Struggling with Human Exemptionalism: The Rise, Decline and Revitalization of Environmental Sociology

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The emergence of environmental sociology in the 1970s, the decline of interest it experienced in the the early 1980s, and its revitalization since the late 1980s are described and linked to trends in societal interest in environmental problems. We suggest that the status of the field has been heavily dependent upon societal attention to environmental problems, in part due to the larger discipline's ingrained assumption that the welfare of modern societies is no longer linked to the physical environment. We also suggest that growing recognition of the reality of global environmental change (GEC) poses a fundamental challenge to this "human exemptionalism paradigm," and thus offers an opportunity for strengthening sociological interest in the environment. Understanding the causes and consequences of GEC calls for examination of societal-environmental interactions, the fundamental subject matter of environmental sociology. Unfortunately, early sociological work has largely ignored such interactions in favor of analyses of the "social construction" of GEC. Consequently, limitations of a social constructivist approach to GEC (and to environmental problems in general) are discussed, and a more inclusive research agenda is recommended.

A decade-and-a-half ago *The American Sociologist* published the first effort to provide an explicit definition of the field of environmental sociology. Entitled "Environmental Sociology: A New Paradigm" (Catton and Dunlap, 1978a), it was included in a thematic issue on "New Theoretical Perspectives in Sociology." In addition to defining the field as "the study of interaction between the environment and society," the article contended that examining such interaction would require overcoming sociology's traditional reluctance to acknowledge the relevance of the physical environment for understanding modern human societies.

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In that article we argued that the Durkheimian tradition of explaining social phenomena only in terms of other "social facts," plus an aversion to earlier excesses of biological and geographical "determinism," had led sociologists to ignore the physical world in which humans live. These disciplinary traditions were further strengthened, we suggested, by the emergence of sociology during an era of unprecedented growth and prosperity, fueled by resource abundance and technological progress. Along with increased urbanization, which reduced direct contact with nature, these societal trends made it easy for sociologists to assume that human life was becoming increasingly independent of the biophysical world. Consequently, we claimed that our discipline had come to assume that the exceptional features of Homo sapiens—language, technology, science and culture more generally—made industrialized societies "exempt" from the constraints of nature. We concluded by claiming that changing circumstances (e.g., the 1973-74 energy crisis) necessitated shedding the "blinders" imposed by exemptionalism and turning to an ecological paradigm that acknowledges the ecosystem-dependence of all human societies.[1]

In retrospect, it is apparent that our call for a paradigmatic revolution was issued during a time of exuberant growth for the new field of environmental sociology, following its formal recognition via establishment of an ASA section in 1976. Buttel (1987:466) has described this period as one in which " . . . there was a vibrant *espirit de corps* that a new sociology was being nurtured. . . . Environmental sociologists sought nothing less than the reorientation of sociology toward a more holistic perspective that would conceptualize social processes within the context of the biosphere." Buttel went on to argue, however, that "These lofty intentions . . . have largely failed to come to fruition. The discipline at large has handily withstood the challenges to its theoretical assumptions posed by environmental sociologists." While not challenging the accuracy of Buttel's appraisal, we believe that his pessimistic assessment of environmental sociology was heavily influenced by the period in which it was written. The late seventies was indeed a "vibrant" period for environmental sociology, but the eighties saw a significant decline of interest in the field—reaching its nadir at mid-decade when Buttel was writing. Since the late eighties there has been a resurgence of interest in environmental sociology, and a new assessment of the field and its paradigmatic implications seems in order.[2]

The first goal of this article will be to trace the broad contours of the emergence, decline and revitalization of environmental sociology, and to highlight linkages between these disciplinary developments and major trends in societal attention to environmental problems. The rapid growth of the area in the seventies, and our call for an ecological paradigm to guide it, came during a period of intense concern with the societal impacts of energy and other resource limits. When such limits appeared to recede (and were disavowed by the Reagan administration) in the eighties, sociological interest in the environment declined. Renewed societal attention to environmental problems—from local to global—

since the late eighties, however, have clearly revitalized the field. In particular, widespread recognition of the reality of human-induced global environmental change not only undermines the notion of human exemptionalism, but represents an enormous opportunity for environmental sociology.

Understanding the human dimensions of global environmental change necessitates study of societal-environmental interactions, including a balanced examination of the impacts of humans on the environment as well as the effects of ecological constraints on human societies. Early disciplinary work on global environmental change has, however, adopted a staunch constructivist orientation that deflects attention from such interactions. Limiting sociological attention to the ways in which global environmental problems have been recognized, defined and legitimated inhibits our contributions to understanding the causes, consequences and possible amelioration of such problems. Such limitation also risks a retreat into human exemptionalism, for if global change is seen as primarily a social construction rather than an objective (albeit imperfectly understood) condition, then it poses little threat to the future of our species. Consequently, the second goal of this article is to argue for moving beyond investigations of the socially constructed aspects of ecological problems (a "sociology of environment") to greater concern with analyzing the social causes and consequences of such problems (an "environmental sociology").

The Changing Fortunes of Environmental Sociology

Emergence in the seventies

Although there was minor sociological interest in environmental topics prior to the seventies, consisting primarily of research on natural resources by rural sociologists (see Burch, et al., 1972) and on built environments by urban sociologists (see Michelson, 1970), it is generally agreed that the field of environmental sociology developed largely in response to the emergence of widespread societal attention to environmental problems in the early seventies (Buttel, 1987; Dunlap and Catton, 1979; Freudenburg and Gramling, 1989; Humphrey and Buttel, 1982).[3] Not surprisingly, the bulk of this early work focused on the environmental movement, public attitudes toward environmental issues, environmental policymaking and the development of environmental quality as a social problem. This work involved the application of mainstream sociological perspectives to environmental topics. It was a "normal science" approach in Kuhn's (1962) terms, and was labelled the "sociology of environmental issues" (Dunlap and Catton, 1979).

As sociologists paid more attention to environmental issues, some began to look beyond societal attention to environmental problems to the underlying relationships between modern, industrialized societies and the physical environments they inhabit. Concern with the societal causes of environmental pollution (Molotch and Follett, 1971) was supplemented by a focus on the social impacts of pollution and resource constraints (Catton, 1972). In some cases there was explicit attention to the reciprocal relationships between societies and their environments, or to the "ecosystem-dependence" of modern societies (Burch, 1971).

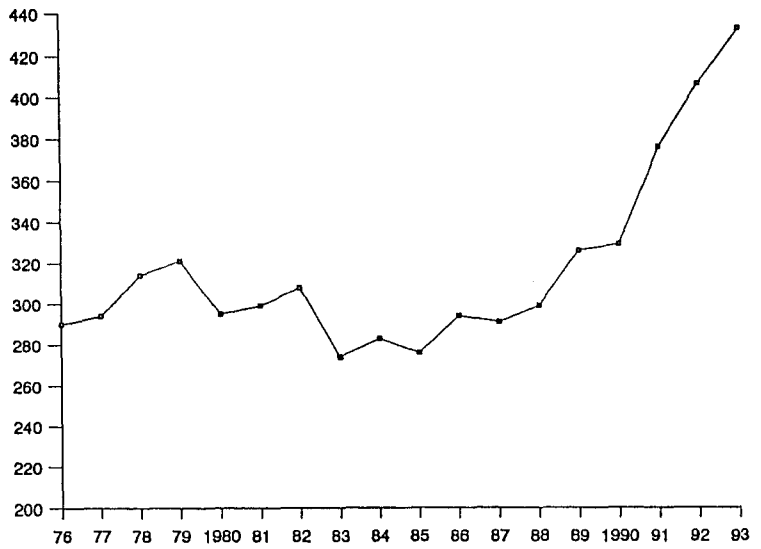
In retrospect, it appears that the widespread attention received by *The Limits to Growth* (Meadows, et al., 1972), and the 1973-74 energy crisis that appeared to validate its thesis, led to a preoccupation with the societal impacts of resource scarcity. Sociological work on energy in the seventies gave far more attention to the societal impacts of energy shortages than to the social factors influencing energy use (see the contributions in Unseld, et al., 1979). Likewise, there was considerable interest in the societal impacts of resource scarcity in general, especially the inequitable manner in which these impacts would likely be distributed among social strata (Morrison, 1976; Schnaiberg, 1975). Although some attention was given to the social mechanisms driving the rapid growth leading to scarcity (Anderson, 1976; Schnaiberg, 1975), the dominant theme was that we were entering an era of ecological limits—exemplified by publication of an issue of *Social Science Quarterly* (September 1976) devoted to "Scarcity and Society" that included several contributions by environmental sociologists.

Sociological interest in the impacts of energy and other resource scarcities contributed to the emergence of environmental sociology as a distinct specialization by increasing awareness that "environment" was more than just another social problem or sociopolitical issue, and that environmental conditions could indeed have an effect on society. While energy researchers may not have given much thought to the fact that their work involved examining "societal-environmental interactions," and thus violated Durkheim's dictum that the causes of social facts must be sought in other social facts,[4] their concern with the societal impacts of shortages facilitated a transition from the early "sociology of environmental issues" to a self-conscious "environmental sociology" focused explicitly on such interactions. That concern also contributed to a rather one-sided view of these interactions, however, as the effects of resource constraints on society received far more emphasis than did the impacts of society on the environment.

Although sociological attention to the societal impacts of resource limits was very much in tune with the *Weltanschauung* of the mid- to late seventies, highlighted by President Carter's energy policy and his sponsorship of *The Global 2000 Report* (Barney, 1980), an emphasis on ecological constraints was clearly at odds with the discipline's ingrained exemptionalist orientation (Stockdale, 1989). Thus, it is not surprising that sociological work on resource scarcity never appeared in the discipline's top journals (Krogman and Darlington, 1992), nor that several leading figures in the field directly challenged the reality of ecological limits (Bell, 1977; Lipset, 1979; Nisbet, 1979). Indeed, Daniel Bell (1977) provided the quintessential exemptionalist response by arguing that if there are limits to growth, they are surely *social* rather than physical! It is also not surprising that environmental sociology's critique of human exemptionalism had little impact on the discipline at large.[5]

Despite its limited effect on the larger discipline, environmental sociology ended the decade with a good deal of momentum. Research on topics such as environmental attitudes and the environmental movement, along with energy,

FIGURE 1
Membership in ASA Section on Environmental Sociology*



*Name changed to Section on Environment and Technology in 1988.

had increased throughout the seventies; the ASA Section on Environmental Sociology grew from 290 members in 1976 to 321 in 1979 (see figure 1), and had a fair amount of success in attracting members with a wide range of interests—including housing and the built environment, social impact assessment, natural hazards as well as environmentalism and energy; the ASA section—like the Rural Sociological Society's Natural Resources Research Group and the Society for the Study of Social Problems' Environmental Problems Division—sponsored several well-attended sessions at annual meetings; and a couple of potential texts were "in press" (Catton, 1980; Schnaiberg, 1980) while the field's first full-fledged text was being written (Humphrey and Buttel, 1982). In addition, numerous environmental sociology courses sprang up, and a few graduate programs developed specializations in environmental sociology (Freudenburg and Gramling, 1989:447). The situation looked very promising, but not for long.

Decline in the Early Eighties

Even though the events of the seventies had caused the public to give some credence to the idea of limited natural resources (Yankelovich and Lefkowitz, 1980), the notion of limits remained unpalatable—for expectations of endless growth and prosperity were deeply ingrained in the American psyche (Dunlap

and Van Liere, 1984; Milbrath, 1982; Stockdale, 1989). Part of the appeal of Ronald Reagan's promise to "make America great again" was his explicit rejection of the reality of limits. As one analyst put it during the 1980 election campaign:

> For voters terrified by the implications of an era of limits, the expansive ideology of the American Century carries powerful political force. While President Carter has suggested that the challenges ahead are extremely complicated and may require national sacrifice, [Reagan] insists that happy days are just around the corner . . . (Viviano, 1980; also see Yankelovich, 1982).

As another analyst wrote eight years later, "Carter's humiliating defeat sealed the end of the poor misspent '70s, a decade of limits and frustration and malaise" (Barol, 1988:41).

From the perspective of those who conceptualized core American values and beliefs such as individualism, free enterprise, abundance, growth and prosperity as a "dominant social paradigm" or "DSP" (Dunlap and Van Liere, 1984; Milbrath, 1982), the Reagan Revolution was a natural reaction to the emergence of unconventional social paradigms or worldviews in the seventies that were premised on the existence of limits (e.g., "voluntary simplicity" [Elgin, 1981]). Just as adherents of dominant scientific paradigms seldom surrender quickly to challengers, so adherents of the DSP mounted a counterattack. The anomaly of energy shortages was quickly "solved" by freeing the market from government restraints,[6] and the idea of limits was dismissed. In the intellectual arena, explicit rejections of limits-to-growth arguments were put forth with increased frequency (Stockdale, 1989). Most notably, Julian Simon's (1981) argument that population growth was desirable because human ingenuity made people "the ultimate resource" (epitomizing a human exemptionalist perspective) resonated particularly well with Reagan's perspective, and contributed to the administration's reversal of long-term U.S. support for population control at the 1984 World Population Conference (Holden, 1984). Similarly, Simon's subsequent book with Herman Kahn, *The Resourceful Earth* (1984), was cited in support of the administration's dismissal of the Carter-sponsored *Global 2000 Report* (Boggs, 1985).

Was environmental sociology affected by this dramatic change in national mood? A variety of evidence certainly suggests so. After three years of growth, membership in the ASA Section on Environmental Sociology dropped below 300 in 1980 (before Reagan even assumed office), and declined to 274 by 1983. The two most widely used texts (Schnaiberg, 1980 and Humphrey and Buttel, 1982) went out of print, and were not replaced by new ones. Fewer papers on environmental topics were presented at professional meetings, reflecting not only a decline in sociological work on energy but on topics such as environmental attitudes and environmentalism as well.[7] In particular, very few contributions to what Buttel (1987:467-472) called the "core" of environmental sociology—its theoretical critique of mainstream sociology's neglect of the physical environment—were made after 1980, and none were published in the leading sociology journals. Similarly, little success was achieved in bringing the major "factions" of

the field—such as those involved in research on housing and the built environment and those concerned with natural resources (Dunlap and Catton, 1983), or those involved in applied work such as social impact assessment and those interested in more theoretical topics (Dietz, 1987)—into a cohesive intellectual community (Buttel, 1987; Freudenburg and Gramling, 1989:449).

Environmental sociology courses often suffered declining enrollments, the few existing graduate programs experienced a levelling of student interest, and there were very few job advertisements for environmental sociologists in the eighties. Such problems were partially shared with sociology (and social science) as a whole, which came under severe attack from the Reagan administration and suffered declining enrollments due to student migration to other fields. However, not only did the difficult times make it especially hard to maintain the momentum needed to institutionalize a new area of specialization in the discipline, but environmental sociology's emphasis on the ecosystem-dependence of modern, industrialized societies seemed particularly out-of-step with the tenor of the times. It is therefore understandable that Buttel's mid-eighties appraisal of the progress of the field was less than optimistic about its future.

There were some countervailing trends in the eighties. Most notable was the rise of concern about human exposure to toxic and other hazardous wastes, symbolized by Love Canal. Levine's (1982) classic study of the controversy at Love Canal (which occurred at the end of the seventies) was the first of several sociological investigations of community responses to local environmental hazards (Couch and Kroll-Smith, 1985). Likewise, the major accidents at Three Mile Island (1979), Bophal, India (1984) and Chernobyl (1986) dramatized the importance of the social impacts of, and human responses to, technological accidents (Bogard, 1989; Sills, et al., 1982).[8] The fact that exposure to such hazards was typically distributed quite unevenly across social strata also renewed interest in the distributional impacts of environmental problems (Schnaiberg, et al, 1986), while growing awareness of these hazards in blue-collar and minority communities stimulated research on a new form of environmentalism—local, grass-roots' environmental action (Bullard, 1983). More generally, increased attention to environmental and technological hazards stimulated sociological interest in the nature and role of risk in modern societies (Short, 1984).

In addition to their obvious societal significance, work on local environmental hazards seemed to have a special appeal to sociologists. The problems were human-created, their recognition and resolution typically involved enormous levels of social controversy in which competing claims-making activities were quite apparent, and conflict over the problems could often be linked to existing patterns of social stratification and political power. They also allowed for micro-level investigations of individual communities employing a wide array of standard data collection efforts (surveys, field work, content analyses, etc.). In short, sociologists' research on environmental (and technological) hazards was inherently sociological (see, e.g., Couch and Kroll-Smith, 1985; Levine, 1982). Although this work dealt with societal-environmental interactions, the environmental conditions were often viewed as "socially constructed," and even when taken as

objectively hazardous to human health the delimited nature of the problems did not raise questions about the future of Homo sapiens—as did earlier work on the impacts of limits to growth.[9] Yet, like the seventies, with its emphasis on the social impacts of scarcity, work in the eighties was initially more concerned with understanding the impacts of environmental conditions *on* humans (especially as mediated by perceptions, collective definitions and community networks) than with investigating the impacts of humans on the environment.

Revitalization in the Late Eighties

By the latter part of the eighties increased societal attention was again focused on what humans were doing to the environment, as was true when environmental quality emerged as a social problem in the late sixties. In 1988 and 1989 alone, three major news magazines—*Time, Newsweek* and *U.S. News and World Report*—carried several cover stories on environmental problems such as the contamination of the Atlantic coast with hospital wastes, acid rain, ozone depletion, rain forest destruction and global warming (Mitchell, 1990-89). *Time* went so far as to name the "Endangered Earth" as "Planet of the Year" in lieu of its "man of the year" for 1988. The exceptionally hot summer of 1988 appeared to validate the notion of global warming in the eyes of the public, much as the 1973-74 energy crisis had done for limits to growth (Ungar, 1992). Thus, although the threat of energy (and other resource) shortages had receded during the eighties, the quality of the environment was widely seen as worsening.

The renewed salience of environmental problems was given great impetus by the mobilization of public support for the twentieth anniversary of Earth Day, April 22, 1990, an event that attracted an enormous level of public involvement and also helped swell the memberships of environmental organizations (Dunlap and Mertig, 1992). In fact, by 1990 the public was expressing greater concern over the state of the environment and more support for environmental protection than it had in the early seventies. In particular, majorities felt that environmental quality had declined in recent years and expected it to continue to do so, and large majorities supported increased government spending and regulations for environmental protection (Dunlap and Scarce, 1991; Mitchell, 1990). Not long after the enthusiasm surrounding the 20th Earth Day subsided, a new wave of interest began to build around preparations for the June 1992 "Earth Summit" in Rio de Janeiro (technically known as the United Nations Conference on Environment and Development). These highly visible events, combined with media attention to issues such as the Exxon Valdez oil spill, tropical rain forest destruction, and the environmental devastation found in Eastern Europe, have resulted in an unprecedented level of societal interest in environmental issues—not only in the United States but throughout much of the world—during the nineties (Dunlap, et al., 1993; Mazur and Lee, 1993).

The Changing Nature of Environmental Problems. The growing salience of environmental problems stems not only from increased attention to them by media and policy-makers, but from discernible changes in the nature of these

problems. Contemporary environmental problems differ from earlier ones such as litter, loss of natural areas and air and water pollution in a number of critical respects: first, the scale of such problems has increased from typically localized problems (e.g., ozone depletion), thereby potentially affecting far more people; second, localized problems such as contaminated water supplies and inadequate solid waste repositories occur (and are reported in the media) with enough frequency that they begin to be seen as generalized problems, adding to the sense that environmental deterioration is pervasive; third, environmental problems are increasingly recognized as often having origins that are poorly understood and consequences that are difficult to detect and predict, with the result that they appear "riskier" than earlier issues; and fourth, the impacts of many problems pose serious consequences for the health and welfare of humans (including future generations) as well as for other species, and some of these impacts may be irreversible. In sum, environmental problems appear to have increased in frequency, scale and seriousness (Dunlap, 1993). Whereas in the sixties and early seventies environmental degradation often seemed an aesthetic issue (or, at most, an irritant affecting outdoor activities), it is increasingly seen as a direct threat to human health and well-being—from the local (e.g., toxic wastes) to the global (e.g., ozone depletion) level (Last, 1993).

In short, recent years have seen the emergence of widespread scientific and societal recognition of the fact that human activities are causing a deterioration in the quality of the environment, and that environmental deterioration in turn has negative impacts on people (see Dunlap and Scarce, 1991 on public perceptions in the United States and Dunlap, et al., 1993 on international perceptions). In other words, the fundamental subject matter of environmental sociology—the reciprocal relations between environment and society—is much more obvious and seen as far more significant than when Buttel wrote his pessimistic appraisal of the field in the mid-eighties or even when the field was emerging in the seventies (Laska, 1993). In addition, growing recognition of the health threat posed by many environmental conditions makes it apparent that human-environment interactions occur not only at the symbolic or cognitive level, once seen as the unique domain of environmental sociology (Klausner, 1971), but that such conditions can have direct (and deleterious) impacts on human behavior and well-being (Catton, 1993). Thus, the full range of possible human-environment interactions highlighted in early literature—cognitive, behavioral and physiological (Dunlap and Catton, 1979; 1983; Michelson, 1970)—now seem obvious and socially (if not always sociologically) significant (see, e.g., Brown and Mikkelsen, 1990).

Revitalization of Environmental Sociology. Given the dramatic increase in the societal salience of environmental issues—measured by environmental activism, media attention, public opinion and policy-making—since the late eighties, it is not surprising that sociological interest in these topics has been rekindled. This is apparent from a variety of indicators, including membership in the ASA Section on Environment and Technology. After bottoming out from 1983 to 1985 and increasing only slightly over the next three years, section membership has grown rapidly since 1988. This upward trend has been complemented by an

increase in the number of papers on environmental topics presented at sociology meetings, which in turn is probably related to a growth of funding opportunities for social science research on environmental problems (Laska, 1993). The trend is also confirmed by the recent publication of four new texts (Cylke, 1993; Dickens, 1992; Schnaiberg and Gould, 1994; Yearley, 1991), with several others now in progress, plus the establishment of new journals such as *Society and Natural Resources* and *Capitalism-Nature-Socialism*. And finally, the few departments offering formal graduate training in the field are experiencing a sharp increase in student interest.

In addition, unlike the seventies, environmental sociology is now receiving a good deal of attention internationally. In some cases, especially in Europe, this interest seems to have been building throughout the eighties (ironically, as North American interest was declining), often stimulated by an interest in the success of "green" political parties and movements (Lowe and Rudig, 1986). In other instances (e.g., Japan) it appears to be a more recent phenomenon. Nonetheless, by the nineties environmental sociology organizations had been formally established within a number of national associations, including the Japanese Sociological Association, the Spanish Sociological Association and the British Sociological Association. In addition, major international environmental sociology conferences have been held in Italy, Spain, the Netherlands, France and Korea since 1989. Perhaps most importantly, a "Working Group on Environment and Society" that was launched within the International Sociological Association in 1990 has grown rapidly and achieved research committee status in record time.[10] The new "Research Committee on Environment and Society" (RC 24) has organized 16 sessions on a variety of topics for the 1994 World Congress of Sociology in Germany. In short, environmental sociology is becoming institutionalized at the international level along the same lines as occurred in the United States in the seventies. This no doubt reflects the fact that environmental conditions are now viewed as problematic in virtually all nations (Dunlap, et al., 1993), as well as being inherently global in nature (Mazur and Lee, 1993).

Much of this renewed interest in environmental issues has taken the form of sociological analyses of societal reaction to environmental problems in the form of studies of public opinion and perceptions, environmentalism, green politics and environmental policy-making. The political economy of environmental problems and sociological contributions to risk analyses, both of which were discerned as emerging areas by Buttel (1987), have continued to attract increasing attention.[11] While some traditional sub-areas such as housing and the built environment, social impact assessment and energy have apparently not yet benefitted as much from the revitalization of sociological interest in the environment (perhaps because they are only indirectly affected by the upturn in societal interest in environmental problems), new research emphases have emerged. Most obvious is the virtual explosion of interest in issues related to growing awareness of the pervasiveness of environmental hazards at the local level: studies of community reaction to local hazards; the rapidly spreading NIMBY ("Not In My Back Yard") syndrome; the emergence of local, grass-roots' environmental groups; and the

interrelated phenomena of "environmental racism" (the location of hazards in predominantly minority areas) and the emerging "environmental justice" movement among minorities (see, e.g., Brown and Mikkelsen, 1990; Bryant and Mohai, 1992; Bullard, 1990; Cable and Benson, 1993; Couch and Kroll-Smith, 1991).[12]

In addition to the wide range of work noted previously, the revitalization of environmental sociology is particularly apparent from a recent spate of publications self-consciously designed as contributions to the methodological, conceptual and theoretical "core" of the field—something that was notably absent during the eighties. Several of these contributions (many by British scholars) involve efforts to apply insights from traditional theoretical perspectives—ranging from symbolic interaction to Marxism—to help understand human-environment relations. Yet, all acknowledge the limitations imposed by the "exemptionalist" nature of these perspectives, and call for a reorientation away from our traditional disciplinary assumption that the biophysical environment is irrelevant to modern, industrialized societies (Benton, 1989; 1991; Dickens, 1992; 1993; Jones, 1987; 1990; Newby, 1991; Weigert, 1991; Yanitsky, 1992).[13] In addition to these efforts aimed at "greening" social theory, renewed attention is also being paid to conceptual and methodological issues involved in examining societal-environmental interactions, primarily by empirically oriented American scholars (Dietz and Rosa, 1994; Freudenburg and Gramling, 1993; Freudenburg, et al., 1993; Guterbock, 1990; Kroll-Smith and Couch, 1991; Ungar, 1992). The eventual merging of these theoretical and empirical efforts promises to yield important advances in understanding the nature of societal-environmental relations.

In sum, although most of the eighties—the so-called "Decade of Greed" (Barol, 1988)—was a difficult time for environmental sociology, recent years have seen a dramatic resurgence of interest in the field and at least the beginnings of its intellectual revitalization. Despite the efforts of the Reagan administration to define environmental conditions as nonproblematic, they continued to worsen and their significant impacts on humans became increasingly apparent. In other words, real-world conditions (and, of course, societal attention to them) seem to have stimulated renewed sociological attention to the environment.

Global Environmental Change: Promise and Peril

Over the past two decades, interest in environmental sociology seems to have been less resilient than was societal interest in environmental issues. Public support for environmental protection and levels of environmental activism in the United States rose throughout most of the eighties—in part as a reaction against the Reagan administration's anti-environmental agenda (Dunlap and Mertig, 1992; Dunlap and Scarce, 1991; Mitchell, 1990). Our discipline's declining interest in environmental problems throughout the early and mid-eighties may have been linked to decreased funding opportunities and perceived policy irrelevance, but it was out of step with the growth in public concern about environmental problems. Perhaps our discipline's ingrained exemptionalist orientation made it particularly susceptible to the Reagan era's denial of ecological limits.[14]

Now that twelve years of American administrative antipathy (Reagan) and neglect (Bush) of environmental protection has passed, and arguably the most pro-environmental administration in U.S. history (Gore, 1992) has assumed office, it seems reasonable to expect continued growth of interest in environmental sociology. Can this interest solidify to the point where it will not ebb and flow with a change in national mood, especially as reflected in periodic political elections? In our view, the recent emergence of widespread recognition of the reality of human-induced global environmental change offers a unique opportunity for permanently shedding the exemptionalist heritage that has heretofore hindered sustained sociological interest in the environment.

The Emergence of Global Environmental Change

Earlier we pointed to important changes in the nature of environmental problems in recent years, noting that they had become broader in scale, more pervasive and complex, and a greater threat to human well-being. These trends are especially obvious in the emergence of anthropogenic (human-induced) global environmental change (GEC) as a major problem (Last, 1993). While GEC is often equated with "global warming" (see, e.g., Taylor and Buttel, 1992), it is a broader phenomenon that encompasses all aspects of human-caused change in the global ecosystem, including climate change (whether increased warming or cooling, or simply greater variation in the climate) and changes in atmospheric content (the most apparent at present being ozone depletion). Further, as Turner, et al. (1990) note, GEC may result not only from "systemic" change such as atmospheric modification produced by carbon emissions and chlorofluorocarbon releases, but via "cumulative" processes at more localized levels, as when deforestation, wetlands destruction and loss of biodiversity accumulate to the point of having global ramifications. In other words, the concept of GEC encompasses a vast range of phenomena resulting from the escalating impact of Homo sapiens on the biogeochemical systems of the planet earth (Silver with DeFries, 1990).

Amid the continual emergence of new environmental problems it is important to step back and recognize what a monumental shift in perspective is reflected by widespread scientific endorsement of GEC. The current view was nicely captured by Frank Press, president of the U.S. National Academy of Sciences, when he wrote:

> Human activities are transforming the global environment, and these global changes have many faces: ozone depletion, tropical deforestation, acid deposition, and increased atmospheric concentrations of gases that trap heat and may warm the global climate. For many of these troubling transformations, data and analyses are fragmentary, scientific understanding is incomplete, and long-term implications are unknown. Yet, even against a continuing background of uncertainty, it is abundantly clear that human activities now match or even surpass natural processes as agents of change in the planetary environment (Silver and DeFries, 1990:iii).

In other words, it is now recognized that Homo sapiens has become so dominant in the global ecosystem that we have begun to disturb such fundamental processes as the earth's climate, something heretofore done only by natural processes such as volcanic eruptions.

The National Academy of Sciences is certainly not known for taking radical stances. When it officially endorses a position that would have been heresy a couple of decades ago, this represents a truly paradigmatic shift in perception of the relationship between humans and our earthly habitat (also see, e.g., Committee on Earth and Environmental Sciences, 1990).[15] No longer are various environmental problems viewed as discrete phenomena; rather, they are recognized as interrelated manifestations of unprecedented human impact on ecosystems—from local to global. As the Science Advisory Board of the U.S. Environmental Protection Agency (1990:17) put it, "Ecological systems like the atmosphere, oceans, and wetlands have a limited capacity for absorbing the environmental degradation caused by human activities. After that capacity is exceeded, it is only a matter of time before those ecosystems begin to deteriorate and human health and welfare begin to suffer." The broad ecological perspective that had to struggle for credibility against a scientific establishment dominated by reductionistic, highly specialized and technologically optimistic practitioners has fully gained legitimacy in the most prestigious scientific and governmental circles (Kerr, 1992).[16] Mounting evidence of the negative human consequences of escalating ecological deterioration has validated the notion that the welfare of human societies is inherently related to the health of the ecosystems they inhabit (Last, 1993), and led to widespread recognition that traditional patterns of industrial growth are unsustainable (see, e.g., Environmental and Energy Study Institute, 1991; Stockdale, 1989).

In addition to fostering recognition of the increased scale and magnitude of environmental degradation worldwide, the concept of GEC calls attention to the vital role played by human beings in the global environment. This new perspective's far-reaching ramifications for scientific inquiry were acknowledged in a National Academy of Sciences report:

> This awareness that humanity is an intrinsic part of the earth system is causing a fundamental shift in the way science is pursued. No longer is it sufficient to explore only the physical dynamics of the earth system . . . So potent is the human impact on the earth system that knowledge of physical processes ruling terrestrial or atmospheric change will be incomplete until scientists better understand the human dimensions of that change (Silver with DeFries, 1990:46-47).

In short, natural scientists involved in the study of GEC increasingly acknowledge the critical nature of the "human dimensions" of that change, and recognize the importance of incorporating human behavior into their analyses (Stern, et al., 1992; Committee on Earth and Environmental Sciences, 1990).[17] The question this raises is whether social scientists, in turn, are prepared to respond to this opportunity.

The Promise of GEC to Environmental Sociology

Global environmental change ought to become a major concern of a revitalized environmental sociology, for it exemplifies societal-environmental interactions (Stern, et al., 1992). The relations between humans and the global environment are complex and inherently reciprocal: human activities are producing unprecedented changes in the global ecosystem, and these changes in turn portend significant consequences for human societies. GEC thus represents the extreme macrolevel case of the fundamental subject matter of environmental sociology. Furthermore, several subareas of the field, such as social impact assessment, natural hazards and disasters, risk assessment, and public perceptions, have accumulated knowledge that should be useful in understanding probable societal responses to GEC, while others such as the political economy of environmental degradation and the social dimensions of energy use can provide insight into the origins of GEC.

GEC also promises to be an attractive topic to the larger discipline of sociology, and social science in general (Buttel and Taylor, 1992). Besides involving the future of modern, industrialized societies—our discipline's core subject matter—GEC invites application of cutting edge concerns such as comparative and historical research methods which have long been employed by environmental sociologists (e.g., Burch, 1971; Catton, 1980). More pragmatically, it offers opportunities for new funding sources and increased policy relevance (Miller, 1990; Stern, 1993), both of which could provide a much needed boost to a discipline apprehensive about its future.[18] GEC thus offers environmental sociology the opportunity to strengthen its position within the discipline.

Finally, despite the legacy of human exemptionalism underlying our discipline, GEC may provide a more attractive topic for sociological attention than did traditional environmental problems, especially resource scarcity. This is partially because human agency is at the very core of human-induced GEC. More importantly, the nature of human response to GEC will influence both the future of global change and of our species. Unlike the case of resource scarcity in the seventies, when humans tended to be seen as passive victims of resource limits, GEC less readily invokes images of a bald "environmental determinism" in which the fate of humans lies outside our control. The focus now is on how the future will be shaped by an interaction between the global ecosystem's limited capacity to absorb the impacts of our species, without being disrupted to the point of collapse, and the ways in which we can modify those impacts and adapt to the changes (Stern, et al., 1992). In short, while recognition of the reality of GEC directly challenges an exemptionalist view of our species (which would see GEC as nonexistent or at least nonproblematic, given human capacity to adapt to any change), the challenge does not require relinquishing belief in human agency as a potent force influencing our future.

Preliminary Sociological Work on GEC

As funding opportunities became apparent, major actors in the sociological and social science "establishment" began mobilizing "human dimensions of global environmental change" programs both in the United States and internationally (Miller, 1990). Yet, what has been striking about these efforts is how little they have drawn upon existing work in environmental sociology. With the notable exception of the National Research Council (Stern, et al., 1992),[19] one rarely finds any reference to current research and theory in environmental sociology (Buttel, 1987), social impact assessment (Freudenburg, 1986), energy (Lutzenhiser, 1993; Rosa, et al., 1988), technological hazards (Couch and Kroll-Smith, 1991) and so forth in the materials produced by these "human dimensions programs." Environmental sociologists have contributed to the situation, however, by being slow to recognize the significance of GEC (either as a major problem or as a "hot topic"), and by the nature of the small amount of early work they have published—work that is oddly out of sync with growing interdisciplinary efforts to understand the human dimensions of GEC (Stern, et al., 1992). Indeed, the predominant thrust of the published work has been to emphasize the degree to which global environmental change is a "socially constructed" rather than an objectively existing phenomenon.

Thus, the plea by the chairman of the UK's Economic and Social Research Council (Newby, 1991) for increased sociological attention to environmental issues such as GEC was met with a skeptical response by a member of the British environmental sociology community who suggested that the "Greenhouse effect" might simply be the "latest paranoia," and that "it could be very foolish for sociologists to assume that the natural world 'really' is changing . . . "(Fox, 1991:24). Fox continued by noting that, "sociology has been suspicious of anything claiming to be grounded in nature, and its positioning has been in direct opposition to any claims that the natural has influence over human relations." In fact, Fox (correctly we think) notes that "Sociology typically 'brackets' the natural world . . . Either 'nature' is asserted to be ineffectual in influencing social relations . . . " or "it is asserted that basically the natural world is unchanging, apart from minor, very short-term fluctuations which right themselves in due course to retain a long-term balance." Such a view, epitomizing the continued appeal of human exemptionalism, clearly dismisses global environmental change as a topic worthy of sociological inquiry.

Fox's heavy emphasis on the social construction of the environment is consistent with the views of a majority of the few American environmental sociologists who have thus far published on GEC. Thus, in an interesting study of the emergence of global warming as a major social problem, Ungar (1992) draws upon the definitional or constructionist approach to social problems to emphasize the role played by claims-makers and media in generating societal attention to global warming. While Ungar does acknowledge the importance of the exceptionally hot summer of 1988, and argues that "real-world variables" such as weather may

be important, his emphasis is clearly on the social processes that account for global warming becoming a (presumably shortlived) "social scare" rather than being the first installment of a continuing pattern of worsening climate changes. Similarly, Mazur and Lee (1993) provide an insightful analysis of the media's role in generating societal attention to global warming, ozone depletion, rainforest destruction and loss of biodiversity, especially the convergence of the four problems into "global environmental change" in the late eighties. Although disavowing an "extreme constructivist position," they note that "the rapid rise since 1985 of American concern about the global environment can be seen as primarily a creation of the news media and their sources of information, and only secondarily, if at all, a reflection of truly decaying global conditions" (Mazur and Lee, 1993:684, 714).

Most notably, recent work by Buttel and his colleagues draws upon the social constructivist perspective in the sociology of science to account for the emergence of global environmental change and to lay out a research agenda for environmental sociology on this topic (Buttel, et al., 1990; Buttel and Taylor, 1992; Taylor and Buttel, 1992). Emphasizing the important role played by environmental science (working in conjunction with the environmental movement) in generating attention to GEC, they argue for the importance of "deconstructing" dominant conceptualizations of GEC to highlight the interests that are served (and, conversely, those that may be harmed) by these conceptualizations. In this view, GEC is seen as the latest evolution of environmentalist ideology (a revision of the "limits-to-growth" argument of the seventies)[20] whose emergence has resulted more from social processes such as the growth of new social movements and scientific knowledge than from any change in the state of the earth. While the deconstruction of GEC by Buttel and his colleagues provides important insights (e.g., that an emphasis on "global" problems obscures the differential contributions of poor and rich nations to such problems), their staunch constructivism provides a very restrictive framework for sociological contributions to GEC.

Limitations of a Constructivist Approach to GEC

Environmental sociologists have a long tradition of highlighting the development of societal recognition and definition of environmental conditions as "problems," both directly via claims-making analysis guided by social problems theory (see, e.g. Albrecht, 1975; Mazur and Lee, 1993; Schoenfeld, et al., 1979; Yearley, 1991 and Ungar, 1992) as well as indirectly via analyses of public opinion, environmental policy-making and so forth (Buttel, 1987; Dunlap and Catton, 1979; Dunlap and Mertig, 1992). Indeed, much of what we termed the sociology of environmental issues deals—in varying degrees—with the construction of environmental quality as a social problem. Thus, we certainly do not wish to deny that there is a definitional or constructivist dimension to "environmental problems,"[21] including global environmental change, nor that constructivist phenomena warrant sociological consideration. Rather, our concern is that sociological investigations not be limited to such phenomena.

One can interpret Buttel and Taylor's (1992) programmatic statement in various ways, ranging from the suggestion that environmental sociology became a "sociology of environmental science" to a plea for greater reliance on the sociology of science by environmental sociologists. Regardless of the reading, however, it seems clear that Buttel and his colleagues (also see Buttel, et al., 1990; Taylor and Buttel, 1992) propose investigation of the socially constructed aspects of environmental problems such as GEC as the primary role of environmental sociology. One finds no acknowledgement by Buttel, et al. of the importance of examining societal-environmental relations; indeed, they are quite skeptical of giving credence to any knowledge claims concerning conditions of the physical environment. Whether or not Buttel, et al. are advocating a "strong constructivist" perspective is difficult to determine,[22] but clearly they are encouraging environmental sociologists to pay great attention to the ways in which environmental problems such as GEC are socially constructed and to be wary of their objective status.

We find Buttel, et al.'s plea for greater reliance on social constructivism in sociological analyses of GEC, and in environmental sociology more generally, troubling for several reasons (for a complementary critique of constructivism see Murphy, 1994). The first is that treating GEC primarily (if not totally) as a social construction discourages investigation of the societal causes, consequences and amelioration of global environmental problems. Besides seeming unnecessary, given the historically limited attention paid to the causes and consequences—as opposed to aspects of the construction—of environmental problems in our field, this seems especially unwise in the case of GEC. At the very time that natural scientists and policy-makers have come to recognize the vital role of human behavior in creating and adapting to GEC, it would be unfortunate if sociologists remained aloof by refusing to do more than examine competing claims about the validity of GEC. Besides missing out on what might be considered the most significant policy debate in history, sociologists would be abdicating efforts to understand the "human dimensions" of GEC to those who have little expertise in the analysis of social behavior (see, e.g., Stern, 1993).

Second, although we agree that the scientific evidence in support of GEC is not iron clad, we think that Buttel, et al., are overly skeptical. While there may not be scientific consensus regarding all aspects of GEC, this is commonplace for what Cole (1992) terms "frontier knowledge."[23] The important point is that phenomena like ozone depletion and loss of biodiversity have, in just the past couple of decades, moved increasingly from frontier to "core" knowledge, as suggested by the previously noted acknowledgement of GEC by the National Academy of Sciences and other prestigious scientific organizations (Kerr, 1992). This is especially impressive given the built-in advantages of what Schnaiberg (1980: Chap. 6) terms "production science" (i.e., all scientific efforts that ultimately yield technological products) relative to "impact science"—the latter consisting mainly of recent efforts (stimulated largely by technology and environmental impact assessment) to document the effects of human activities on the environment. In view of the historical bias (from government and corporate funding of basic science to "R and D") in favor of production science, we can

expect a rapid growth of knowledge concerning the impacts of humans on ecosystems as the still-modest funding for impact science increases.

It is not surprising, however, that the status of GEC (along with most other environmental risks) is continually challenged, for dealing with GEC poses a major threat to vested interests (Taubes, 1993). Our third problem with Buttel, et al.'s constructivist orientation is that it induces an extreme relativism which does little more than point to competing claims (or constructions) as evidence of the uncertainty of GEC. Thus, Buttel and Taylor (1992) cite the skepticism of a conservative think tank like The Marshall Institute toward GEC as evidence of lack of scientific consensus on the issue, ignoring the overwhelming endorsement by far more credible scientific bodies such as the National Academy of Sciences. A staunch constructivist orientation ultimately dismisses problems like GEC by equating (or at least failing to evaluate) the competing claims of a Dixie Lee Ray (see Ray and Guzzo, 1993) with those of Sherwood Rowland, codiscoverer of the "ozone hole" and recent president of the American Association for the Advancement of Science (Rowland, 1993). Such relativism not only fails to provide useful analyses of the differing expertise, funding, motives, etc. of competing claims-makers, but proves inherently conservative: if all truth claims have validity, then there is no basis for endorsing some over others, and thus no basis for becoming proactive.

Fourth, a staunchly constructivist program would lead to a very restricted form of environmental sociology, one that analyzes knowledge claims about environmental conditions and avoids analyses of societal-environmental interactions (such as the causes and consequences of GEC). The reason is that examining these interactions needs to be grounded on assumptions about objective environmental conditions, and constructivists are unwilling to privilege one among the inevitably competing sets of claims about such conditions. Yet, empirical research dealing with various aspects of the construction of environmental problems is already more common than is research focused explicitly on societal-environmental interactions, and the Buttel, et al. program would further discourage the latter. Indeed, Kroll-Smith and Laska (1994:3) label the constructivist approach of Buttel, et al., the "sociology of environment," a perspective that "acknowledge[s] the physical environment while calling for a research agenda based on its social fabrication," and reserve "environmental sociology" to refer to examination of the reciprocal relations between the biophysical environment and society.[24] While distinguishing between efforts to examine societal-environmental interactions and those limited to examining the social construction of environmental problems seems more useful than our earlier distinction between an environmental sociology (focused on such interactions) and a sociology of environmental issues (involving applications of traditional perspectives such as social movements' theory to environmental issues), we endorse Kroll-Smith and Laska's distinction with hesitation. On the one hand, we do not want to solidify a cleavage between constructivist and "objectivist" approaches to environmental sociology; on the other hand, many scholars fruitfully employ both approaches in their work (see, e.g., Dietz, et al., 1989 and Dietz and Rosa, 1994).[25]

Finally, inherent in social constructivism and relativism is a fundamental sociocul-

tural determinism that readily slips into human exemptionalism (Archer, 1987). We emphasize that "deconstructing" particular representations of environmental problems does not, by any stretch of the imagination, mean that the problems themselves are any less "real." Global environmental change will likely have an enormous impact on the future of Homo sapiens, regardless of the fact that Buttel and Taylor have shown that it serves as a useful ideology for environmentalists and hides important differences in First World-Third World contributions to (and, we would add, consequences from) global ecological disruption. By emphasizing the definitional or constructivist component of GEC, we fear that environmental sociologists will fall into the quintessential exemptionalist trap of assuming that environmental conditions are irrelevant for modern societies. Even though widespread recognition of the problematic implications of GEC is the result of a complex set of social-definitional processes, calling attention to this fact does not make GEC any less real or consequential.

Summary and Conclusions

We began by arguing that environmental sociology took root in very infertile soil, as its emphasis on the societal significance of environmental variables was strongly at odds with the discipline's tendency to ignore all but social facts. Further, the emphasis given to the social impacts of resource scarcity (stemming from attention to the *Limits to Growth* and energy shortages) by environmental sociologists in the seventies was particularly incongruent with the larger discipline's inherently exemptionalist assumption that modern societies had become independent of their ecosystems. Consequently, when the national policy agenda downplayed the significance of environmental problems during the eighties, sociological attention to them quickly declined as well. Reagan's explicit rejection of the idea of "ecological limits" may have been the one theme of his administration that resonated with mainstream sociology!

Despite Reaganesque efforts to deny the significance of environmental problems, they did not disappear; indeed, they grew steadily worse (measured by frequency, scale, threat, etc.) throughout the eighties. By the turn of the decade the environment was again a prominent issue on the national agenda, and sociological interest in the topic was reinvigorated. A variety of evidence suggests that environmental sociology has been revitalized in North America, and is quickly being institutionalized as an area of inquiry throughout the world.

We then argued that widespread recognition of the reality and significance of human-induced global environmental change offers a major opportunity to advance the field, for GEC represents a complex set of researchable societal-environmental interactions: how social processes affect the global environment, how the resultant changes affect human societies, and how deleterious effects might be mitigated (Stern, et al., 1992). GEC thus represents a perfect example of what environmental sociologists have termed the inherent bioecological/sociocultural "duality" of human existence, or the fact that although "human societies are both influenced and constrained by environmental realities . . . humans are unique among all species in the degree to which they have been able to alter or transcend many environmental influences" (Freudenburg and Gramling, 1993:343; also see Buttel, 1986; 1987). Anthropogenic global change illustrates humans' power to alter the environment; the issue now becomes whether we will be constrained in deleterious ways by these changes or transcend them via successful adaptation.

Unfortunately, much of the initial sociological attention to GEC has been marked by a staunchly constructivist orientation that largely ignores the crucial bioecological dimension of global environmental change. Ironically, such an approach dismisses the significance of the very changes in the earth's biogeochemical systems that have prompted natural scientists increasingly to acknowledge the necessity of understanding the human dimensions of these phenomena (Silver and DeFries, 1990; Committee on Earth and Environmental Sciences, 1990). Fortunately, there is also a modest, but growing, amount of sociological work that assumes the existence of GEC and investigates its social roots. This work attempts to sort out the relative importance of population, technology and various aspects of social organization in generating problems such as tropical deforestation and carbon dioxide emissions, and thus promises to contribute directly to understanding the human dimensions of GEC (Dietz and Rosa, 1994; Grimes, et al., 1993; Rudel, 1989).

If sociology is to develop a deep and enduring interest in the relations between humans and our environment,[26] one that is not heavily dependent upon the current level of societal attention to environmental problems, we need to overcome our deep-seated assumption that our species is separate from the rest of nature and exempt from ecological constraints (including those such as ozone depletion that we are creating ourselves). It would be a shame to see the current interest in environmental sociology turn out to be simply the latest example of sociological attention to whatever problem happens to be—inevitably temporarily—garnering national attention. Yet, current efforts to analyze the constructions, and ignore the realities, of global environmental change make our field especially susceptible to such trendiness. These efforts constitute a "sociology of environment" that does little to advance us beyond the early "sociology of environmental issues" that treated environmental quality as just another social problem or political issue. Both are inevitably limited to analyses of societal attention to (rather than interactions with) the environment, and are thus likely to fare poorly when societal interest is again distracted by other issues.

Now that natural scientists, along with many policy-makers and much of the public, have recognized the reality of global environmental change, and begun to realize the enormous implications of such change, it should not be asking too much of environmental sociology (if not sociology at large) to do the same. It is time for our discipline to acknowledge that the welfare of human beings is inextricably interrelated with the condition of our earthly habitat, and that the increasingly problematic nature of this interrelationship cannot simply be deconstructed.

Notes

Revision of a paper presented at the Annual Meeting of the American Sociological Association, Miami Beach, August 1993. We thank Steve Kroll-Smith, Loren Lutzenhiser, Angela Mertig, Gene Rosa and anonymous reviewers for helpful comments on an earlier draft, and absolve them of any responsibility for remaining shortcomings.

1. We originally labelled the dominant disciplinary perspective the "human *exceptionalist* paradigm," but subsequently shifted to the "human *exemptionalist* paradigm" to acknowledge that we were not questioning that Homo sapiens possessed "exceptional" characteristics, but only that these characteristics "exempted" our species from ecological constraints. Likewise, we revised the call for a "new *environmental* paradigm" to that for a "new *ecological* paradigm" (Dunlap and Catton, 1979; Catton and Dunlap, 1980). For an update of the HEP-NEP argument, see Dunlap and Catton (1994).
2. For less pessimistic overviews of two major subareas of the field, social impact assessment and energy, written about the same time, see Freudenburg (1986) and Rosa, et al., (1988).
3. For evidence of the rapid growth of public concern about environmental quality and of the numbers and sizes of environmental organizations in the late sixties leading up to and immediately following the first "Earth Day" celebration in 1970, see Dunlap and Mertig (1992).
4. The strength of the Durkheimian tradition was nicely illustrated by controversies in the sociology of agriculture over the appropriateness of including environmental variables such as rainfall and soil type in efforts to explain variation in farm practices just over a decade ago (summarized in Dunlap and Martin, 1983). Subsequent empirical research clearly established the importance of including such variables in sociological analyses of agriculture (Buttel, 1987:471).
5. Besides overemphasizing the importance of ecological constraints on human societies, and giving short shrift to human agency (van Steenbergen, 1990:1080), our paradigm argument was criticized for emphasizing the exemptionalist orientation of mainstream sociology to the neglect of its theoretical diversity. Drawing upon his earlier work on major theoretical approaches within environmental social science, Buttel (1978) argued that differences among these traditional perspectives overshadowed their shared assumptions of human exemptionalism. In response, we acknowledged the importance of existing theoretical diversity but reemphasized the primacy—for analyses of environmental issues—of the exemptionalist-ecological paradigmatic cleavage (Catton and Dunlap, 1978b; also see Catton and Dunlap, 1980). Buttel (1986) subsequently noted that we (along with others) exaggerated the degree to which *classic* sociological theory had ignored the environment (also see Dickens, 1992: Chap. 3), although he granted that "contemporary sociological theory has developed with an implicit taboo against incorporating ecological variables in their analysis" (Buttel, 1986:338). Perhaps Stephen Kroll-Smith is correct in arguing (via personal communication) that the Durkheimian taboo has been most apparent in *empirical* rather than theoretical sociology (as exemplified in the sociology of agriculture—see prior footnote).
6. For an alternative evaluation of Reagan's energy policy, emphasizing the importance of increased oil production by Arab nations and successful conservation programs in overcoming shortages, see Axelrod (1984). A global economic recession also contributed to decreased energy demand.
7. In part due to the lag time involved in papers being published, and in part because *Sociological Inquiry* published a symposium on environmental sociology in 1983, it appears that the number of articles on environmental topics in sociology journals peaked in 1983. This conclusion is based on classifying the 85 articles examined by Krogman and Darlington (1992) by year. In the case of energy, the peak appears to have been a couple years later, due to the publication lag for research stimulated by the second wave of the energy crisis in the late seventies (Lutzenhiser, 1992:49).
8. The growing salience of technological accidents and hazards, along with recognition of the technological component inherent in most environmental problems, led the ASA Section to change its name to "Section on Environment and Technology" in 1988, parallel to the SSSP Division's 1983 change to "Division on Environment and Technology."
9. These studies were closely related to the development of sociological interest in the social dimensions of environmental/technological "risks" in general, an area that often employs a "constructivist" orientation (e.g., Dietz and Rycroft, 1987; Dietz, et al., 1989; Freudenburg and Pastor, 1992).
10. This was accomplished by a merger with the existing Research Committee on Social Ecology.
11. Disciplinary interest in risk was clearly stimulated by Short's (1984) ASA presidential address on the topic and subsequent analyses highlighting the potentially important contributions of a sociological perspective to the rapidly growing field of risk analysis (e.g., Dietz, et al., 1989; Freudenburg, 1988), a field institutionalized by formation of the Society for Risk Analysis. Similarly, political-economic analyses of environmental problems were stimulated by establishment of a journal, *Capitalism-Nature-Socialism*, devoted to such analyses (O'Connor, 1988), and the concomitant growth of comparative studies stemming from increased international interest in environmental problems (e.g., Broadbent, 1989; Dietz and Kalof, 1992; Rudel, 1989).
12. These observations are based on a review of titles of papers on environmental topics presented at ASA meetings over the past decade, and at the international environmental sociology conferences previously cited, as well as the obvious increase in publications on these topics—see, for example, the special issue of *Social Problems* (February 1993) devoted to "Environmental Justice" and the special issue of *Sociological Spectrum* (January-March, 1993) devoted to "New Directions in Hazard, Risk, and Disaster Research," which include 17 articles focusing on these issues.
13. Two exceptions are Yearly (1991), whose application of the sociology of science and social problems' theory to environmental issues nicely illustrates the insights yielded by a "sociology of environmental issues" that does not challenge the discipline's exemptionalist orientation, and Spaargaren and Mol (1992), who question the utility of the HEP/NEP distinction.
14. It is also possible that sociological interest in the environment simply lags several years behind societal attention to environmental problems. Public concern initially peaked in the early seventies, and was declining in the mid- to late-seventies when environmental sociology emerged. Perhaps the decline of interest in the area in the early eighties was stimulated by the earlier decline in public concern, and its revitalization in the late eighties by the upturn in public concern that occurred in the early eighties (see Dunlap and Scarce, 1991 on public opinion trends). The fact that Americans were increasingly concerned about environmental problems, even while endorsing (at least implicitly) Reagan's denial of limits, ought not be surprising given the low level of consistency in public opinion across issues such as pollution prevention, resource scarcity and population growth (see, e.g., Van Liere and Dunlap, 1981).
15. A compatible perspective has been put forth by the Union of Concerned Scientists (1991), whose "World Scientists' Warning to Humanity" has been signed by 1,600 prominent scientists from 70 countries, including a majority of all living Nobel laureates.
16. The emergence of an ecological perspective in science as well as society at large has resulted from a complex interaction between environmental science (including but extending beyond the discipline of ecology), environmental activism, media and policy-making. For differing but complementary analyses of this relationship see Oates (1989) and Caldwell (1990). For an insightful documentation of the degree to which an ecological perspective has begun to permeate the thinking of the public-at-large, see Kempton, et al., (1994).
17. We are not suggesting that this process will be easy. On the one hand, natural scientists often hold naive views of social behavior (Stern, 1993), and tend to seek quick "social fixes" (e.g., limiting population growth) analogous to the technological fixes that have traditionally been the preferred mode of dealing with environmental problems (Dunlap, 1993). On the other hand, past experience with interdisciplinary energy studies reveals major difficulties in fully integrating social scientific perspectives into natural science and engineering models (Lutzenhiser, 1994).
18. For a complementary argument stressing the importance of applied sociological work on more specific and localized environmental issues see Laska (1993).
19. The fact that the report of the NRC's Committee on the Human Dimensions of Global Change (Stern, et al., 1992) paid considerable attention to work by environmental sociologists is likely due to the presence of Tom Dietz on that committee.
20. For alternative accounts of the transition from "limits-to-growth" to "global environmental change," based on changes in objective conditions, see Dunlap (1993) and Stockdale (1989).
21. More fundamentally, we acknowledge that the very conceptions of "environment" and "nature" are themselves human constructs, as aptly demonstrated by Evernden (1992) and Simmons (1993). The philosophical problems raised by this recognition, and their roots in historical debates between realism and idealism, are beyond the scope of this paper. Suffice it to say that while we find some degree of epistemological relativism reasonable (and find Cole's [1992] solution to the problem appealing), we subscribe to ontological realism—i.e., we believe the world exists independently of humans' minds (see, e.g., Simmons, 1993).
22. The currently dominant constructivist camps in both the sociology of science and social problems theory exhibit varying degrees of commitment to social constructivism. In both areas "strong constructivists" maintain that there is no relationship between the "objective world" (if one exists) and social constructs, including what passes for scientific knowledge or what is treated as a social problem (see Sismondo, 1993 on the sociology of science and Best, 1989 on social problems theory). In a short commentary on the initial draft of this paper, Buttel (1993) eschews commitment to *strong* constructivism, and acknowledges the reality of objective environmental problems to a degree not found in his recent writings on GEC.
23. Buttel and Taylor (1992) often interchange GEC with "global warming" or the "Greenhouse effect," especially when they highlight areas of scientific uncertainty. While climate change may be the least well-understood aspect of GEC (although it should be emphasized that regardless of how it changes, rapid change will likely create problems), other components such as ozone depletion are well documented (Rowland, 1993).
24. In fairness we should note that Kroll-Smith and Laska (1994:3) also point to a "frustrating" lack of empirical research on the latter stemming from "the lack of middle-range concepts that link our theoretical musings with empirical research," an observation with which we would not disagree.
25. We would prefer to follow Buttel's (1987:467) lead and consider environmental sociology to consist of the work that is being done by environmental sociologists, although we are hopeful that the field will evolve into a full-blown "ecological sociology" that emphasizes study of the complex relationships between modern societies and their environments (Dunlap and Catton, 1994).
26. Technically we should refer to "non-human components of ecosystems" rather than to our environment.

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