



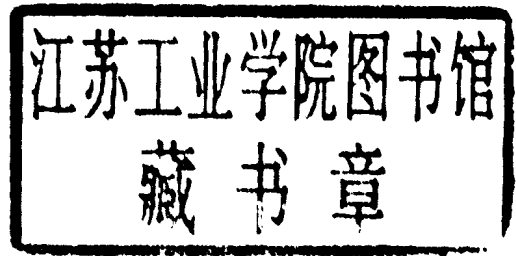
*The Environment
and Society*

READER

R. SCOTT FREY
EDITOR

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R. Scott Frey, Editor
University of North Florida



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Preface

Resource availability and the limited absorptive capacity of the biophysical environment are increasingly important to humans. Consider the fact that the majority of living Nobel Prize winners signed the *World Scientists' Warning to Humanity* in 1992. This proclamation stated that "If not checked, many of our current practices...may so alter the living world that it will be unable to sustain life in the manner that we know" (Union of Concerned Scientists 1992). Never before had a majority of Nobel Laureates agreed to a single statement on any issue, but then again the extent of resource depletion and pollution problems, as well as their consequences, are startling (see e.g., Brown 2000; McNeill 2000; National Research Council 1999; Wackernagel and Rees 1996). It is estimated, for instance, that *each day* humans:

- Appropriate 40 to 50 percent of the products of photosynthesis (Giampietro and Pimentel 1993; Vitousek et al. 1986; see also Vitousek et al. 1997);
- Consume around 54 percent of the accessible runoff water on earth (Postel et al. 1996);
- Mine more material from the earth than the natural erosion of all the Earth's rivers (Young 1992);
- Add over 15 million tons of carbon to the atmosphere (Brown et al. 2000:67);
- Destroy 180 square miles of tropical rain forest (Miller 1994:264);
- Create over 60 square miles of desert (Miller 1994:324);
- Eliminate at least 74 animal and plant species (Wilson 1992:280);
- Erode 70 to 80 million tons of topsoil (Pimentel et al. 1995);
- Add around 1,400 tons of CFCs to the stratosphere (Brown et al. 1995:63).

These and a host of other environmental problems (including catastrophic events such as Bhopal, Chernobyl, Exxon Valdez, and the Gulf War oil spill) have aroused worldwide concern. This concern has been expressed in several ways: public anxiety and demand for a physically attractive, biologically healthy, and productive environment (Dunlap 1998; Dunlap and Mertig 1995; Freudenburg 1993); scientific debate and controversy over the nature, scope, and management of environmental problems (National Research Council 1999, 2000; Rosa and Dietz 1998); political controversy, conflict, and litigation among various industry, government, and public groups (Dryzek 1997); and mitigative and regulatory efforts by numerous governmental and nongovernmental organizations at the local, national, regional, and global levels (Elliott 1998; Fiorino 1995; Frank 1999). The problems are so severe that German sociologist Ulrich Beck (1992, 1999) has argued that the modern world is a "risk society" in which exposure to environmental risk is as important a determinant of life as class, race, and gender.

Current concerns with environmental problems can best be summarized in six interrelated questions:

1. What is the actual nature and scope of depletion and pollution problems at the local, national, regional, and global levels?
2. How are threats to humans created by problems of depletion and pollution distributed within and between countries?
3. What are the human causes or driving forces of environmental problems?
4. What kinds of human responses (individual, organizational, cultural, societal,

and international) have these environmental problems produced?

5. Because human responses are embedded in a larger social context, how have they been influenced by psychological, economic, political, and social and cultural forces?
6. How can we deal more effectively with environmental problems?

Despite the pressing importance and sociological relevance of these questions, there is no comprehensive introduction to the issues in sociology. This reader provides such an introduction for advanced undergraduate and beginning graduate students. It consists of twenty-one papers that are organized into eleven chapters. Part I (Chapters 1–4) examines the scope, nature, and human causes of environmental problems. Part II (Chapters 5–8) provides an overview of various human responses to environmental problems. Part III (Chapters 9–11) outlines an emerging view referred to as *sustainable development* that not only represents an alternative way of thinking about environmental problems but provides concrete suggestions for action.

PART 1: NATURE AND CHARACTER OF ENVIRONMENTAL PROBLEMS

Chapter 1 Environmental problems are problems of resource depletion and pollution created by human activities. Specific examples include the depletion and degradation of soil, water, and marine resources that are important for food production; air and water pollution; devegetation of land by deforestation and desertification; stratospheric ozone depletion; acidic precipitation; global climate change; destruction of natural habitats; loss of biodiversity. Such problems affect human health and sociocultural production and other species, as well as disrupt the overall integrity of the biosphere. The nature and character of environmental problems are examined in this chapter.

This chapter consists of a paper that discusses the nature of environmental problems and identifies their effects on humans and the larger biosphere (Frey). The paper also examines three specific environmental problems (ranging from the local to the global) to illustrate major points: (1) toxic wastes at the local level in the United States; (2) environmental degradation in the former Soviet Union; and (3) global climate change. It concludes with discussion of a basic model for thinking about the human causes and responses to environmental problems.

Chapter 2 Environmental sociology as a distinct subdiscipline centered on the study of “societal–environmental interactions” emerged in the late 1970s. Although sociologists studied environmental topics (including public opinion, resource management issues, and the environmental movement) for several decades prior to this, they did so typically from a disciplinary tradition grounded in what some have called the “Human Exemptionalist Paradigm.” This paradigm assumes that humans are exempt from constraints imposed by the biophysical environment because of culture, science, and technology. Environmental sociology (or the new human ecology as some prefer to call it) challenges this idea by insisting that the biophysical environment shapes and is shaped by human activities. The implications that this assumption has for sociology are explored in Chapter 2.

Three papers are included in this chapter. The first paper argues that mainstream sociology ignores the relationship between the biophysical environment and society at the risk of increasing irrelevancy (Murphy). The second paper outlines the conceptual underpinnings and theoretical core of U.S.-based environmental sociology, examines its history and current status, and discusses existing theoretical shortcomings and possible new directions (Dunlap). The chapter concludes with a paper that explores the potential contribution of the Marxist narrative

(and other classical theoretical narratives) to the development of a deeper understanding of environmental problems (Foster).

Chapter 3 Environmental problems are embedded in stratification systems that exist within and between countries. Consequently, the human benefits (economic and other) and the threats of environmental problems (such as exposure to pollution and the attendant health risks, economic problems like unemployment resulting from resource depletion, and the protection from such problems) are not equitably distributed within and between countries. Rather, they tend to reflect power–dependency relations between various social groups (based on class, gender, and race), communities and regions within countries, as well as between countries. The threats of environmental problems, therefore, tend to vary inversely across groups and geographic areas within countries by economic and other considerations and between countries by position in the world-economic system. Despite widespread recognition of the problem, social science research is limited. We have little understanding of how the threats of environmental problems are distributed across class, gender and racial groups, communities, countries, and other meaningful human categories such as generations. The general issue is examined in this chapter by concentrating on the specific problem of differential exposure to environmental hazards and the attendant health risks.

This chapter consists of three papers. The first paper examines how exposure to environmental hazards and the attendant health risks vary by racial–ethnic group status in the United States (Bullard). (Among other things, this paper examines what is known about the differential location of locally unwanted land uses [LULUs] in poor and minority communities and how these contribute to the problem of health risks.) The second paper examines how the export of hazardous wastes to less developed coun-

tries by transnational corporations (based in the industrialized or core countries) contributes to health, safety, and environmental risks in the periphery (Frey). The chapter concludes with the statement of environmental justice principles adopted by The First National People of Color Environmental Leadership Summit in 1991.

Chapter 4 Environmental problems have been linked to various driving forces or human causes. Major forces include population growth, economic growth and poverty, technological change, the structure of political–economic institutions, and cultural attitudes and beliefs. Population growth is thought to result in greater aggregate demand placed on the resource base and absorptive capacity of the environment. Economic growth (or increased production and consumption of goods) results in increased resource withdrawals and waste creation. Poverty fosters population growth and increases human demands on local environments. Technological change affects the environment in several interrelated ways: It not only creates new ways for using resources, but it changes the efficiency of production and consumption patterns. Characteristics of political–economic institutions (the existence or absence of markets, centralization of power, and the like) have been linked to environmental problems in various ways. Cultural attitudes and beliefs (often referred to as *worldviews*) emphasizing domination, growth, progress, and a world without physical limits are thought to underlie shortsighted, self-interested human activities linked to environmental degradation. Little consensus exists in the scientific literature on the nature of the relationship between these driving forces and environmental problems. In fact, considerable controversy has emerged around several of these factors.

This chapter consists of two papers. The first paper reports an important effort to synthesize and make sense of the seemingly disparate (but highly conventional) views

outlined above, especially population growth, affluence, and technology (Dietz and Rosa). The second paper represents a neo-Marxian effort to link environmental problems (especially those of the periphery) to global capitalism (O'Connor).

PART II: HUMAN RESPONSES TO ENVIRONMENTAL PROBLEMS

Chapter 5 Research in the United States and many developed and less developed countries indicates that the public is concerned with environmental quality. The public perceives a deterioration in environmental quality and is concerned with the threats to human health and well-being posed by this deterioration. Furthermore, there has been a reduction in public confidence in the state's ability to protect them from environmental threats. The intent of this chapter is to summarize what is known about environmental beliefs and attitudes.

This chapter consists of three papers. The first paper examines the social bases of environmental concern in the United States (Jones and Dunlap). The second paper examines one interesting (but highly controversial) effort to explain why humans differ in their views of the environment and the nature of environmental problems (Ellis and Thompson). The third paper discusses the nature and recent trends in public concerns with the environment in twenty-four developed and less developed countries (Dunlap and Mertig).

Chapter 6 The contemporary environmental movement can be viewed as a political response to environmental problems. It has been described by several commentators as a "new social movement" because its origins, tactics, and goals differ substantially from traditional class and economic-based social movements. Regardless of the accuracy of this characterization, the environmental movement has challenged the underlying goals and structure of the ad-

vanced industrial countries and become an important actor in the political process in many industrialized countries. There has also been a dramatic increase in environmental movement activity throughout the less developed world and the emergence of what can be described as a global environmental movement.

This chapter consists of three papers. Attention in the first paper is directed to the contemporary environmental movement in the United States (Brulle). It examines the contemporary U.S. environmental movement sector: its ideology, support bases, motivational dynamics, organizational structures, and the political styles of the increasingly diverse movement organizations (ranging from mainstream organizations such as the Sierra Club to community grassroots organizations and other local groups fighting LULUs as well as more radical groups such as Earth First!) that have emerged at the local and national levels. The second paper discusses the environmental movement in the less developed world; specifically, the authors discuss the distinguishing characteristics, political styles, and direction of the environmental movement in India (Bandyopadhyay and Shiva). The chapter concludes with a paper examining the emergence of global-level environmental discourse and activity (Frank).

Chapter 7 Environmental problems generate conflict between various actors about appropriate state policy. In response, industry and government have developed formal techniques for assessing and managing environmental problems. These include economic cost-benefit analysis, risk analysis, environmental impact assessment, and related procedures. Proponents of these techniques maintain that they are rational scientific tools that facilitate environmental assessment and management. Critics contend that these techniques have numerous limitations that may produce flawed environmental assessment and management

practices. One such technique, risk assessment, is discussed in this chapter.

This chapter consists of a paper outlining the distinguishing characteristics and major shortcomings of risk assessment (and management), as well as the sociological implications of risk (Dietz, Frey, and Rosa). Risk assessment is characterized by scientific uncertainty resulting from inadequate data and methods and the values surrounding risk assessment and management are often in dispute. These problems are compounded as the spatial and temporal horizons of environmental problems become more distant.

Chapter 8 Many people in the United States and other countries are concerned with environmental quality, and they appear to have lost confidence in the state's ability to protect them from environmental threats. Although several commentators have described laypersons and environmentalists as victims of "near-clinical paranoia," a number of observers have argued that the public's response is reasonable and predictable given the way that environmental assessment and management have been conducted by government and industry. Interested parties are often disenfranchised. They are either excluded from participating in the assessment and management process or they are consulted after the assessment has been conducted and management decisions have been made. This chapter examines the problem and outlines ways for improving the process.

The chapter begins with a paper that discusses the dynamic tension between science and democracy that seems to underlie the problems discussed in papers in the previous two chapters: This tension can best be described as the conflict between expertness and popular rule (Brown). The authors of the second paper argue that the traditional view of science (a practice conducted by a peer community of experts) is outmoded given the scientific uncertainties

and value disputes discussed earlier and that an extended community of peers or interested parties (including both experts and nonexperts) is needed in the assessment and management of environmental problems (Funtowicz and Ravetz). The argument is not based on a rejection of science as a means of generating valid information or normative considerations regarding the moral superiority of democracy over technocratic rule by experts, but on pragmatic grounds: By broadening the peer community, the quality of assessment information may improve, confidence and trust among key actors may increase, and consensus about appropriate management strategies may emerge.

PART III: ENVISIONING A SUSTAINABLE AND EQUITABLE FUTURE

Discussions of environmental problems often have a pessimistic tone because the problems are large and often seem intractable. This collection concludes with a discussion of an emerging perspective (referred to as *sustainable development*) that provides a means for thinking more clearly about and dealing more effectively with environmental problems. *Sustainability* is typically defined as the responsibility of the current generation to ensure the ability of future generations to meet their material needs and experience a healthy environment. Beyond this, however, there is little consensus about the conceptual and operational content of sustainability. Ecologists, for instance, see sustainability as the preservation of ecological systems, whereas most economists (and sociologists) see it as the maintenance and improvement of living standards for humans. Disagreements over the meaning of *sustainability* represent more than a debate between economics and ecology; they are based on different views regarding the nature of the relationship between the biophysical environment and human society. The utility of the sustainability concept

for thinking about and dealing with environmental problems is discussed in Chapters 9–11.

Chapter 9 The Western conception of development is critically reviewed in this chapter. The chapter consists of a paper that outlines the historical origins of the Western view of development; discusses the major social components of this conception (or dominant social paradigm as some have called it); discusses how it has become embedded in much of the contemporary social, economic, and political thought and practice; and presents an alternative view (Catton and Dunlap). In other words, the Western conception of development as economic growth is considered illusory because it is neither sustainable nor morally defensible.

Chapter 10 Chapter 10 consists of a paper that addresses several important issues surrounding the concept of *sustainable development* (Farrell and Hart). It examines the conceptual and operational core of sustainable development by critically reviewing existing conceptions. It outlines a synthetic conception of sustainable development that incorporates important dimensions from existing conceptions and responds to criticisms raised by critics. It also discusses what sustainable development might look like and ways for assessing progress at different spatial levels and across time.

Chapter 11 The book concludes on an upbeat note by discussing specific changes (including transformations in technology, economic and political institutions, and lifestyles) required for the emergence of a sustainable and equitable future. The role of both science and politics in shaping the future and the place that human agency plays in shaping future human–biophysical environment interactions are emphasized in the discussion. A paper is included that draws together the understanding developed in previous chapters and discusses specific ways

in which humans can reduce environmental problems (Hawken).

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PART I

Nature and Character of Environmental Problems

Chapter 1

Environmental Problems from the Local to the Global

1. Environmental Problems

R. SCOTT FREY

What are environmental problems? At the most abstract level, environmental problems occur when the state of the biophysical environment has adverse consequences on things people value. We can think of two general kinds of problems. One occurs when a resource that people value is in short supply or disappears entirely. This is resource depletion. The other is when human actions change ecosystems in undesirable ways. We think of this as pollution.

As we proceed into the twenty-first century, we are faced with a host of severe environmental problems (National Research Council 1999:186–224). Specific examples include:

- The depletion and degradation of soil, water, and marine resources that are considered important for human food production;
- Air and water pollution;
- Land devegetation resulting from deforestation and desertification;
- Stratospheric ozone depletion;
- Accumulation of greenhouse gases in the upper atmosphere;
- Acidic precipitation;
- Destruction of natural habitats;
- Species extinction and the loss of biodiversity.

The U.S. Environmental Protection Agency (EPA) (1987, 1990) and other organ-

izations and analysts (see especially National Research Council 1999:190–191) have published numerous lists of the most important environmental problems facing humanity. The EPA list of environmental problems of concern is presented in Table 1.1. Some of these problems have very adverse effects on human health and economic welfare. They can also affect other species and disrupt the overall integrity of natural ecosystems, crucial bio-geochemical cycles, and the larger biosphere. The EPA's expert-based ranking of the most important environmental problems in terms of their human health and ecological risks is presented in Table 1.2.

With so many different kinds of environmental problems, we need to have some way to sort them into categories. This sorting, if done in meaningful ways, can help us understand the character of the problems. Sometimes it is useful to look at environmental problems in terms of their causes. At other times it is useful to consider whether the problems are based on the depletion of resources or pollution. It is also useful to consider the spatial scope of an environmental problem, which can range from the local to the global. Another concern centers on whether the consequences are mostly for humans or for nonhumans and the larger biosphere. We may also be concerned about the time scope of environmental problems, because some problems have immediate effects while others will not make themselves