# *The Emergence of Environmental Sociology: Contributions of Riley E. Dunlap and William R. Catton, Jr.*

William R. Freudenburg, *University of Wisconsin* and Robert Gramling, *University of Southwestern Louisiana*

Human beings have a dualistic relationship with the environment, being subject to physical and biological limits and yet being unique in the capacity for culture and symbolic communication. Sociology reflects this context and adds another dualism, drawing heavily from the concepts and perspectives of biological ecology, but reacting almost violently against "reductionism" of any sort, specifically including social Darwinism and environmental determinism. During much of the twentieth century, the predominant trend within sociology was for scholars to downplay or even ignore the importance of the environment, particularly in the United States. This trend was ultimately counterbalanced by sociological responses to the environmental movement of the late 1960s and early 1970s and by the efforts of selected sociologists—particularly Riley Dunlap and William Catton—who helped bring together the field of "environmental sociology." Given the finite nature of many natural resources and the ways in which human activities depend upon and affect the environment, the field of environmental sociology is likely to be an increasingly important one in the years to come.

## Introduction

As Buttel and Humphrey note (1987, p. 60), humans have a dualistic nature with respect to the environment, being both "a biological species in an ecosystem," subject to ecological limits and interdependencies, and at the same time "creators of distinctly social environments." Recognition of this dualistic nature is at least implicitly evident in the sociological literature since its inception. For the most part, however, the explicit focus of sociology has been on the "distinctly social" half of this dualism. While this focus is understandable, it is also incomplete. From the human consequences of natural disasters (Drabek 1986) to the "natural" consequences of some human-induced disasters (Erikson 1976; Bunker 1984), the interrelationships between society and the environment have shown no signs of going away even during the many times they have been ignored.

Since the early 1970s, fortunately, this partial blind spot in the sociological imagination has begun to be recognized and corrected. The problem,

*Sociological Inquiry*, Vol. 59, No. 4, November 1989

of course, is still likely to persist for quite some time, but to ignore the progress that has been made would be just as inappropriate as to ignore one half of humanity's dualistic relationship with the environment. In this article, accordingly, we review the contributions of two of the sociologists who have been most influential in the emergence, development, and institutionalization of what is now commonly known as "environmental sociology"—William R. Catton and Riley E. Dunlap.

Admittedly, the emergence of environmental sociology (with its emphasis on the reciprocal causal relationship between human activities and the physical environment) has been an uphill battle in American sociology, and for four main reasons. First, the "American" aspect of the discipline has provided an underlying ethos antagonistic to environmental sensitivity, particularly during the decades of prosperity after World War II. As Dunlap and Van Liere (1984) have noted, the "Dominant Social Paradigm" (DSP)—society's "common values, beliefs, and shared wisdom about the physical and social environments" (Pirages 1977, p. 6)—"was formed during a bygone era of extraordinary abundance" (Dunlap and Van Liere 1984, p. 1014). American sociologists, like other Americans, have been socialized into this man-versus-environment, frontier-like world view. This socialization process makes the reciprocal causal relationships between humans and their environment less likely to be noticed and thus less likely to be operationalized in research.

Second, one of the more basic historical trends within American sociology was a reaction against the conservative ideology of Social Darwinism prevalent around the turn of the century, with its tendency to be used in the legitimation of elite exploitation. The enduring legacy of this rejection has been an aversion to deterministic explanations in general, and biological explanations in particular (cf. Buttel and Humphrey 1987).

Third, the classic sociological theorists of the late nineteenth and early twentieth centuries, situated as they were in an unsympathetic cultural and academic setting, concentrated on the social as opposed to physical elements of human behavioral systems, if only to simplify the process of carving out a legitimate area of expertise. As Buttel and Humphrey (1987, p. 10) note, "Each of the classical theorists earned his reputation for creating a system of theoretical reasoning in which the master processes of social change were seen to be distinctly social factors." Furthermore, of perhaps even greater influence was the analysis of these original efforts by later theorists, primarily Parsons, an interpretation that exaggerated the exclusively social bent of the analysis. Thus, macroscopic sociological theory increasingly developed an almost exclusively social explanation of human behavior.

Finally, and generally less recognized, microscopic sociological theory has had a similar bias, one that has increased over the past several decades.

While Dunlap and Catton (1983) note the influence of the symbolic interactionists, primarily Mead, Cooley, and Thomas, who have focused on the importance of the socially derived definition of the situation, an equally influential and socially focused account has been presented by other major microscopic paradigms. Human interaction has come increasingly to be viewed as a process by which actors construct meaning within a largely undefined social environment (cf. Berger and Kellner 1964; Berger and Luckmann 1967), exchange subjectively meaningful rewards in a market-like milieu (Blau 1964), or create, produce, organize, and make accountable everyday life (Garfinkel 1967). Seldom, if ever, is there any hint that these processes, or the end result of these processes, would differ according to the physical environment(s) within which they occur.

As pointed out by Field and Burch (forthcoming), a number of sociologists, including many of the "classic" rural sociologists in the U.S., did indeed devote explicit attention to the environment. By the late 1960s, however, many of these contributions had been overlooked or forgotten under the combined influences of the forces noted above. Even the sociological aspects of "human ecology," despite the field's ecological roots and title, devoted only occasional attention to the biophysical environment (e.g., Duncan 1961). It is only a minor exaggeration to say that today's field of "Environmental Sociology" waited to congeal until the 1970s, as sociologists responded to the environmental movement of the late 1960s and early 1970s—and to the combined efforts of Riley Dunlap and William Catton.

## Intellectual Paths to Collaborative Work

William R. Catton, Jr. received the Ph.D. from the University of Washington in 1954, where he was exposed to the positivistic sociology of Stuart Dodd and George Lundberg. Following brief stints at Reed College in North Carolina and the Rand Corporation, Catton returned to the University of Washington as a faculty member in 1957. After conducting research on a range of topics (most notably on mass communication and human values) early in his career, Catton's avid interests in hiking and camping stimulated his sociological imagination, positivistic orientation, and research interest (Catton 1986). The results included an early sixties study of visitation rates to national parks (Catton 1966: chap. 6 and 8) and a mid-sixties study of the characteristics and motivations of wilderness users (Hendee and Catton 1968)

These empirical studies evolved into broader concern with "wildland recreation," an interest that was strengthened by Catton's move to the University of Canterbury in New Zealand from 1970 to 1972. His relationship to the environment there, as well as in the United States (especially from hikes around his beloved Mt. Rainier in Washington), gradually led Catton to an

awareness of and concern about the ecological damage produced by human over-use of the environment (Catton 1971; 1972). These experiences convinced him of the utility, for sociological analyses, of bio-ecological concepts such as carrying capacity, and he soon extended his ecological insights into macro-level analyses of what he saw as an overpopulated, industrialized world dependent upon finite resources such as fossil fuels (Catton 1974).

One finds in these early writings the seeds of subsequent conclusions that the paradigmatic underpinnings of the discipline itself precluded analysis of ecological considerations. Most notably, in a 1972 article Catton wrote, "pressure from physical and biological (ecological) limits has begun to render obsolete the sociological assumption that reality is largely socially constructed" (Catton 1972, p. 437). To overcome this pervasive "anti-reductionist" assumption, Catton argued that sociology needed to develop a "new paradigm"—one that would see the human being "not only as a creature of culture but also as an evolving mammal and component of a changing ecosystem" (1972, p. 438). The nature of this new paradigm, as well as fuller explication and critique of the dominant paradigm within sociology, was subsequently spelled out much more fully in Catton's collaborative work with Dunlap.

Riley E. Dunlap's involvement in environmental research began early in his career. Having just completed a study of student political activists for his M.A. at the University of Oregon, Dunlap teamed up with Richard Gale—who was then an assistant professor—in a study of the students who were involved in the 1970 "Earth Day" celebration at Oregon. This study of "eco-activists" (Dunlap and Gale 1972) was the first in a long line of studies of environmental attitudes conducted by Dunlap, many of which focused on the socio-political bases of environmentalism.

A prominent theme in these studies was the assumption that environmental protection was not the consensual issue it first appeared to be, and that ". . . a national commitment to solve environmental problems will run head-on into many traditional values and time-honored practices" (Dunlap, Gale, and Rutherford 1973, p. 45). In the process of attempting to understand these sources of opposition, Dunlap came across the concept of a "Dominant Social Paradigm" (DSP) in Pirages and Ehrlich (1974). The concept of a DSP captured the essence (much better than did the notion of "political conservatism") of a growing body of literature on the "anti-ecological" nature of traditional American values and ideology.

In the mid-seventies, Dunlap began to design a study to operationalize the concept of a DSP and to examine its relationship to environmental attitudes. In the process, he came to the conclusion that prominent themes in pro-environmental writings, such as the inevitability of limits to growth, the rejec-

tion of an anthropocentric worldview, etc., were evolving into a scientific alternative to the DSP. This alternative was labelled by Dunlap and his then-student collaborator, Kent Van Liere, as the "New Environmental Paradigm," or NEP (Dunlap and Van Liere 1978; 1984). It was about this time that Dunlap and Catton began their collaboration.

## Collaboration and Cross-Fertilization

By the mid-1970s, the term "environmental sociology" was coming into wide use, as shown perhaps most clearly by the formation of a Section on Environmental Sociology of the American Sociological Association (ASA). Still, there was a great deal of ambiguity in the term's usage. To many, it applied to any sociological research on environmental issues, the most prevalent of which were studies of environmentalism. Most of these analyses involved the application of standard sociological perspectives—typically from social movements, social psychology, public opinion, and social problems theory—to environmental issues, rather than the development of a distinctly new area of specialization. Prior to the widespread sociological attention to environmentalism (which developed only after the emergence of the environmental movement in the late 1960s), several other groups of sociologists were dealing with environmental issues, most notably through studies of housing and the built environment, studies of natural disasters, and studies of natural resource management. However, it was rare to find individuals involved in the latter types of research calling themselves "environmental sociologists."

Against this background, Catton and Dunlap began to discuss their mutual interests in environmental issues, and more specifically, the need for an "environmental sociology." Catton's growing appreciation of the work of early sociological human ecologists—extending mainly from the works of Robert Park and Ernest Burgess up through at least the early work of Amos Hawley—made him somewhat skeptical of the need for a new speciality. Catton's attendance at a 1975 conference on contemporary sociological human ecology, however (eventually published as Micklin and Choldin 1984), convinced him that sociological human ecologists were not adequately addressing the issues of pollution, resource use and population growth, issues that were receiving increasing attention by non-sociological ecologists and by environmental sociologists. He became more sympathetic to Dunlap's argument that a new specialty was needed.

In some ways, it would be fair to argue that the new specialty was already emerging, but that it lacked focus and identity. If so, what Catton and Dunlap did was to help such a focus to coalesce. In early 1976, Dunlap and Catton began work on a paper for that year's ASA meeting. The paper was intended to provide both a definition of environmental sociology and a clarifica-

tion of the way in which the new field differed from sociological human ecology. While a presentation was given on "Environmental Sociology—Why Not Human Ecology?" the paper was never completed. However, this manuscript contained the core ideas that were eventually published in a number of articles.

The first publication, "Environmental Sociology: A New Paradigm," (Catton & Dunlap 1978a) appeared in a special issue of *The American Sociologist* devoted to the "New Theoretical Perspectives." This paper accomplished two things. First, it provided a straightforward definition of the field of environmental sociology as the "study of social-environmental interactions," emphasizing not only that humans have an impact on the physical environment, but that environmental conditions (such as energy supplies) also affect humans and human societies. Second, it made the argument that environmental sociologists' willingness to examine environmental variables carried an implicit challenge not only to the DSP, but to our own discipline's fundamental assumptions or paradigm (Catton & Dunlap 1978a). More specifically, the cross-fertilization of their prior work led Catton and Dunlap to argue that sociology suffered from a preoccupation with the social causes of social facts and from an implicit set of assumptions that encouraged the discipline to ignore the ecological constraints facing all other species. Catton and Dunlap called those assumptions the "Human Exceptionalist Paradigm," or HEP, referring to its exaggerated emphasis on the "exceptional" characteristics of Homo sapiens (culture, science, and technology). A later conversation with Allan Schnaiberg at a San Francisco deli caused them (and all others in attendance) to agree that this could more accurately be called the "Human Exemptionalist Paradigm," the term they generally still use to this day. Finally, they also argued that implicit within the growing body of sociological work on environmental problems was a "New Environmental Paradigm," (NEP) or set of assumptions that emphasized the ultimate "ecosystem-dependence" of human societies.

This argument received a good deal of attention, being singled out by the outgoing editor of *The American Sociologist*, Allen Grimshaw (1979) as one of his two favorites among the articles published during his four-year term. It also received criticisms, including a major one by fellow environmental sociologist Frederick Buttel (1978), who argued that while HEP-NEP distinction was important, it ought not overshadow traditional theoretical perspectives such as the conflict-versus-consensus cleavage. This led to a short reply (Catton & Dunlap 1978b) and stimulated an eventual revision of the basic assumption of two paradigms as well as an expanded clarification of the relationship between the HEP-NEP and conflict-consensus cleavages (Catton and Dunlap 1980).

Responses received from other colleagues also led to new names for the

two paradigms. As noted above, HEP was renamed the "Human Exemptionalism Paradigm," a label that does not challenge the notion that humans are an "exceptional" species, but rather conveys the ideas that possession of culture and technology does not "exempt" humans from ecological constraints. Similarly, the NEP was renamed the "New Ecological Paradigm," in recognition of the increasingly ecological perspective involved in most environmental research (Catton and Dunlap 1980). The HEP-NEP distinction has been used by Catton in *Overshoot* (1980), a sweeping ecological history of Homo sapiens, and was extended to the rest of the social sciences in a symposium edited by Dunlap (1980).

While the article and reply in *The American Sociologist* and the 1980 follow-up article emphasized the paradigmatic implications of sociological attention to environmental issues, Dunlap and Catton also continued the effort to "define" the field of environmental sociology. They authored a 1979 article in the *Annual Review of Sociology* and a 1979 book chapter (Dunlap and Catton 1979a; 1979b) in which they not only repeated their argument that sociological attention to environmental issues warranted the recognition of a new specialization, but reinforced their point by reviewing and synthesizing a wide range of work —ranging from housing to resource management—that had a common focus on "societal-environmental interactions." In addition to delineating a common focus, they distinguished between "core" environmental sociology, which focused on such interactions, and research that involved the application of traditional sociological perspectives to environmental issues (e.g. research on the "Environmental Movement"), which they labelled the "sociology of environmental issues." In a later paper, which appeared as the lead article in a special issue of *Sociological Inquiry* on "Sociology of Environment," Dunlap and Catton (1983) reinforced the argument for common ground among sociologists studying environmental issues, focusing specifically on commonalities and the need to bridge the gap between those who study the "built" and those who study the "natural" environment.

In addition to their efforts to define environmental sociology as an area of specialization and to emphasize its paradigmatic implications, a third theme is prevalent in the works of Dunlap and Catton, namely that environmental sociologists should ground their work in a strong ecological perspective. They have suggested that sociological human ecology (at least when freed of its HEPish traditions) offers useful insights. Specifically they have urged the use of Duncan's (1961) model of the ecological complex, or "POET model," which emphasizes the mediating role of human organization and technology between human populations and their environment, as a useful analytical framework (Dunlap and Catton 1979a; 1979b; 1983).

## Institutionalization of the Field

In addition to their intellectual work, however, Dunlap and Catton have also offered the kind of organizational and institutional leadership that, in some respects, may prove to have been just as important. The significance of this contribution has to do partly with the importance that Washington State University attained in the area of environmental sociology, largely because of their leadership, but it can also be seen by realizing that the two colleagues played crucial leadership roles in all three of the professional sociological associations that have provided the organizational base for environmental sociology. Riley Dunlap initiated the formation of the "Environmental Problems Division" within the Society for the Study of Social Problems (SSSP) in 1973, serving at its chair through 1975. He was also elected to the initial Council of the ASA Section on Environmental Sociology, serving from 1976 to 1978, and he also served as chair of the oldest such group, the Natural Resources Research Group of the Rural Sociological Society (RSS), for 1978–79. Finally, Dunlap served as chair-elect and chair of the ASA Section on Environmental Sociology from 1979 to 1983. Catton served on the "ASA Ad Hoc Committee on Environmental Sociology" in 1974–75, the first time that the national organization had dealt specifically with the topic. He was elected as the chair of the newly formed ASA section in 1976–77.

Between the two of them, Catton and Dunlap have organized and chaired numerous sessions at professional meetings, several of which focused on the nature of the emerging field of environmental sociology. They also put out innumerable issues of newsletters for the three organizations noted above, assisting in the crucial "networking" functions during the early days of the field. Dunlap also organized joint SSSP-RSS sessions early on, bringing rural sociologists and SSSP members together to discuss topics such as environmental quality as a social problem, the equity impacts of environmental problems, and the nature of the "Environmental Movement." More generally, they have served as informal "networkers" who have tried to bring together ASA, SSSP and RSS members, as well as to put environmental sociologists in touch with non-sociologists interested in environmental issues.

Just as salient as the national organizational leadership provided by Catton and Dunlap is the extent to which they managed to build up a key center of environmental sociology at Washington State University (WSU). Riley Dunlap arrived at WSU in 1972, directly out of graduate school; William Catton was hired a year later, after returning to the United States from the University of Canterbury in New Zealand. They began to collaborate in 1975.

By mid-decade, other WSU sociologists such as Lew Carter (Carter and Gray 1975) and Don Dillman (Dillman, Tremblay and Dillman 1977) were

also focusing on environmental issues, and the late seventies saw the addition of two new faculty with strong interests in environmental sociology, William Freudenburg (Freudenburg 1981; 1986) and Eugene Rosa (Freudenburg and Rosa 1984; Rosa, Machlis and Keating 1988). In addition, Marvin Olsen spent a short period at WSU in the early eighties. The result was that the WSU departments of sociology and rural sociology developed a "critical mass" of faculty in the area of environmental sociology, as well as a set of relevant courses: Environmental Sociology, taught by Dunlap; Human Ecology, taught by Catton; Energy and Society, taught by Rosa; and Social Impact Assessment, originally taught by Freudenburg, now by Carter.

While WSU has lost a pair of faculty members—Freudenburg and Olsen—who contributed to its Environmental Sociology Program, Lee Freese and James Short have in recent years developed interests that are germane to the area (e.g. Short 1984; Freese 1988). In general, throughout the eighties, WSU's environmental sociologists have focused increasing attention on the relationship between technology and environmental issues, including work on nuclear energy (Dunlap and Olsen 1984; Carter 1988), risk assessment (Short 1984), information technologies (Dillman 1985) and theoretical analyses of technology and natural resources (Catton 1986; Freese 1988). This shift has paralleled a general trend among environmental sociologists, one reflected in changes in the names of the SSSP Division (from "Environmental Problems Division" to "Division on Environment and Technology") and the ASA Section (from "Section on Environmental Sociology" to "Section on Environment and Technology"). Within the past decade, of course, other departments have also developed critical masses of faculty with interests in environmental sociology, including Michigan State, Penn State, Utah State and Wisconsin.

## Assessing the Impact of Their Work

Catton and Dunlap's contributions up to the present represent five broad areas. First, as noted above, most environmental sociologists would probably agree that Dunlap and Catton's efforts to define, integrate, and modify the field have had a major effect on environmental sociology, providing practitioners with a sense of identity as well as providing the specialty with visibility within the larger discipline. This is reflected in their being named co-recipients of a 1985 "Award of Merit" from the Rural Sociological Society's Natural Resources Research Group and a 1986 "Award for Distinguished Contribution" from the American Sociological Association's Section on Environmental Sociology. Similarly, in a recent review of the field for the *Annual Review of Sociology*, Buttel refers to their work as providing—along with that of Allan Schnaiberg (1980)—much of the "core" of environmental sociology (1987, pp. 467–71; also see Buttel 1986).

The second contribution of Dunlap and Catton comes with their expansion of the perspective of human ecology. Focusing on the reciprocal causal relationship between human activity and the physical environment not only avoids the potential for a narrow deterministic point of view, but also provides a more comprehensive analytical framework—indeed, a more "ecological" framework—than is found in what had become the traditional sociological human ecology. An additional contribution is the idea that certain human activities (primarily a tendency toward unchecked growth, and a concomitant increasing reliance on and depletion of finite resources) tend to lead not toward equilibrium with the natural environment, but toward disequilibrium and environmental degradation (cf. Catton 1980). The call for renewed attention to ecological limits, however, has met with only limited success in other sociological research (Buttel 1987, pp. 469–471). One area of success is reflected by recent work in the sociology of agriculture. Buttel (1987, p. 471) attributes the increasing attention given to ecological conditions in this work as stemming, to a considerable degree, from the Dunlap and Martin article (1983) that criticized earlier sociological work on agriculture for ignoring such conditions. On the other hand, ironically, Catton and Dunlap have had little success in convincing many of those who consider themselves sociological "human ecologists" of the relevance of the biophysical environment (see, for example, St. John 1985).

Third, whether or not the extant theoretical perspectives in sociology constitute a single meta-theoretical paradigm (Human Exemptionalist Paradigm) as Catton and Dunlap have argued, many of these perspectives do share a common implicit assumption that the physical environment is largely irrelevant for sociological analysis. In this sense, Dunlap and Catton's position has been, as Buttel (1987, p. 468) notes, "self-consciously fashioned as a critique of 'mainstream' sociology," and the mainstream currents of any discipline can be notoriously slow to shift.

Fourth, having characterized current sociological perspectives as a single paradigm, Catton and Dunlap have proposed an alternative, the New Ecological Paradigm. This HEP-NEP distinction in particular has had, as Buttel (1986, p. 345) puts it, "a curious influence on environmental sociology." On the one hand, most environmental sociologists accept the validity of the HEP-NEP distinction; on the other hand, it is drawn at a level of abstraction that may make it difficult to apply in empirical research. Continued efforts to integrate this paradigmatic distinction with mainstream theoretical perspectives, as begun by Humphrey and Buttel (1982, pp. 100–104), are certainly warranted.

Finally, Catton and Dunlap have deepened our understanding of current public and political environmental debates in the United States by drawing

greater attention to the historical experience of American society, as reflected in the Dominant Social Paradigm. In contrast to the HEP-NEP conceptualization, the DSP-NEP distinction has had considerable impact on empirical work, perhaps because it focuses on society at large rather than the discipline of sociology. The idea that environmentalism poses a full-blown challenge to the "dominant social paradigm" of industrialized nations has been used by European sociologists (Cotgrove 1982) as well as U. S. scholars in other disciplines (e.g. Milbrath 1984). Dunlap is in the process of reformulating the competing societal paradigms as the "ecological" and "technological" worldviews (Dunlap and Olsen 1984).

The jury is still out, of course, on the longer-term, wider-range effects of the growth and institutionalization of environmental sociology. It is unclear whether Dunlap and Catton have been successful in getting most sociologists who study environmental issues to think of themselves as "environmental sociologists" rather than, for example, as specialists in energy (Rosa, Machlis and Keating 1988), social impact assessment (Freudenburg 1986), or a combination of the two (Gramling and Brabant 1986). More broadly, only limited success has been achieved in establishing a common identity among those who study housing and the built environment and other environmental sociologists.

What is clear, however, is that the physical environment does affect human activities, and in turn human activities affect the environment. While technological developments have allowed many of us to ignore the interdependencies for a few decades, the interdependencies are unlikely to disappear even when they are being ignored. Current issues range from ozone holes to global warming, Superfund sites to resource depletion, Three Mile Island to Chernobyl; we can confidently predict that headlines over the coming years and decades will continue to provide evidence that societies' options are limited by the realities of the physical environment—and that societies' actions can have increasingly far-reaching implications for the environment on which we all depend.

Under the circumstances, it appears that sociologists can choose between two options: We can begin to bring the environment into our analyses now, or we can be further behind when we can no longer avoid doing so in the future. As Dunlap and Catton have helped to point out, the option to bring the environment into sociological analysis clearly exists. Our conclusion is that they are to be commended for doing so; our hope is that this article will help ever-increasing numbers of sociologists to choose the option of recognizing the reciprocal relationships, sooner, rather than later.

## REFERENCES


Berger, Peter, and Hansfried Kellner. 1964. "Marriage and the Construction of Reality." *Diogenes* 46:1-23.

Berger, Peter, and Thomas Luckmann. 1967. *The Social Construction of Reality*. Garden City, NY: Doubleday.

Blau, Peter. 1964. *Exchange and Power in Social Life*. New York: John Wiley.

Bunker, Stephen G. 1984. "Modes of Extraction, Unequal Exchange, and the Progressive Underdevelopment of an Extreme Periphery: The Brazilian Amazon, 1600-1980." *American Journal of Sociology* 89 (March):1017-1064.

Buttel, Frederick H. 1978. "Environmental Sociology: A New Paradigm?" *The American Sociologist* 13 (November):252-256.

———. 1986. "Sociology and the Environment: The Winding Road toward Human Ecology." *International Social Science Journal* 109:337-356.

———. 1987. "New Directions in Environmental Sociology." *Annual Review of Sociology* 13: 465-488.

Buttel, Frederick H., and Craig R. Humphrey. 1987. "Sociological Theory and the Natural Environment." Paper presented at the annual meeting of the American Sociological Association, Chicago.

Carter, Lewis F. 1988. "Negotiations of Social Impact Scope Conditions: The Case of the Hanford Nuclear Reservation in Washington State." Paper presented at the annual meeting of the Pacific Sociological Association, Las Vegas.

Carter, Lewis F., and Louis N. Gray. 1975. *Societal Implications of Energy Scarcity*, edited by Lewis F. Carter and Louis N. Gray. Pullman: Social Research Center, Washington State University.

Catton, William R., Jr. 1966. *From Animistic to Naturalistic Sociology*. New York: McGraw-Hill.

———. 1971. "The Wildland Recreation Boom and Sociology." *Pacific Sociological Review* 14 (July):339-359.

———. 1972. "Sociology in an Age of Fifth Wheels." *Social Forces* 50 (June):436-447.

———. 1974. "Depending on Ghosts." *Humboldt Journal of Social Relations* 2 (Fall/Winter): 45-49.

———. 1980. *Overshoot: The Ecological Basis of Revolutionary Social Change*. Urbana: University of Illinois Press.

———. 1986. "Homo Colossus and the Technological Turn-around." *Sociological Spectrum* 6:121-147.

Catton, William R., Jr., and Riley E. Dunlap. 1978a. "Environmental Sociology: A New Paradigm." *The American Sociologist* 13 (February):41-49.

———. 1978b. *Paradigms, Theories, and the Primacy of the HEP-NEP Distinction*. Pullman: Washington State University.

———. 1980. "A New Ecological Paradigm for Post-exuberant Sociology." *American Behavioral Scientist* 24 (September/October):15-47.

Cotgrove, Stephen. 1982. *Catastrophe or Cornucopia: The Environment, Politics and the Future*. New York: John Wiley.

Dillman, Don A. 1985. "The Social Impacts of Information Technologies in Rural North America." *Rural Sociology* 50 (Spring):1-26.

Dillman, Joye J., Kenneth R. Tremblay, Jr., and Don A. Dillman. 1977. "Energy Policies Directed at the Home: Which Ones Will People Accept?" *Housing Educators Journal* 4:2-13.

Drabek, Thomas E. 1986. *Human System Responses to Disaster: An Inventory of Sociological Findings*. New York: Springer-Verlag.

Duncan, Otis Dudley. 1961. "From Social System to Ecosystem." *Sociological Inquiry* 34:140–149.

Dunlap, Riley E. 1980. "Ecology and the Social Sciences: An Emerging Paradigm." Special Issue of *American Behavioral Scientist* 24 (September/October):1–151.

Dunlap, Riley E., and William R. Catton, Jr. 1979a. "Environmental Sociology." *Annual Review of Sociology* 5:243–273.

———. 1979b. "Environmental Sociology: A Framework for Analysis." Pp. 57–85 in *Progress in Resources Management and Environmental Planning*, edited by T. O'Riordan and R. C. d'Arge. Vol. 1. Chichester, England: John Wiley.

———. 1983. "What Environmental Sociologists Have in Common (Whether Concerned With "Built" or "Natural" Environments). *Sociological Inquiry* 53 (Spring):113–135.

Dunlap, Riley E., and Richard P. Gale. 1972. "Politics and Ecology: A Political Profile of Student Eco-activists." *Youth and Society* 3 (June):379–397.

Dunlap, Riley E., Richard P. Gale, and Brent M. Rutherford. 1973. "Concern for Environmental Rights Among College Students." *American Journal of Economics and Sociology* 32 (January):45–60.

Dunlap, Riley E., and Kenneth E. Martin. 1983. "Bringing Environment Into the Study of Agriculture: Observations and Suggestions Regarding the Sociology of Agriculture." *Rural Sociology* 48 (Summer):201–218.

Dunlap, Riley E., and Marvin E. Olsen. 1984. "Hard-path Versus Soft-path Advocates: A Study of Energy Activists." *Policy Studies Journal* 13 (December):413–428.

Dunlap, Riley E., and Kent D. Van Liere. 1978. "The New Environmental Paradigm: A Proposed Measuring Instrument and Preliminary Results." *Journal of Environmental Education* 9:10–19.

———. 1984. "Commitment to the Dominant Social Paradigm and Concern for Environmental Quality." *Social Science Quarterly* 65 (December):1013–1028.

Erikson, Kai T. 1976. *Everything in its Path: Destruction of Community in the Buffalo Creek Flood*. New York: Simon and Schuster.

Field, Donald R., and William R. Burch, Jr. Forthcoming. *Rural Sociology and the Environment*. Westport, CT: Greenwood Press.

Freese, Lee. 1988. "The Very Thought of Resources." Paper presented at the annual meeting of American Sociological Association, Atlanta.

Freudenburg, William R. 1981. "Women and Men in an Energy Boomtown: Adjustment, Alienation, and Adaptation." *Rural Sociology* 46 (Summer):220–244.

———. 1986. "Social Impact Assessment." *Annual Review of Sociology* 12:451–478.

Freudenburg, William R., and Eugene A. Rosa. 1984. *Public Reactions to Nuclear Power: Are There Critical Masses?* Boulder, CO: American Association for the Advancement of Science/Westview Press.

Garfinkel, Harold. 1967. *Studies in Ethnomethodology*. Englewood Cliffs: Prentice-Hall.

Gramling, Robert, and Sarah Brabant. 1986. "Boomtowns and Offshore Energy Impact Assessment: The Development of a Comprehensive Model." *Sociological Perspectives* 29:177–201.

Grimshaw, Allen. 1979. "Editor's Page." *The American Sociologist* 14 (November):170, 267.

Hendee, John C., and William R. Catton, Jr. 1968. "Wilderness Users: What Do They Think?" *American Forests* 74 (September):29–31, 60–61.

Humphrey, Craig R., and Frederick H. Buttel. 1982. *Environment, Energy and Society*. Belmont, CA: Wadsworth.

Micklin, Michael, and Harvey M. Choldin. 1984. *Sociological Human Ecology: Contemporary Issues and Applications*, edited by Michael Micklin and Harvey M. Choldin. Boulder, CO: Westview.

Milbrath, Lester W. 1984. *Environmentalists: Vanguard for a New Society*. Albany: State University of New York.

Pirages, Dennis C. 1977. "Introduction: A Social Design for Sustainable Growth." Pp. 1–13 in *The Sustainable Society*, edited by Dennis C. Pirages. New York: Praegen.

Pirages, Dennis C., and Paul R. Ehrlich. 1974. *Ark II: Social Response to Environmental Imperatives*. San Francisco: W. H. Freeman.

Rosa, Eugene A., Gary E. Machlis, and Kenneth M. Keating. 1988. "Energy." *Annual Review of Sociology* 14: (in press).

Schnaiberg, Allan. 1980. *The Environment: From Surplus to Scarcity*. New York: Oxford.

Short, James F., Jr. 1984. "The Social Fabric at Risk: Toward the Social Transformation of Risk Analysis." *American Sociological Review* 49 (December):711–725.

St. John, Craig. 1985. "Review of Sociological Human Ecology." *Contemporary Sociology* 14 (March):200–201.