmental problems and/or that their aspirations for the levels of living standards enjoyed in the north would need to be restrained if global environmental problems were to be solved. In addition, there was considerable opposition (particularly among industrial corporations) and general public ambivalence about population control and the imperative to constrain growth and increase living standards.

The general lack of enthusiasm for modern environmentalism's early forays into global thinking, in fact, led to the movement's having lost much of its momentum during the late 1970s and early 1980s. What would change all this would be the appointment of the World Commission on Environment and Development (WCED) by the secretary-general of the United Nations in the early 1980s. The commission was charged with developing new ideas about how the south and north could come to agreement on ways to make progress in solving environmental and human problems. WCED's book *Our Common Future* (1987) played a highly influential role in popularizing the notions of sustainability and sustainable development. Most significantly, the WCED's work led to some measure of compromise among representatives of various world governments, environmental organizations, international development nongovernmental organizations, and development agencies. The essence of the compromise worked out within the WCED was that the contradiction between economic growth and development could be diminished very substantially if new growth was harnessed in a sustainable development framework. Equally importantly, WCED's *Our Common Future* also argued that the major ecological problems that sustainable development policies were to address were essentially global-scale ecological problems. *Our Common Future*, for example, was perhaps the first globally circulated book in which the greenhouse problem was portrayed as a master global environmental issue. Most of the other ecological problems that WCED argued must be addressed through sustainable development programs and policies were global-scale problems such as deforestation, loss of biological diversity, desertification, soil and land degradation, and so on.

The WCED's *Our Common Future*, and the 1992 Rio Earth Summit that it paved the way for, represented a hopeful pattern of international collaboration and agreement that has subsequently become one of the pillars of modern thought about how a more promising environmental future can be made possible. In addition to the pioneering work of the WCED, by the time of the Earth Summit, it was becoming well known that the 1987 Montreal Protocol had begun to make major accomplishments in reducing the introduction of chlorofluorocarbons into the stratosphere and in making possible a reduction of the rate of depletion of the stratospheric ozone layer. The relatively nonconflictual and effective process of agreeing to and implementing the Montreal Protocol suggested that international treaties and agreements, and the international organizations and regimes that are formed in association with these agreements, would be the logical course to take in creating a better environmental future.¹³

The general impulse that led to enthusiasm about and fascination with global environmental policy making also had some precedent in the modern environmental movement. From an environmental movement standpoint, the logic behind an international approach is fairly compelling. For one thing, focusing on global-scale problems, particularly if these problems could be connected with suggestions that future global-scale environmental disasters might occur, could be an effective strategy for environmental groups to obtain media attention and to multiply their impact (Mol, 2000; P. J. Taylor & Buttel, 1992). Thus, there has tended to be some association in environmental thought and strategy between international environmental claims making and cultivation of an atmosphere of imminent crisis (what Mol [2000] terms somewhat disparagingly as "apocalypse-blindness"). Global strategies also provide a way for environmental groups to multiply their impacts on policy; instead of environmental groups' having to contest policy decisions in every capital city across the world, successful passage of a global-scale agreement could, in one fell swoop, leverage governments across the world to implement new environmentally friendly policies. Third, as noted earlier, there was growing disillusion with and opposition to standard command-and-control national-level regulation, and the international arena promised a fresh and possibly more comprehensive approach to environmental reform. Finally, international negotiations promised more access by civil society groups to policy making than was often the case with regulatory implementation in the United States and other industrial countries.

As a result of the late 1980s and 1990s spurt of interest in global environmental problems and in the global frameworks for solving these problems, there have been some significant changes in how many organizations, groups, and governments think about a desirable environmental future. As the work of the WCED and activities leading up the Rio de Janeiro Earth Summit moved forward and as global environmental problems were propelled into the spotlight, there was a tendency for most large environmental organizations on the North American coasts and across the major cities of western Europe to become increasingly global in their discourses, issue foci, and their strategies. Second, prompted by the activities leading up to the Earth Summit, frameworks for prospective environmental conventions and protocols were put into place (see below for a more specific discussion of terminology). Most of the critical international environmental negotiations that have occurred over the past decade have been those connected in some way to the 1980s and 1990s work of the WCED and its successor the United Nations Commission on Environment and Development (UNCED). Major examples of these frameworks for international negotiations include the Convention on Biological Diversity and

the FCCC. A large share of the work of the large environmental organizations continues to focus on global environmental arenas such as these.

There are several different vehicles for such an international approach to improving the future of the global environment. The most common mechanism is typically referred to as "international environmental regimes," which are systems of norms and rules specified in a multilateral agreement among signatory states to regulate actions on a specific issue or set of issues (see Porter & Brown, 1996, chap. 1). Regimes generally involve some binding legal agreement or instrument, the most typical of which is a convention. A convention is a legal instrument that contains all the binding obligations that have been negotiated and a detailed legal inventory of norms and rules. A framework convention (e.g., the FCCC laid down in advance of the Rio Earth Summit, which continues to be negotiated in the new millennium) is a very general or formal agreement negotiated in anticipation of additional texts to be agreed to later that specify rules and obligations of the parties (called "protocols"). Some agreements are "soft," or, in other words, nonbinding, an example of which is the Agenda 21 Plan of Action agreed to at the 1992 UNCED Earth Summit. Nonbinding agreements, however, tend to have minimal impacts. Such soft agreements typically lead to efforts to create a legally binding agreement.

The second major component of international environmental policy making consists of international governmental organizations (IGOs). Environmental IGOs are intergovernmental organizations formed for some specific purpose in relation to the environment. Important environmental IGOs include UNCED, the United Nations Environment Programme (UNEP), and the United Nations Commission on Sustainable Development (UNCSD). Also, many other IGOs, such as the World Bank, the Food and Agriculture Organization of the UN, the United Nations Development Programme, and the World Health Organization, play crucial roles in global environmental policy making because their mandates relate closely to the environment in one or more ways. UNEP has played a particularly prominent role in international environmental policy making. UNEP, for example, was responsible for convening a group of experts who adopted the World Plan for Action on the Ozone Layer. Five years later, in 1982, negotiations leading to the Montreal Protocol began. The Montreal Protocol on Substances That Deplete the Ozone Layer (usually referred to with the shorthand, the "Montreal Protocol") was ultimately adopted in 1987. But some environmental IGOs, such as the Intergovernmental Panel on Forests, largely fail and become nonfunctional. The FCCC has yet to develop a protocol with concrete agreed-on norms and rules for implementation. The latest round of the FCCC, at the Hague in November 2000, essentially ended in failure because the United States has declined to ratify the Kyoto Protocol.

Although international regimes and IGOs have some similarities, their roles should be recognized as being quite distinct. Environmental IGOs themselves are not empowered to formulate international agreements, whereas the *raison d'être* of international negotiations and regimes is to establish norms, rules, and sanctions relating to environmentally related conduct of signatory countries and their agents. Some international IGOs, however, have very substantial funding programs that have a great deal of impact on the environment globally. The UNDP has a particularly large development assistance grant fund (of approximately \$1.5 billion annually) and is the major grant (as opposed to loan-based) funder of sustainable development and integrated conservation and development programs in the world today. UNDP is one of the three implementers of the Global Environmental Facility that grew out of the Earth Summit.¹⁴ The World Bank is the largest international devel-

opment finance agency and has an even greater global environmental impact, historically a substantially negative one.¹⁵

There are some differences of view about how the international level of environmental policy making and policy development operates or ought to operate. The most common view is that the most straightforward and immediate route to solving international environmental problems is to engage in international negotiations with an eye to securing an agreement for an international regime and legal protocol. Although there have been some recent successes, such as the Cartagena Protocol on Biosafety under the umbrella of the Convention on Biological Diversity (which was initiated in conjunction with the 1992 Rio Earth Summit), most recent attempts at making breakthroughs on protocols involving major global environmental issues have largely failed. The essential failure of the 1997 Kyoto Protocol of the FCCC to secure ratification in a critical mass of signatory states (particularly the United States), and the failure of the Hague Round to resolve the impasse, makes it quite unlikely that there will be a significant agreement on greenhouse gases and climate change for the foreseeable future. Most observers also regard the 2002 Johannesburg Earth Summit as having been a resounding failure as well.

Despite the shortcomings of the past decade or so of international approaches to environmental reform, there have recently been more optimistic assessments of the constructive role that world society plays in environmental policy making. Frank (1997) and Frank, Hironaka, and Schofer (2000) have argued that the most significant role played by world society is through IGOs, rather than only or primarily through international regimes. Frank and colleagues suggest that the IGOs' impacts on environmental policy making occur over fairly long periods of time (see also Mol, 2000). IGOs serve to diffuse the shared proenvironment and environmental-scientific cultures of their "epistemic communities" down to the government agencies and officials of nation-states. Thus, for Frank et al., the existence of the large, prominent environmental IGOs such as UNEP and UNCSD, plus the many smaller environmental IGOs (e.g., the International Union for the Conservation of Nature), has been critical over time in inducing the governments of world nations to take positive steps toward environmental control such as establishing autonomous environmental ministries, becoming signatories to international environmental protocols, and setting aside land and other natural areas for conservation and preservation.¹⁶

Despite the widespread interest in the environmental level of international policy making, its status as the focal point for ensuring a desirable environmental future is by no means clear. As noted earlier, concrete accomplishments at the level of international regime and protocol negotiation since the Rio Earth Summit have been very modest. It is also useful to evaluate the success of the international strategy of environmental policy making by bearing in mind that, to some degree, global environmental change is a frame or social construction in which preexisting problems or concerns have essentially undergone repackaging (P. J. Taylor & Buttel, 1992). Global environmental change, or atmospheric disruption, essentially tends to boil down to two key long-standing issues: air pollution and energy conservation. It is therefore important to ask whether the decade or so of reframing air pollution and energy conservation as global environmental change—or reframing the case for controlling air pollution and conserving energy being that of staving off atmospheric or climate disruption—has given us any greater leverage on the problem.

Again, it is not clear that environmental globalization has had advantages in making possible significant environmental reforms in the arenas of air pollution control and energy conservation. In fact, in the United States, the framing or social

construction of air pollution control and energy efficiency as being global issues requiring global-scale policy action has clearly energized right-wing think tanks and conservative corporations to fight creeping internationalism. Prior to Rio, there was seldom a concerted right-wing movement to counter air pollution control and energy efficiency improvement programs. Now, however, the U.S. Congress is very unlikely to ratify an international regime and protocol that appears to partially exonerate developing countries from complying with greenhouse standards. Environmental internationalism has so catalyzed the right-wing countermovement so powerful that it prompted an unprecedented failure by Congress to pass amendments to the Clean Air Act in 2000.

In addition to environmental internationalism catalyzing right-wing opposition and heading off regulatory improvements that might have been possible if particular issues had been defined as national ones, there are other actual or potential shortcomings of international environmental agreements and environmental IGOs. First and most important is the fact that there are very definite north-south differences of interest in coming to agreement on protocols relating to fundamental global environmental concerns. The industrial countries of the north now account for the bulk of resource-consumption-related insults to the global environment, but these countries are strongly divided on whether they are willing to sacrifice growth or jeopardize their international economic stature in pursuit of international environmental public or collective goods such as healthier forests, a more stable climate, conservation of scarce land and soil resources, and so on. Many of the developing countries of the south are unwilling to enter into agreements unless they are essentially exonerated from major commitments over the short to medium term and unless they can expect to receive "green foreign aid" to help finance a transition to a more sustainable pattern of natural resource use. With the end of the cold war, however, most industrial countries, particularly the United States, are beginning to pare foreign aid budgets that were originally established after the Korean War in a climate of East-West rivalry over the hearts and minds of developing country governments and their peoples. The end of East-West cold war rivalry has led to declining foreign aid outlays and to a decreased likelihood that the south will receive subsidies to invest in new green technology or in sustainable development programs. In effect, then, despite the allusion in the WCED's (1987) *Our Common Future* that all of humankind has a common stake in international environmental protection, the apparent reality is that different countries perceive very different (domestic) interests in international cooperation over the environment (Yearley, 1996).

Differences of national interest in international environmental policy discussions have clearly been the major factor preventing new landmark international agreements. In addition, social research on international environmental regimes is increasingly discovering that national political and regulatory styles remain very resistant to external pressures for change that derive from international agreements. The fact that an international environmental agreement has been secured by no means ensures that fundamental changes in national styles of regulation and policy making will result. Recent controversies over the role of the WTO—particularly over how its policies relate to trade in hormone-treated meat and genetically modified foods—suggest that international negotiators are increasingly discovering the limits on how much global negotiations can override national differences in regulatory cultures and practices (O'Neill, 2000; Weale, Pridham, Williams, & Porter, 1996).

WHAT ROLE FOR GREEN CONSUMERISM?

In this article, I have suggested that in the world today, there are four major alternative images of the route to a more promising environmental future (or four major mechanisms that are now being emphasized in theories of environmental improvement). It is useful to note, however, that this list of the four major mechanisms of environmental improvement omitted what is perhaps the single most common environmental reform strategy advocated by environmentalists and environmental scientists: that of stressing reduced consumption on the part of individual consumers (see, e.g., Ehrlich & Ehrlich, 1990, chap. 12). Although reduction of consumption has been a focal point of environmental group doctrine for many years (see, e.g., Ehrlich, 1968), the attention to consumption strategies has, if anything, increased in recent years as a result of the attention now given to green products and green marketing (Milani, 2000). How should we understand the future role that consumer behaviors and green marketing will play with regard to our environmental future?

Consumption and consumptionism occupy a curious position in contemporary social science and environmental sociology. The predominant theoretical tradition in the social sciences has been to regard consumption phenomena as being of relatively minor importance, save for how consumption styles and symbols serve as markers of class or status position, or for how humans construct meaning around the activities of their daily lives. Environmental sociology is one of the few branches of the social sciences in which consumption is taken seriously. Even so, consumption phenomena are somewhat controversial in environmental sociology as well. Thus, on one hand, there are a number of environmental sociologists who have argued strongly about the need to take consumption and individual consumption processes seriously (e.g., Catton, 1976; Murphy, 1994; Redclift, 1996; Redclift & Woodgate, 1997; Shove, 1997). On the other hand, there have been a number of environmental sociologists who have argued that the exhortation of individuals to consume less or to buy green products such as organic food or recycled paper is an ineffective means of securing environmentally friendly social changes (Schnaiberg & Gould, 1994).

Environmental sociologists have raised four major concerns about placing major theoretical stress on a green-consumption-driven environmental future. One of the major points that has been stressed is one with deep roots in the neo-Marxist tradition. This is the notion that production institutions, particularly the laws and tendencies of capitalist competition and capital accumulation, have causal priority over consumption institutions. Thus, Schnaiberg (1980), in his influential book *The Environment*, devotes an entire chapter (chap. 4) to the issue of whether environmental deterioration is primarily a consumption-driven problem. Schnaiberg by and large agrees with the neo-Marxist position that, in capitalist societies, the principal decisions made about production processes and consumption choices are made within production institutions, that is, mainly by corporations and other production groups, rather than by individual consumers. Accordingly, Schnaiberg has stressed that environmental movements need to focus on changing the rules of production institutions rather than trying to influence consumer purchasing decisions. In addition, Schnaiberg has stressed that most of the energy and materials consumption in the U.S. economy is accounted for outside of the sphere of household consumption (i.e., by corporations and governments and in the transportation and circulation of nonconsumer goods) and is thus largely beyond the purview of the individual consumer to influence (Green, Morton, & New, 2000).

A second and related criticism of seeing environmental problems and solutions to these problems mainly in consumption terms has also been made by Schnaiberg (1980), as well as by a number of other environmental sociologists (e.g., Milani, 2000; Schnaiberg & Gould, 1994; Tellegen & Wolsink, 1998). This criticism is that the choices of products and services available to consumers are very substantially shaped by a society's political-economic system and sociospatial infrastructure. For example, individual consumption is heavily shaped by whether a society's transportation system dictates individual dependence on the private automobile and by whether city-planning designs and other public policies encourage a predominance of automobile-dependent shopping and of large, detached, single-family residences. Thus, it is held that individuals have relatively little latitude in making fundamental reductions in their consumption of energy and materials, given the physical infrastructure within which they must make consumer decisions. These environmental sociological critics of the green consumerism strategy thus suggest that voluntary limitations on consumption or green consumerism would involve little more than a drop in the bucket compared to the huge flows of resources that are shaped by public policy through its effects on the transportation system, the urban infrastructure, and the character of the built environment.

A third issue raised by environmental sociologists about consumption is that of the potential "greenwashing" effects of green consumption. Schnaiberg and Gould (1994), for example, have noted that as much as many consumers would welcome new products that involve major reductions in the use of resources or in pollution levels, green products are typically more matters of corporate public relations than they are significant improvements in an ecological sense. Thus, the authors observe that the significance of green consumerism lies more in corporate image enhancement or, in other words, in greenwashing than in reduction of resource consumption or pollution.

Finally, Tellegen and Wolsink (1998, p. 138) have stressed that in most instances, there appear to be only small relationships between individual attitudes and green consumption behaviors. They thus suggest that the emergence of more proenvironmental public attitudes are not likely to yield major changes in consumption of energy and materials. Furthermore, although they acknowledge that it is possible for public policies to affect attitudes that are very specific to a given type of consumption (such as energy consumption in autos or in the home) and these programs can have some limited effectiveness, it remains the case that influencing environmental behaviors through value and attitude change will have only modest results.

Each of these limits to the role that green consumerism might play in the future has a strong element of truth and suggests that consumption and green production strategies do not constitute another important category of images of how to make for a sounder environmental future. It would be premature, however, to argue that individual consumption matters are unimportant for environmental sociology. In particular, individual consumption behaviors and green consumerism can be quite relevant to several of the four major images of our environmental future that I have stressed in this article. For example, green consumerism is a key issue that relates to environmental movements. Several European environmental groups such as Friends of the Earth have made major gains by targeting specific industrial corporations that play strategic roles in making possible beneficial, industry-wide changes; typically, these environmental groups target an industry leader (such as Siemens in electronics) and raise the threat of mobilizing consumer boycotts as a strategy to

secure voluntary corporate agreement to undertake an environmentally friendly change in production practices.

Another critical arena of state environmental regulation is that of regulations, rules, and incentives that affect the society's transportation, urban, and built environmental infrastructures. Clearly, one of the major factors that has stimulated growth in energy and materials consumption in the United States has been "automobilization." Similarly, many observers have pointed to the constructive conservation role that the U.S. government's strict Corporate Average Fuel Economy (CAFE) standards had in the late 1970s and early 1980s. Beginning in 1975, federal CAFE standards mandated ongoing improvements in automobile gas mileage by auto manufacturers. CAFE standards had very positive impacts on automobile fuel economy in the United States until they began to be relaxed during the Reagan administration during the mid-1980s. Similarly, government policy changes that would make cities more compact and encourage greater use of mass transportation could make possible major decreases in resource consumption. Furthermore, green consumerism is now one of the most important areas of research in the ecological modernization tradition (Spaargaren, 1996), particularly with regard to areas in which environmental group and corporate collaboration can yield improvements in environmental efficiency. Thus, although there are limits to the role that individual- or household-level green consumerism can play in creating a sounder environmental future, consumption will become an increasingly important component of environmental improvement in the future.¹⁷

WHICH WAY FORWARD?

Mainstream North American environmental sociology found its way in the 1970s and 1980s by emphasizing the understanding of how ongoing patterns of environmental problems have been shaped by social forces and social changes. The ultimate promise of environmental sociology, however, is arguably that of helping to chart the way forward to more socially secure and environmentally friendly arrangements. Recent work by environmental sociologists on how a better environmental future can be made possible has been extremely exciting but not yet very conclusive. Which of the four focal processes of environmental improvement—environmental movement mobilization, national government environmental regulation, ecological modernization, or international environmental policy making—is the most enduring or promising in this regard?

One potential answer to this question is to say that all four processes are important and that choices among them really need not be made. Indeed, a reasonable case could be made for such a judgment. On several occasions in this article, for example, I have noted significant connections among the four overarching images of our environmental future (e.g., the hypotheses by ecological modernizationists about the kinds of environmental movement strategies that tend to be most constructive). But it nonetheless remains worthwhile to ponder the issue of which of the four basic processes is the most fundamental and which ought to attract the most research and application. In this concluding section, I will make a few tentative and highly speculative remarks that scholars and students might want to consider.

This article began by noting that the conventional wisdom in environmental sociology had traditionally been that the ultimate way out of the iron cage of persistent environmental crisis is that of citizen mobilization through environmental movements. There is good reason to scrutinize the assumptions environmental

sociologists have made about the future role that environmental movements will play. This is the case if for no reason other than the fact that the discourses, strategies, support bases, and alliances of environmental movements are now enormously different than was the case when environmental sociologists began speculating about and doing research on the role of these movements in the 1970s. It is also clear that environmental sociologists, in their recent quest to think broadly about what our environmental future might hold, have actively considered a range of alternatives to the conventional notion that environmental challenges lead more or less directly to environmental mobilization and ultimately to institutional changes of a proenvironmental nature.

In this article, however, I have moved toward—or actually back to—an overall view that if there is a particular social force that ought to be considered most fundamental to a sounder environmental future, this force is probably that of environmental movements and environmental mobilization. When all is said and done, the pressures for an environmentally problematic business as usual—if not the environmental backsliding and deregulation that so many antienvironmental countermovements now seek—have become so strong that citizen environmental mobilization is now the ultimate guarantor that public responsibility is taken to ensure environmental protection. I do not wish to imply that there is no room for concern about the directions that various environmental movements are taking. Global environmental movements are in some senses becoming more splintered and fractionalized as they increasingly embrace very different discourses and strategies, as noted by Brulle (2001). The chasm between internationally oriented and grassroots movements is a particular concern, as is the fact that so many of the largest and best-funded movement organizations have stressed the global arena and thus far have little to show for it. Internationally oriented environmental movements are increasingly encountering the problem that emphasizing problems that cannot be directly experienced (e.g., greenhouse warming three or so generations hence) or goals that will not be achievable in citizens' lifetimes (e.g., climate stability at the end of the 21st century) is problematic for sustaining mobilization.

Second, I would suggest that the national-state system of sovereign countries is so entrenched in the world today and reflects such different regulatory cultures and styles that there is no substitute for working out sounder environmental policies at the national governmental level. Successful international agreements, if they are to be broadly implemented, need to accommodate differing national interests and need to be adopted, implemented, and enforced by national governments. In addition, nationally constituted governments remain the master institutional complex that has an ultimate authority to ensure that steps are taken to make changes in society to accomplish environmental goals. Some of the prevailing concerns about conventional command-and-control regulation—particularly those about inflexibility and the obstacles posed to private and public innovation—have an element of truth and need to be addressed in the future. At the same time, there is evidence that a national environmental regulatory system will remain critical in dealing with environmental challenges in the future (Cole & Grossman, 1999).

Third, there is much to be said for the possibility that ecological modernization processes might emerge somewhat autonomously from the actions of social movements and the (de)regulatory activities of national governments. It is ultimately the case that successful environmental movement initiatives and more effective national environmental oversight will be needed to harness the capacity of corporations to respond to new incentives and to stimulate the creativity and accountability of government officials in designing and implementing innovative new environ-

mental control incentives. Ecological modernization perspectives can be of particular help in conceptualizing the possibilities for comprehensive, effective, and socially benign systems of environmental incentives.

It is particularly noteworthy that there has emerged sound socioeconomic modeling evidence that green taxation (particularly CO₂ or BTU taxes) would be enormously effective in environmental protection and, through replacement of income taxes, would ensure that such a policy regime would be reasonably equitable (Buttel, 1998; Milani, 2000; Sachs et al., 1998; Weale, 1992). There have been promising steps taken toward green taxation in several European countries (Milani, 2000), and the European Union has taken a forward-looking position on green taxation as a means of making possible an effective agreement on a protocol for the FCCC. At the same time, the fact that even modest advances in energy-related green taxation are not on the U.S. political agenda at the turn of the 21st century (and that there is no small amount of resistance to green taxes in some European countries) is one of several realities suggesting that the potentials of ecological modernization processes ought not to become a reason for complacency. Ecological modernization, to the degree that such a process begins to emerge across the globe, will no doubt be as conflictual, contested, and subject to backsliding as more conventional environmental regulation has been.

There is, in particular, growing evidence that the incentives and institutional innovations that make ecological modernization possible will need to be anchored in a supportive political climate that can be created only by environmental movements. Sonnenfeld (2000), in his comprehensive empirical test of ecological modernization theory in the context of the transformation of pulp-and-paper manufacturing, has found that environmental social movements and activism were critical in inducing the ecological upgrading that has occurred in this sector across the globe. The results of Sonnenfeld's study were consistent with several of the hypotheses of the ecological modernizationists such as Mol (1995) and Spaargaren (1996), for example, the notion that movements will tend to move away from mainly contesting government policy and toward working more directly with manufacturing industry. But Sonnenfeld (2000) has also concluded that there was little support for the ecological modernization hypothesis that successful environmental activism would be primarily reform-minded (as opposed to radical) environmentalism. He found that radical environmentalism was successful in some contexts whereas reformist environmentalism was successful elsewhere in helping to prompt pulp-and-paper industries into more environmentally responsible behavior. Furthermore, some environmental groups moved back and forth from radical demands to reform-oriented direct relations with government agencies and private firms.

Fourth, the track record of the past decade or so of internationalized environmental policy making is not particularly encouraging. It seems unlikely that the pursuit of international agreements, or that the role of environmental IGOs in the diffusion of environmental protection norms to national governments, has sufficient potential to justify seeing the international policy strategy as the "lead horse" for achieving a sounder environmental future. This notion is in some sense still in conflict with the conventional wisdom, though (see, e.g., Buttel, 2000; Frank et al., 2000). It also seems somewhat in conflict with the idea that environmental progress in this era of globalization would not necessarily be achieved most effectively and comprehensively at the global level. But perhaps there is no contradiction here because of the fact that, rightfully or not, proenvironmental social movements are becoming increasingly opposed to the trade liberalization and international mone-

tary policies that are increasingly creating the conditions for offshore corporate veto of environmental laws.

The environmental movement at the turn of the 21st century shows every sign of becoming part of a larger social movement complex that is increasingly antiglobalization and anti-international in its focus. Increasingly, a wide range of environmental groups has joined hands with other movements to pursue agendas such as antiglobalization, prohuman rights, proconsumer, profamily farming and sustainable agriculture, and opposition to genetically engineered foods in tandem. The antiglobalization agenda seems ironic given the emphasis of the movement on international environmental policy making over the past decade and a half (although this is perhaps not so surprising when one considers the difficulties that it has encountered at the international levels). And perhaps it remains the case as well that the essence of the human relationship to the environment is that it occurs somewhere—at a particular location on the globe, in particular communities or countries, and particular institutions and social circles—and that there is something irreducibly local about the human experience with the biophysical environment (Macnaghten & Urry, 1998).

Although I have my doubts about whether international regimes or organizations are likely to prompt global-scale sustainability improvements over and above those that environmental movements, government regulatory agencies, and ecologically modernizing firms will be able to achieve, there is no doubt that the international arena will be critical to the shape of our environmental future. Sachs (1999, chap. 8) has usefully summarized the promise and peril of global economic and social integration for the future of sustainability. Global competition, for example, can be a powerful force in ferreting out inefficiencies in production organizations, resource use, state policies, and other areas. Similarly, Mol (2000), in a creative linking of his ecological modernization perspective with that of the environmental internationalists, has noted that international organizations and processes of negotiating global environmental agreements will be a key mechanism in diffusing new conservation ideas and technologies around the world. But Sachs (1999) noted that the outcome of global competition and efficiency improvements will undoubtedly be a pattern of economic expansion that requires increased use of energy, minerals, raw materials, and ecological services; efficiency, in other words, tends to lead to growth that may negate the ecological benefits of producing goods and services more efficiently. A related contradictory pattern identified by Sachs is that governments and environmental movements have good reasons to want to get on board the turn-of-the-century globalization trajectory at the same time that trade liberalization and the shift of economic, social, and environmental regulation to the transnational levels will be unsettling to nation-states and their citizens. Sachs has titled his discussion of the contradictory roles and ambivalent views about globalization “Planet Dialectics.” By *dialectics*, Sachs means that instead of the modern world changing according to readily foreseeable linear trends (such as those toward modernization, efficiency, development, or sustainability), global change is characterized more by ambivalences, ironies, contradictory forces, and countertrends. Achieving environmental security in the turbulent social environment of the 21st century is the epitome of a dialectical vision. The new century will very possibly be one in which the master trends that created environmental disruption and degradation—industrialization, global economic integration, and unfathomable technological transformations—will be reshaped in ways that help to solve the problems they created in the past century. Sociological vision has much to contribute to this, perhaps the most important social as well as biophysical project of this next century.

NOTES

1. Also note that the analysis of environmental attitudes and values on one hand, and of environmental movements on the other, has traditionally been presumed to be largely the same subject matter. For purposes of this article, however, I will take the matter of environmental values, attitudes, and movements—or, in other words, the matter of environmental attitude change as a component of a more promising environmental future—to be mostly synonymous. I do so while recognizing that environmental attitude research (see, e.g., the summary in Tellegen & Wolsink, 1998, chap. 6) has a definite literature of its own and that the translation of proenvironmental values into concrete social movements is highly problematic (Brulle, 2001; Hannigan, 1995). Also, I would suggest that the value change-behavior connection is sufficiently small (Tellegen & Wolsink, 1998) so that environmental value change ought not to be considered an environmental futures mechanism apart from environmental movements.

2. See Thornton (2000) for a fascinating case study of the Chlorine Chemistry Council, an association of corporations that make and sell potentially dangerous chlorinated chemicals. Thornton identifies the diverse ways that the council is an omnipresent lobbying force at the same time that the organization has remained almost completely invisible to the public.

3. It is useful to note that Inglehart's (1990) postmaterialism hypothesis—the notion that growth in income leads social groups, and presumably countries as a whole, to come to embrace postmaterial values such as environmentalism—has been subjected to a number of cross-national tests and found to have major shortcomings. The postmaterialism hypothesis, for example, is inconsistent with the fact, discussed later in this article, that the past decade and a half or so has witnessed the mobilization of numerous environmental movements in the developing countries of the south (Gadgil and Guha, 1995). Brechin and Kempton (1994) and Dunlap and Mertig (2001) have also found that there is little association between the level of affluence of nations and the degree to which their citizens express environmental concerns.

4. Kraft (2001, pp. 89-90) uses the term *greens* or *radical greens* to encompass Brulle's (2001) categories of ecocentric and deep ecology discourses and groups.

5. Jaffee (1999) differs from Dreiling and Wolf (2001, p. 42) about how various environmental groups' views about the North Atlantic Free Trade Agreement (NAFTA) should be characterized. Dreiling and Wolf (2001) and Jaffee (1999) agree that the Defenders of Wildlife, Environmental Defense Fund, National Audubon Society, National Wildlife Federation, Nature Conservancy, and the World Wildlife Federation supported NAFTA. Several of the groups discussed by Dreiling and Wolf (2001) (Citizen's Clearinghouse for Hazardous Waste, Clean Water Action, and Earth First!), all of which Dreiling and Wolf identify as opponents of NAFTA, do not make Jaffee's (1999) list of influential U.S. environmental groups at the national level. The two studies agree that Friends of the Earth, Greenpeace, and Sierra Club were opponents of NAFTA, at least as of 1995.

6. It is worth noting, however, that although various developing-country groups and governments have been a base of strong support for proenvironmental agendas (such as supporting the Precautionary Principle (PP) in the discussions that led to the Cartagena Protocol of the Convention on Biological Diversity), this is not always the case. Many developing-country governments, for example, have objected to the environmental protection and conservation procedures that the World Bank is increasingly insisting on. Also, most developing countries have opposed the World Trade Organization's moving toward permitting environmental restrictions on trade or insisting on particular environmental regulatory practices as a condition of membership.

7. This section borrows from Mol and Buttel (2000).

8. As I will note later, some sociologists stress that the referent for efficiency or rationalization tends to be international in nature, in other words, that state managers tend to be influenced in their sense of the possibilities and responsibilities of government by the standards exhibited in other countries. Frank, Hironaka, and Schofer (2000) have argued that it has generally been the case at the global level that the major factor that shapes the national

government's views and perspectives of the proper role of government in relation to the environment is the expectations in this regard that are transmitted through international organizations such as the Intergovernmental Panel on Climate Change and negotiations of the Convention on Biological Diversity. I will suggest below, however, that at least for the bulk of the developed industrial countries of the north, the tendency is that the blueprint for the state's environmental role tends to be shaped by domestic politics. Thus, state agencies and managers, acting in relation to environmental and other groups in civil society and in relation to competing forces within the state, develop conceptions of the appropriate or possible roles of government in a manner that is not decisively shaped by international organizations and forces.

9. Technically, the Environmental Protection Agency administrator (most recently, Christine Todd Whitman, who resigned in May 2003) is not in the cabinet but holds "cabinet rank," along with five other officials such as the director of the Office of Management and Budget, the U.S. trade representative, and the director of the Office of National Drug Control Policy.

10. The PP is sometimes referred to as the Precautionary Polluter Pays Principle (or 4P) in recognition of the fact that it is premised on the notion that firms should be directly responsible—including the payment of fines to the government and compensating victims—if a technology or production practice proves to be harmful.

11. Note that in 1998, the World Trade Organization ruled against the European Union's (EU) ban on imports of hormone-treated beef. The EU's ban on hormone-treated beef had been implemented as a result of its commitment to implementing the PP to decisions on the safety of food, chemicals, and other products.

12. It should be stressed, however, that it essentially never occurs that a single nation moves from low-income to high-income status over a period as brief as a few generations. Kuznets curve formulations are based mainly on cross-sectional differences among nations as arrayed by their per-capita income levels.

13. Note, however, that many of the most successful international environmental regimes and agreements were negotiated well before the current era of global environmental change and fascination with the global level of international policy making. In fact, most international environmental regimes currently "on the books" involved protocols agreed to prior to 1990. An excellent example of a preexisting international environmental regime and agreement was the 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora.

14. The Global Environmental Facility plays a major role in funding sustainable development and biodiversity protection projects in the tropical developing countries.

15. The World Bank and its tendency to direct loan funds to the development and expansion of resource and raw material extraction sectors continue to be a major focal point for criticism by international environmental groups. At the same time, the World Bank has taken steps to establish a substantial Environment Department and to insist on greater environmental protections than many developing-country governments are comfortable with.

16. Frank (1997) and Frank et al. (2000) stressed the role that scientifically driven conceptions of environmental problems play in environmental IGOs. It should be noted, however, that the increasing knowledge-based nature of international environmental policy making has both advantages and disadvantages. On one hand, scientific documentation of the global character of environmental problems and of the threats and risks that are resulting from these problems has largely given rise to new opportunities to make use of international channels and processes for environmental protection. But it is now increasingly apparent than the application of Western science, rather than being able to bring closure to environmental policy discussions, typically has the opposite effect (Yearley, 1996). Controversies or disagreements within science become seized upon by various national governments and nongovernmental parties. The likelihood that matters of politics and social choice will become transformed into technocratic exercises is almost certain to generate opposition as well.

17. It is useful to note that some of the most important recent theoretical and empirical works (e.g., Green, Morton, & New, 2000; Princen, Maniates, & Conca, 2002) have focused on the fact that consumption occurs along the full length of commodity chains. Thus, consumption is not simply an atomistic phenomenon that occurs at the downstream node of consumer demand. As Princen et al. (2002) noted, "Nodes of raw-material extraction and manufacturing, for example represent not just production and value added, but also consumption and value subtracted" (p. 16). Thus, in the view of both Princen et al. (2002) and Green et al. (2000), the key to understanding the importance of consumption is to understand its intimate relationships with production.

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