

An Environmental Sociology for the Twenty-First Century

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Abstract

Environmental sociology has become a mature field within the discipline of sociology. We consider several of the key theories that define the core and boundaries of the field, calling attention to debates and unresolved questions. We contend that two of the defining features of this field are (*a*) attention to the inseparability of human and nonhuman natures and (*b*) attention to the role that power and social inequality play in shaping human/nonhuman interactions. These two characteristics of environmental sociology also reveal strong links between this field and the broader discipline, in light of recent reexaminations of classical sociological writings. We conclude with a consideration of new directions environmental sociologists might take toward building an even more robust, interdisciplinary, and critical area of study.

INTRODUCTION

Environmental sociology is now four decades old and has come a long way from a fledgling subfield to a growing, interdisciplinary area of study with a plethora of articles in leading social science journals, scores of books published with academic presses, several scholarly journals devoted to the field, and a respected section within the American Sociological Association. Environmental sociologists regularly appear in the national and international media, advise governmental bodies and policy makers around the world, and secure considerable research funding from public and private institutions. In this review, we consider the evolution of this field and explore several key areas of inquiry and debate within and outside of its expanding boundaries.

As when one reviews any sizable and expanding field, we chose to emphasize some topics and exclude others. For example, owing to space limitations, we do not examine the literatures on human ecology, postmaterialism, and environmental concern (for excellent reviews and analyses, see Borden 2008, Dunlap & York 2008, and McCright & Dunlap 2008). Furthermore, a substantial portion of the literature featured here comes from scholars outside of the discipline of sociology in order to highlight the interdisciplinary nature of environmental sociology's reach and sociological aspects of this interdisciplinary research. Finally, this review expands upon previous *Annual Review of Sociology* articles by revisiting and rethinking the origins of environmental sociology, its interdisciplinary influences and possibilities, the strong thread of political economy in the field, and the contributions to the study of risk and disasters (see Dunlap & Catton 1979, Goldman & Schurman 2000, Rudel et al. 2011, Tierney 2007). We also explore topical areas not considered in previous reviews, such as environmental criminology, radical social movements, the labor and the environment nexus, and Critical Animal Studies.

ORIGINS OF ENVIRONMENTAL SOCIOLOGY

Environmental sociology emerged alongside what scholars have termed the New Ecological Paradigm (NEP)—a perspective that became prevalent during the 1960s as a response to the loss of ecosystems and nonhuman species due to the growth of industrialization and urbanization in the United States and Europe. Drawing from the ideas of early preservationists and conservationists such as Aldo Leopold, John Muir, Gifford Pinchot, Robert Marshall, George Perkins Marsh, and later, Rachel Carson, the NEP calls for a healthy balance between human economic activities and the needs of ecosystems, arguing that human social systems must reduce their demands and impacts on nonhuman nature (Catton & Dunlap 1980, Dunlap & Catton 1979, Dunlap & Van Liere 1978). The NEP highlights the fragility of the biosphere and the extraordinary harm that human society has visited upon it through material extraction and industrial pollution, and it reflects the dominant perspective of mainstream environmental movements in the United States.

While environmental sociology emerged within this broad cultural and political context (Freudenburg 2009), it was also a response to the perceived human exemptionalism within the classical sociological tradition. That is, the scholarship of Karl Marx, Émile Durkheim, and Max Weber—and therefore much of the body of sociological ideas that followed—was viewed as mired in an anthropocentric epistemology that was stubbornly resistant to the possibility that nonhuman natures and ecosystems could shape human society and vice versa (Buttel 2002, Durkheim 1950). However, recent scholarship that reevaluates the work of early sociologists suggests that human exemptionalism may have actually been more characteristic of sociology that emerged after World War II, when an emphasis on technology and the human conquest of nonhuman natures reached new heights (Foster 1999), whereas foundational writings

by Durkheim, Marx, Weber, and others were, in fact, more interdisciplinary and attuned to human/nonhuman interactions than we had previously recognized (Rosa & Richter 2008).

Since its emergence, environmental sociology has matured as a body of scholarship that builds on earlier research that challenges constructed boundaries among human society, nonhuman natures, and the built environment (Canan 1996, Catton 1982, Freudenburg et al. 1995, Goldman & Schurman 2000, Tierney 1999). Scholars in this field routinely draw on classical sociological theory to demonstrate its relevance for analyses of environmental crises (Dunlap & Michelson 2002), and recent research has recuperated significant evidence of classical theory's ecological foundations, thus contributing to a more ecologically oriented sociological canon and strengthening the legitimacy of environmental sociology itself (Foster 1999, Foster & Holleman 2012, Merchant 2005).

Interestingly, the field's initial existence on the margins of sociology may have been an asset in that it encouraged environmental sociologists to extend their reach and intellectual breadth beyond the parameters of sociology (Dunlap & Catton 1979, p. 266; Dunlap & Michelson 2002; Laska 1993). Environmental sociologists frequently collaborate with climate scientists, geographers, limnologists, economists, political scientists, urban planners, historians, legal scholars, anthropologists, psychologists, and biologists, producing much more robust and defensible accounts of socioecological reality. Though interdisciplinarity is not unique to environmental sociology, it is something that the larger discipline of sociology would do well to embrace more enthusiastically.

Although interdisciplinarity has its benefits, sociology is unique in bringing the core concept of inequality to the forefront. Inequality (and the distribution, circulation, and use of power more broadly) has always been at the heart of the sociological enterprise, and environmental sociology offers a unique and powerful way

of theorizing and applying that concept. The problem of inequality is rightly a key focus for many sociologists. However, most sociologists think about, study, and teach the subject from within a particular—and therefore limited—framework. This might include economic, political, institutional, racial, gender, and national inequalities, all of which are important for understanding how social systems work for the benefit of some groups and to the disadvantage of others. But by focusing exclusively on human inequality, we miss how far and wide inequalities actually extend, what their impacts are, and how we might address them. Environmental sociology's promise is to expand our understanding of inequality by making sense of the often tense and violent relationships among humans, ecosystems, and nonhuman animal species. By doing so, we not only might achieve a better grasp of inequality's ramifications, but we also can deepen our understanding of the nature of inequality itself. For example, some research suggests that social inequality among humans actually reinforces or even causes environmentally harmful practices (Bookchin 2005, Boyce 2008, Gaard 2004).

A focus on inequality reaches to the core of sociology past and present, as it is clearly a key concern in the writings of Karl Marx and Max Weber. Indeed, recent reexaminations of the ecological foundations of Marx's and Weber's writings reveal strong support for an environmental sociology that focuses on the problems of inequality and power, primarily as embodied in capitalist economies and statecraft (Gibson 2009, Foster 1999, Foster & Holleman 2012). Marx and Weber were deeply concerned about the harmful effects of modernity and its capitalist cultures and institutions on marginalized populations (e.g., workers and Native Americans), ecosystems, and the future of democracies (Marx 1974, 1976; Weber 1930, 1977, 1988). Their writings underscore that the power of nation-states, corporations, and bureaucracies to exert influence by some humans over others is exceeded perhaps only by the power that humans enjoy

over the nonhuman world. Thus, we propose that environmental sociology's contribution to the broader field is the combination of a focus on the inseparability of human society from nonhuman natures and the centrality of inequality and power that shape both.

WHAT IS THE ENVIRONMENT? WHAT IS NATURE?

Many sociologists and other environmental studies scholars are highly skeptical of the use of the term "natural," as it suggests that social realities just happen and are fixed rather than socially constructed. Scholars inside and outside of sociology have argued that nature is a "terrain of power" (Moore et al. 2003, p. 1), an ideological battleground (Haraway 1991), and a construction that privileges elite classes, masculinism, heterosexism, white supremacy, and humanism (Gaard 2004). Furthermore, sociologists have been at the forefront of research on the ways that certain socially marginalized populations live in communities with disproportionate environmental risks, thus leading to a redefinition of the environment from a concept restricted to nonhuman natures to one that is inclusive of built and social environments (Bullard & Wright 2012). Thus, the environment and nature are concepts that reveal the presence of politics, power, and inequality. Environmental studies scholars have, in recent years, been explicit about expanding the definition of the environment beyond the traditional nineteenth and early twentieth century European/US images of nature, wilderness, nonhuman animals, oceans, forests, etc., to also include those places where humans live, work, learn, pray, and play (Adamson et al. 2002).

In the next several sections, we consider many of the leading paradigms and theoretical perspectives that have influenced and shaped environmental sociology over the decades, followed by emerging areas of study with clear relevance to the field. Each of these traditions is evolving, but they center on the themes of inequality, power, human/nonhuman interactions, and environmental degradation versus sustainability.

POLITICAL ECONOMY

Political economy perspectives within the field of environmental sociology focus on the effects of capitalism and modernity on socioecological well-being (Foster 1999, Gould et al. 2008, O'Connor 1988; for a more in-depth examination, see Rudel et al. 2011). Many of these studies reflect a Marxist viewpoint in that when struggles over the means of production tend to favor the capitalist classes, they also produce greater ecological damage and mass social suffering. Thus, this body of research is of great importance for linking inequality to ecological harm.

Two competing theoretical perspectives within this tradition are ecological modernization and the treadmill of production. Ecological modernization contends that, although processes of modernization and globalization often result in environmental degradation, they also can encourage policies and programs designed to improve environmental quality within state policy making and corporate practices (Mol 2003). Ecological modernization theorists argue that industrial society has entered a new period—that began in the 1980s—marked by new technologies, innovative entrepreneurs, and farsighted financiers bringing about a generation of industrial innovation that can secure ecologically sustainable futures (Sonnenfeld 2000). In fact, the argument suggests that continued modernization is actually necessary for societies to achieve ecological sustainability. However, this theory tends to overstate the degree to which institutions and societies have become ecologically sustainable.

The treadmill of production theory, on the other hand, contends that capitalist economies behave like a treadmill; as economic development intensifies, so does the degree of ecological degradation. Within this model, the capitalist state underwrites private accumulation while also addressing the social upheavals associated with that system (falling wages, rising inequalities, structural unemployment, and environmental harm). The logic of such a

system dictates that ever greater investments toward economic growth will usher in solutions to the socioecological crises the system caused in the first place. Accordingly, investors, the state, consumers, and working-class populations intensify their commitment to economic growth in order to generate goods for sale on the market, income for workers, and legitimacy for nation-states despite the inherent illogic of such an approach (Schnaiberg 1980). Not surprisingly, ecological modernization scholars contend that this theory overstates the degree to which market economies are ecologically harmful.

Hence, the debate between the treadmill of production and ecological modernization centers on the degree to which industrialized societies and modernization are supportive of ecological sustainability. Although much of the scholarship is generally divided between studies that find support for one or the other perspective (see, for example, Bonds & Downey 2012, Mol 2003), several studies find partial support for both, depending on the context (Jorgenson & Clark 2012, Mol & Sonnenfeld 2000). Clark & York (2005) argue that one of the major shortcomings of theories such as the treadmill of production and ecological modernization, as well as O'Connor's (1988) second contradiction of capitalism (i.e., the tendency for capital to exhaust the ecological basis of its production system), is that, by limiting their analysis to how much human activities disrupt ecosystems, they fail to take nonhuman natures more seriously. Rather, these theories should also examine ecological processes and cycles more closely. Moreover, as Hooks & Smith (2004) note, none of these theories accounts for the deep commitment to militarism and geopolitics on the part of dominant nation-states, a commitment that produces significant socioecological harm as well. We would add that these perspectives also fail to take seriously the relationship between market economies and gender, racial, and other inequalities, which are as important as class inequalities. Thus, these political economy perspectives narrowly define the role of capitalism by positing that the primary

tension is between economic and ecological goals.

In an exciting development that links environmental sociology to classical theory, the concept of metabolism has recently been recuperated by political economy-oriented scholars who borrowed it from Marx's body of work. Thus, unlike ecological modernization and the treadmill of production, the concept of metabolism directly connects contemporary environmental sociology with classical sociology. Metabolism refers to the general relationship of exchange between human societies and nonhuman natures. The metabolic or ecological rift indicates the disruptions of ecosystem processes and the environmental harm produced by humans in general and capitalism in particular (Foster et al. 2010). This has dire consequences for socioecological inequalities and for relations that characterize the domination over nonhuman nature and over human beings by elites. As Foster et al. (2010, p. 47) write:

This ecological rift is, at bottom, the product of a social rift: the domination of human being by human being. The driving force is a society based on class, inequality, and acquisition without end. . . . No solution to the world's ecological problem can be arrived at that does not take the surmounting of capitalism, as an imperialist world system, as its object.

The metabolic rift is a productive development in the field because it connects current research to classical theory and links sociology with an interdisciplinary array of scientific literatures focused on ecosystem dynamics.

WORLD SYSTEMS THEORY AND WORLD POLITY THEORY

Taking a more global approach, world systems theorists contend that the historical economic development of core (wealthier) nations occurred as a result of ecological degradation, social upheavals, and economic underdevelopment of nations within the global periphery

(Bunker & Ciccantell 2005). According to world systems scholars studying ecologically unequal exchange, this basic relationship continues in the contemporary era, as wealthy nations gain disproportionate access to capital and externalize the costs of capital accumulation onto nations in the Global South (Austin 2010). For example, not only are some core nations dumping toxic waste in and exporting the most hazardous production facilities to the periphery, they are also extracting energy and other forms of ecological wealth from the periphery and paying less than market value for it (Rice 2007). In the process, core nations may appear to be greening their industrial policies, whereas peripheral nations might seem to be less committed to ecological sustainability, but this relationship actually reveals continued global inequalities among nation-states and regions whereby the core has the power and capacity to outsource its most ecologically injurious practices abroad (Bonds & Downey 2012, McKinney 2012).

Research on ecological footprints, or “the amount of biologically productive space...to support the average individual in a given society” (York et al. 2003, p. 282), has made even further advances in measuring the degree to which unequal exchange affects nations and ecosystems in the world system. These inequalities among nations are not only rooted in vast differences in gross domestic product and the size of respective economies, but they are also made possible and reinforced by the uneven nature of military power (Jorgenson & Clark 2009). Specifically, those nations with greater military power are able to negotiate more favorable terms of trade, thus increasing their consumption and utilization of global ecological materials. This research is made possible by the import and use of ecological economics, thus revealing the interdisciplinary growth within environmental sociology. However, it is difficult to measure ecological effects that occur outside the boundaries of the nation-state, suggesting that some sort of post-state method and orientation could prove useful. Echoing Clark & York’s (2005) critique of various environ-

mental sociological theories that pay insufficient attention to nonhuman ecological processes, McKinney (2012) encourages scholars of world systems and unequal exchange to incorporate knowledge and ideas from the physical sciences in order to realize the promise of environmental sociology and of a more robust sociology more generally.

Overall, political economy perspectives within environmental sociology are critical to understanding the link between social inequality and ecological dynamics. Even so, these theories are fundamentally rooted in a Marxist orientation that does not pay sufficient attention to the dynamics of racism and patriarchy in the division of social and environmental benefits and costs.

Drawing upon a related theory of globalization, world polity scholars—also often called world society scholars—argue that transnational networks, international non-governmental organizations (NGOs), and epistemic communities transmit cultural models and ideas constructed in world society to nation-states and communities. These scholars explore the global influences on pro-environmental state policies and, more recently, global environmental organizations. Unlike many of the previous theories, world polity theory emphasizes culture rather than economy, politics, and power.

According to this perspective, the principle of environmental protection became institutionalized in world society through models that were constructed and propagated through global cultural processes (see, for example, Frank et al. 2000, Schofer & Hironaka 2005). This world environmental regime then diffuses these models to nations, as it encourages states to adopt new environmental laws and policies, and as states and NGOs work to change the views and behaviors of society, governments, and other actors. Clearly, not every country obeys the global norms, although over time norms are theorized to have a major effect on behavior.

Beyond a focus on policy making, the transnational structure of the world polity

may also influence domestic associations. For example, Longhofer & Schofer (2010) examined voluntary associations devoted to environmental protection around the globe and found that environmental destruction is not a significant predictor of the formation of these organizations. Rather, global forces, such as international NGOs, are powerful catalysts for launching environmental associations in the Global South. Furthermore, ties to global forces, such as through membership in international environmental NGOs, may also help mitigate environmental harms associated with global economic integration (Jorgenson et al. 2011).

There are several limitations to the world polity approach. First, although it emerged in part as a response to what scholars viewed as world systems theory's overly strong emphasis on political economic power, world polity's focus on cultural practices, such as the diffusion of environmental protection principles and norms, often neglects the role of power in those processes. Second, world polity scholars tend to skirt over the question of agency among nation-states as it concerns the adaptation and articulation of environmental protection principles. Finally, the level of analysis is primarily focused at the nation-state even though arguably most environmental harms are unequally distributed within countries.

ENVIRONMENTAL JUSTICE

The global environmental threats associated with the political economy and world polity have measurable effects on the everyday experiences of people around the world. Furthermore, the material impact of social inequality is reflected in the highly uneven distribution of environmental harm and privileges in societies around the globe, which is the primary concern of environmental justice (EJ) studies. EJ is, according to the field's founding scholar, the notion that all people and communities are entitled to equal protection under environmental health laws and regulations (Bullard 1996, p. 445). EJ studies emerged as a response to

the need to study the problems of environmental racism and inequality, and although there are numerous ways to define these concepts, sociologists and other EJ scholars stress that they are not fundamentally environmental issues. Rather, environmental inequality is first and foremost a social problem, driven and legitimated by social structures and discourses (Hurley 1995, Sze 2007).

EJ scholarship developed in the United States during the 1970s and 1980s as scholars realized that environmental hazards disproportionately affect poor communities, communities of color, and other marginalized populations.¹ In 1993, Stella Čapek introduced the EJ frame, which articulates the issue as going well beyond the problem of disproportionate hazards; it is about ordinary people demanding respect for their grassroots definition of the situation, while gaining access to democratic processes and power.

Nevertheless, most of the EJ studies literature has focused on documenting and explaining disproportionate hazards, such as landfills, mines, incinerators, and polluting factories. Hundreds of studies have documented that racial minorities, people of lower socioeconomic status, and other marginalized communities are disproportionately affected by toxic facilities, largely through their residence but also through the location of institutions, such as schools (see, for example, Crowder & Downey 2010). As a result of different methodological approaches, levels of analysis, sources of data, geographical locations, and types of hazards, scholars debate the relative degree to which environmental inequality exists in various communities. A plethora of studies of environmental inequality provide strong evidence of racial inequalities (Downey 2006, Mohai

¹ Although EJ studies is relatively new, environmental injustice is not. For example, at the core of colonialism were many environmental injustices, as people and land were exploited for the benefit of colonizers (Du Bois 1977 [1935]). However, the more recent intensification of global industrial and technological production has exacerbated the problems of environmental injustice.

& Bryant 1992), whereas other studies find evidence that other social categories, such as age, poverty, and class, matter as much or more than race, depending on the context (Mennis & Jordan 2005, Pastor et al. 2002), and yet others have found only nominal or no evidence of environmental inequality (Oakes et al. 1996).

Though EJ studies has traditionally focused on race (and, to a lesser extent, class), sociologists have been exploring other intersections of inequality and the environment in more recent years. For example, gender is a category that scholars are paying more attention to, as women are often physically and socially relegated to some of the most toxic residential and occupational spaces in communities and workplaces—an undertheorized example of environmental inequality (Pellow & Park 2002). Several recent studies document the ways that women experience and resist discriminatory environmental policies in workplaces, residential communities, and elsewhere (Buckingham & Kulcur 2010). Ironically, women activists in the EJ movement are less politically visible because they tend to work for smaller, community-based organizations that rarely make headlines and survive on volunteer labor and small grants, despite the fact that women form the overwhelming majority of the movement's leadership (Bell & Braun 2010, Brown & Ferguson 1995). Lastly, the very material landscapes being polluted and fought over in EJ struggles are deeply imbued with meanings that are gendered, sexualized, and expressed as such in local and global imaginaries, state policies, corporate practices, and activist resistance campaigns (Adamson et al. 2002).

Citizenship, immigration, indigeneity, and nation are also linked to environmental inequalities (Taylor 2009). Immigrants in the United States are more likely than non-immigrants to live in residential communities with high levels of pollution (Bullard et al. 2007, Hunter 2000, Mohai & Saha 2007). Ethnographic studies reveal similar dynamics and demonstrate how ideologies of exclusion and nativism support the production and maintenance of such an unequal socioecological terrain (Park & Pellow 2011,

Pellow & Park 2002). Furthermore, in countries throughout the globe, indigenous peoples are systematically excluded from participation in environmental decision making, evicted from their lands, disproportionately exposed to pollution, and restricted from using ecological materials within their territories (Agyeman et al. 2010, Smith 2005).

The international trade in hazardous wastes offers a prime example of global environmental inequality, and a growing body of research pays attention to the social, cultural, and economic driving forces behind the waste trade (Clapp 2001, Frey 1998). A cursory examination of the nations importing waste (legally or illegally) into their borders illustrates that they are generally states on the geopolitical and economic periphery, nations that have endured colonization and are often populated primarily by people of color; thus, the global waste trade is a form of transnational environmental inequality that illuminates stark Global North/South divisions (Pellow 2007).

Climate change also offers a powerful window into the problem of local and global environmental inequality and has thus been theorized through an EJ lens (Bullard & Wright 2012). For example, EU nations, the United States, Canada, Australia, and Russia are responsible for the vast majority of global carbon emissions, whereas sub-Saharan Africa is responsible for only 2% (Hoerner & Robinson 2008). Although they contribute far less to the causes of climate change, people of color, women, indigenous communities, and Global South nations often bear the brunt of climate disruption in terms of ecological, economic, and health burdens—giving rise to the concept of climate injustice (Roberts & Parks 2007). These communities are among the first to experience the effects of climate disruption, which can include natural disasters, rising levels of respiratory illness and infectious disease, heat-related morbidity and mortality, and large increases in energy costs. Similarly, in a study of the microclimate of Phoenix, Arizona, Harlan et al. (2006) find that neighborhoods with lower median incomes, lower educational

attainment, higher poverty rates, and larger populations of people of color were also the city's most intensely heat-stressed neighborhoods, with the fewest resources to cope with such environmental conditions. Those neighborhoods with higher educational attainment, higher incomes, and larger Anglo populations experienced less heat stress because they were more likely to have air-conditioned homes; to have roofing materials to reflect rather than absorb heat; and to have green space, parks, and vegetation that can provide cooling and heat-mitigation properties. Thus, addressing the causes of climate change requires a critical focus on inequality (Athanasios & Baer 2002, Roberts & Parks 2007).

EJ studies is becoming more interdisciplinary, witnessing an extension of research into areas of greater theoretical breadth, and expanding the social categories under consideration, particularly with stronger attention to gender, sexuality, and, increasingly, nonhuman natures. There is also a greater depth with which scholars are envisioning the question of justice as it relates to sustainability (Agyeman 2005, Harrison 2011, Schlosberg 2007). When the demand for EJ was first declared, much of the scholarship emphasized distributive justice. In other words, the focus was on issues of equity regarding the distribution of environmental injury. Recent scholarship has called for the literature to move beyond this distributive paradigm (Schlosberg 2007), and while we concur with the goal of expanding the field's orientation, this particular effort risks overlooking the fact that inequality is at the root of the problem and that this is inherently a distributional question. Earlier EJ scholars actually went to great pains to point out that they were not simply advocating a more even and democratic distribution of industrial pollution and other hazards—they wanted to see the entire system that produced these hazards transformed (Faber 1998, Hamilton 1993, Schnaiberg 1980, Taylor 1997). Moreover, we contend that the dynamic nature of distributional politics and impacts has yet to be fully explored. For example, environmental inequal-

ity has been defined almost entirely through the lens of environmental disadvantage, whereas environmental privilege goes largely unexamined (Norgaard 2011, Park & Pellow 2011, Taylor 2009). Environmental privilege allows access to coveted amenities, such as forests, parks, green space, healthy food, coastal properties, and elite neighborhoods. In our view, environmental privilege is the flip side and a source of environmental injustice/inequality. Thus, although many studies seek to document the distribution of environmental damage, the deeper distributional questions around where power resides and how privilege drives environmental injustice are only beginning to be explored.

RISKS, DISASTERS, AND HAZARDS

Sociological research on risk analysis, disasters, and hazards is extensive and has had broad impacts on scholarship inside and outside of the boundaries of sociology and the social sciences. Sociological research on risk can be divided into several subareas, including technological and natural disasters, among others (see Beamish 2002, Kroll-Smith & Couch 1990, Weber & Peek 2012). Prominent examples of technological risks include reactor meltdowns at nuclear facilities, toxic leaks and explosions at industrial chemical facilities, and oil spills. Natural disasters often include earthquakes, hurricanes, heat waves, floods, and landslides. We first consider technological risks.

Much of the research on technological risks underscores that, generally, some groups impose risks on others (e.g., the wealthy on the poor), revealing the importance of power and social inequality (Perrow 1984). Sociologists increasingly embrace the perspectives that risk is socially constructed and that power and political economic dynamics play key roles throughout any struggle over such risks (Freudenburg & Pastor 1992, Tierney 1999). Some of the most exciting research on technological risks and hazards focuses on grassroots responses to such threats by individuals, community

organizations, and social movements that challenge the state's and/or industry's definition of the risk situation and its implications (Brown 2007, Widener 2011). For example, in Brown's (2007) study of social responses to breast cancer, asthma, and Gulf War-related illness, he found that, across the United States, scientists and community activists are collaborating to challenge the dominant epidemiological paradigm, which emphasizes individual, behavioral, and genetic causes of illness to the neglect of other possible causes. Activists and scientists counter the dominant epidemiological paradigm by articulating an alternative public paradigm—a framework that emphasizes broader social structural, technological, and environmental factors in the production of illness and a claim that the public has a stake in the direction and outcome of scientific studies.

A well-known theoretical perspective in this literature is the “risk society” (Beck 1995). According to Beck and others, ecological risks are deeply embedded in modern society and are ubiquitous, extremely damaging, yet frequently difficult to measure (Beck 1995). Their existence and effects require expert knowledge, and even then, because the sources of these risks are so diffuse, it is difficult to assign blame or develop policies that would address the problem (Benton 2002). Beck (1995) argues that risks adhere to the pattern of class inequality, with the wealthy living in relatively safe environments, but contends that, in the long run, all people face the new hazards associated with modernity. Even so, many scholars find that the undemocratic power of private capital over the state, scientific research, and the public is at the root of the problem of risk (Gould 2012).

The approach that other leading scholars (Canan & Reichman 2002, Giddens 1990) bring to risk and modernity is quite different: They tend to place greater trust in scientific expertise, actors, and institutions in the effort to manage and reduce risks on a global scale. For example, the Montreal Protocol for the Elimination of Ozone Depleting Substances is perhaps the most successful example of international environmental decision making on record. Canan

& Reichman (2002) find that the protocol was the product of several factors, including persistent advocacy by leading scientists. This debate reveals two views of modernity: one that embraces the rise of technological and scientific prowess and another that sees it as imposing risks on populations and nonhuman natures without consent (Alario & Freudenburg 2003).² Both perspectives may tend to overstate their case, and there are abundant examples in which technological risks produce great benefits as well as in which ordinary people—not experts—manage and negotiate the risk society in ways that suggest that much more agency and power is being exercised from below.

The sociology of risk overlaps with and is closely related to the field of natural disasters and hazards research because these areas of study explore the origins and impacts of external events that disrupt everyday social behavior. Generally, sociological research on disasters asserts that these phenomena have root causes in societal actions. Much of the research has fallen under the hazards adjustment paradigm, which posits that people choose how to adjust to hazards and seek to reduce hazard-related losses. As Peek & Mileti (2002) note, this literature examines disasters from four angles: preparedness, response, recovery, and mitigation. Contrary to most of the recent sociological work on disasters, much of the policy-oriented research on this topic has taken an approach that treats disasters as originating in atmospheric processes. However, this literature has been criticized for artificially separating the natural and social aspects of disasters and for deemphasizing the view that disasters originate from social actions and conditions (Burby 2006). We concur, as the inseparability of human and nonhuman natures is at the foundation of environmental sociology.

With regard to defining disasters, realist and event-based perspectives in which disasters are seen as distinct events have largely

²In many ways, this debate mirrors the ecological modernization-versus-treadmill debate.

dominated hazards research. However, the field has increasingly included constructivist perspectives that claim that the notion of disaster is socially constructed through media, politically organized responses, policies, and other forces (Aronoff & Gunter 1992). For example, Dynes (2000) illustrates that interpretations of the 1755 Lisbon earthquake reflected ongoing strains and tensions over challenges to traditional ideas and institutions in Europe at that time. Furthermore, in his research on the 1995 Chicago heat wave, Klinenberg (2002) shows that extreme natural events can cause many deaths without being labeled disasters, which illustrates the importance that property damage holds in dominant definitions of disaster (Tierney 2007). Moreover, other scholars have begun to argue that rather than defining disasters as nonroutine events, they should be understood as normal, common occurrences that reflect societal characteristics (Pellig 2003). A drawback of such an approach, however, is that it can lead to the view that disasters should receive less attention than they merit or that they are unwieldy problems with few viable policy solutions.

Scholars have also analyzed the social dimensions of disasters, as they often reflect and reinforce inequalities and divisions within society. In one example of how gender influences risk perception, behavior, and the impact of disasters, Seager (2012) noted that during Hurricane Katrina, women were less likely to have a car or a driver's license, limiting their mobility (see also Ariyabandu 2006, Enarson & Morrow 1998). Klinenberg (2002) also illustrates that disasters magnify and reproduce inequalities, and comprehensive reviews of the literature have shown that poverty (Fothergill & Peek 2004) and ethnicity and race (Fothergill et al. 1999) reflect, produce, and influence inequalities across the social dimensions of disasters. However, as Tierney (2007) notes, the field was slow to recognize key sociological concepts pertaining to inequality. Furthermore, the field has largely been uncritical of government and other institutional responses to perceived disasters, perhaps due

to the institutions' cooperation in research, and has privileged the disaster narratives of official organizations rather than those of survivors and community-based groups. In recent years, the field has begun to respond to these critiques, though more work that takes seriously inequality and other narratives is needed.

BEYOND THE BOUNDARIES OF ENVIRONMENTAL SOCIOLOGY

In this section, we offer ideas for avenues of scholarship that, while not central to the field, have contributed and/or could contribute to important interventions and generative research possibilities. We cover research conducted by sociologists, though we also consciously build on Goldman & Schurman's (2000) *Annual Review of Sociology* article that moved well outside the boundaries of environmental sociology to explore and suggest productive routes for strengthening the field. Each of the following areas of scholarship is attentive to and raises key questions about the role of power and social inequality in the production of environmental outcomes as well as the inseparability of human and nonhuman natures.

Deep Ecology and Social Ecology

Several other environmental studies perspectives outside of sociology have influenced the field's core ideas and development. In the early 1970s, the Norwegian activist philosopher Arne Naess introduced the environmental philosophy known as deep ecology, which sees humans as merely a single species on a planet with millions of other species that have intrinsic value. Naess contrasted deep ecology with what he called shallow ecology, which seeks to protect and/or improve the health and affluence of humans in industrialized countries (Naess 1973). Deep ecology, by contrast, seeks a shift in Western values, pushing the Western concept of the self from anthropocentrism toward biocentrism—an approach that

decenters human beings entirely (see Devall & Sessions 1985).

Deep ecology focuses on targeting Western cultural values and on the need to reduce the size of the world's human population to achieve sustainability (Scarce 2006, pp. 337–38). That focus on population size ironically reveals a major Western cultural bias because the targets are generally non-Western societies, which are described as nations with high fertility rates and the primary sources of immigration to the West (Smith 2005). Moreover, this perspective does not place adequate emphasis on the extraordinary ecological impact of consumption and production by Western nation-states and corporations. It is also open to critique from feminist theorists and activists who point out (a) that an antipopulation growth perspective tends to view women of color and women from the Global South as primary drivers of ecological crises, and (b) that there is no critical gender analysis within deep ecology even though much of ecological injustice affects women and men in vastly different ways and, according to some scholars, a masculinist worldview is largely responsible for many of our environmental problems (see Scarce 2006, p. 39; Smith 2005).

Social ecology is another perspective that has strong affinities with environmental sociology. According to its founder, philosopher Murray Bookchin, hierarchy within human society predates and is at the root of the human domination and control of nature (Bookchin 2005). Thus, social ecology calls for the eradication of hierarchy in order to produce ecologically sustainable societies marked by egalitarianism and cooperative, communal organization (Bookchin 1996). In a keen sociological insight, Bookchin insisted that all environmental problems are social problems at root and therefore must be confronted collectively.

Sociologists have largely ignored Bookchin's work (White 2008). In a recent book, however, sociologist Bob Torres writes that Bookchin offers a powerful thesis because social "[e]cology poses questions that urge us to think not about piecemeal solutions, but about how we might restructure the *entirety*

of society along ecological lines," and that "[o]nly by reorganizing society along radically antihierarchical lines, might we live *in* nature rather than *above* nature" (Torres 2007, p. 81).

However, Bookchin's writings are, for some critics, problematic for their lack of a feminist analysis and for their overall masculinist orientation (Birkeland 1993). Specifically, ecofeminist scholars have challenged social ecology for being less attentive to gender, sexuality, race, and other forms of social difference that are frequently not respected in the kinds of small communal groups in which Bookchin invests so much hope (MacGregor 2006).

Ecological Feminism

Much like deep ecology, ecofeminism—which first emerged in the 1970s—proposes a theory and politics that recognize human interdependency with all other beings. However, some ecofeminists charge that deep ecology naively encourages a oneness or boundary-free relationship among living beings in a way that ignores actual social differences and histories of exploitation (Warren 1990). Ecofeminism is an umbrella term that encapsulates a range of perspectives whose "basic premise is that the ideology which authorizes oppressions such as those based on race, class, gender, sexuality, physical abilities, and species is the same ideology which sanctions the oppression of nature" (Gaard 1993, p. 1). What makes ecofeminism a distinct body of ideas is its position that nonhuman nature and dominionism (i.e., domination over nonhuman nature) are feminist concerns (Warren 1997b, p. 4). Most ecofeminist writings are outside the boundaries of sociology, although they have increasingly been influential in the work of social scientists. For example, in interviews with environmentalists in British Columbia, Stoddart & Tindall (2011) explore the empirical evidence for ecofeminist politics. Indeed, they find evidence that environmentalists are increasingly focused on the problem of hegemonic masculinity—those ideologies and practices associated with dominant constructions of masculinity.

Some scholars view ecofeminism as the leading edge of the third wave of feminist theory and politics because it questions the logic of domination that its proponents believe undergirds all forms of oppression rooted in dualistic thought, thus offering a framework that might conceivably unite people across numerous social and cultural divides (Smith 2005, Warren 1990). Although dominated by white female scholars, ecofeminism has strongly embraced an antiracist politics (Mies & Bennholdt-Thomsen 1999) and solidarity with indigenous peoples (Gaard 2001), albeit often through problematic approaches that sometimes impose ecofeminism on women-of-color environmental activists and romanticize indigenous women's lives (Sturgeon 1997, Taylor 1997). Furthermore, though ecofeminists have not consistently incorporated nonhuman animals in their analyses (see Gaard 1993, p. 6), many others have done so and have inspired scholars and activists to expand the scope of the logic of domination across species (Plumwood 2000). Recent writings by ecological feminists have linked this body of work more substantially to postmodern and post-structuralist theory (Alaimo 2000, Armbruster 2000) and queer theory (Gaard 2004).

Although ecofeminism has evolved over the years into a mature scholarly literature, it runs the risk of being overly ambitious and unwieldy. As leading ecofeminist scholar Val Plumwood puts it, "opposing all forms of oppression is a tall order, much more easily proclaimed than achieved" (Plumwood 2000, p. 287). Even so, no other area of scholarship has attempted to explicitly address as many forms of social difference and inequality into one intellectual and political project as has ecofeminism.

Environmental Criminology

In a long line of the criminalization of social behaviors, ecological violence has recently become thought of and theorized as a crime (see, for example, Lynch & Stretesky 2003, South 1998, White 2003, Williams 2009 [1996]). Environmental criminology—also called green

criminology³—explicitly explores the act of ecological violence as criminal and, more recently, examines the influence of ecological violence on crime. As an emergent area of scholarship, it also pushes the boundaries of criminology to consider global issues. Recent scholarship demonstrates that environmental crime can take many forms, such as the practice of bio-piracy, the illegal disposal of radioactive waste, or noncompliance with regulations governing fisheries (White 2009).

For some scholars, environmental crimes are violations of laws regarding air pollution, deforestation, water pollution, species decline, or other areas subject to criminal prosecution and sanctions (Situ & Emmons 2000). However, we also recognize that, as with other forms of crime, environmental crimes are social constructions that invoke different meanings across populations. For example, numerous issues reviewed in the earlier discussion on EJ have been conceptualized as criminal by criminologists, many of whom embrace the EJ framework (Lynch & Stretesky 2003, South 1998). Drawing upon an EJ perspective, Lynch & Stretesky (2003) argue that environmental crime may or may not violate existing laws. Rather than focusing solely on violations of regulations and laws, they maintain that criminologists should explore how overlapping forms of race, class, gender, and power inequities influence the social construction of environmental laws in the first place. We concur with Lynch & Stretesky because, increasingly, environmental crimes may best be understood in terms of justice, rooted in notions of human, nonhuman animal, and ecological rights that exist far beyond the boundaries of the state.

Different philosophies concerning human/nonhuman nature interactions have influenced the various frameworks that criminologists

³Although environmental criminology is used interchangeably with green criminology, we prefer the former term. Note also that these crimes are different from crimes associated with insurgent grassroots environmental movements, such as ecological sabotage, which is intended to protect the environment.

draw upon and, in turn, their conceptions of victims and perpetrators (Halsey & White 2009 [1998]). Within these frameworks, humans, nonhuman animals, and ecosystems could be conceptualized as victims of environmental crimes (for an in-depth essay on environmental victimology, see Williams 2009 [1996]). Indeed, environmental damage also often involves the exploitation of people (Friedrichs & Friedrichs 2009 [2002]). In the literature, those actors considered perpetrators of environmental crimes also vary, though most research has focused on corporations (Simon 2009 [2000], Szasz 1986). This corporate-centered focus is important but limited because governments routinely perpetrate acts that are injurious to ecosystems and their inhabitants. The need for greater attention to government-initiated environmental crime is underscored by the fact that the legal system is part of the state apparatus and may be, at times, constructed to obscure and protect such activity.

Beyond the criminalization of ecological violence, other areas of environmental criminology explore how ecological violence influences behavior deemed criminal (Wachholz 2007, White 2009). For example, Agnew (2012) proposes that climate change may influence crimes at the individual, corporate, and state levels. Drawing upon strain theory, he argues that climate change may influence the strain that individuals feel through exposure to various frustrations and stressors, such as an uncomfortable rise in temperatures, an increased frequency and intensity of extreme weather events, or food and water shortages. Agnew and others, including sociologists who do not consider themselves criminologists (such as political sociologists), also link climate change to increased social conflict, including conflict within states and interstate conflict (Rubin 2010). Such conflict could result from competition over scarce resources (e.g., food, water, arable land), forced migration, or myriad other mechanisms, and the conflict itself could take the form of small intrastate skirmishes, civil war, or perhaps even genocide. However, Agnew (2012) notes that the effects of climate change

are more likely to lead to localized conflicts rather than to civil wars and interstate clashes.

Importantly, there is a lack of peer-reviewed research on violent conflict and environmental crime because most research is taking place within think tanks, government centers, and other organizations that have explored it through the lens of security. Furthermore, even within sociology, there is a dearth of research concerning the environmental factors associated with armed conflict, something we propose will become increasingly important for future sociologists to undertake, particularly as the effects of climate change intensify. Finally, we suggest that environmental criminology might make serious theoretical and methodological efforts to articulate crime outside the restrictive boundaries of state-based legal discourses.

Social Movements

The study of social movements is hardly new, and many environmental sociologists regularly engage this topic. Here we focus on an emerging and promising area of study on social movements on the radical edge of ecological politics. Many waves of social movements have arisen to address socioenvironmental crises (Brulle 2000), several of which draw upon the paradigms we have reviewed in this article. Although much has been written about the more mainstream social movements and organizations (such as Greenpeace and the Sierra Club) that seek to reform social systems that contribute to environmental crises, comparatively less has been written about radical ecological movements. These movements target what they view as the root cause of socioenvironmental degradation—ideologies that naturalize domination, such as speciesism and dominationism, and authoritarian institutions that support those ideologies, such as the state and capitalism (Best & Nocella 2006, Scarce 2006). This lack of attention to these social forces may be due, in part, to the comparatively small size and reduced public visibility of these movements. However, the emergence of Earth First and the Earth and Animal Liberation

Fronts in the 1980s and 1990s marked a new stage in the development of ecological politics in the United States that involved forms of radical analysis and action that had rarely been seen in environmental or animal rights movements until that point. By the late 1990s, segments of these movements were converging around new ideas and tactics in the United States and abroad, resulting in a broader discourse that linked ecology, social justice, and animal rights—an intersection of interests that we propose merits greater attention in future research. These movements' adherents believe that the exploitation of ecosystems and nonhuman species calls for immediate, direct action. They reject structured, bureaucratic approaches and instead target what they see as the roots of the problem. Through direct actions and the discourse that supports them, activists question what they view as the violence of human inequality, capitalism, state power, and speciesism. Even so, although these movements purportedly reject all forms of hierarchy, they also frequently reinforce human dominance, whiteness, and middle-class urban approaches to politics because their leadership and constituents come from those populations. Overall, sociologists have demonstrated some interest in these movements, but not nearly the depth of consideration that is warranted (Ingalsbee 1996).

Labor and the Environment

If many environmental sociologists are concerned with the production of ecological risk, then a core site of such activity is the workplace. Accordingly, one direction that some environmental sociologists have considered is to integrate the insights of this field with labor studies and the sociology of work and occupations (Abbott 1993). As an area of scholarship that has redefined the environment as those spaces where we live, work, and play, EJ studies affords us the opportunity to theoretically bridge what urban planner Robert Gottlieb (2001, p. 281) terms the “work/environment divide”—that gap in our cultural lexicon that produces

a disconnect between spaces and discourses of work and ecology. How might reframing the workplace as a site of environmental concern and struggle shape the future of the field? Environmental sociologists might consider making deeper links to labor and the workplace for several reasons. First, numerous studies conclude that workplaces—like residential areas—are places where people of color and low-income persons frequently face a disproportionately high burden of toxics (Bullard & Wright 1993). Perhaps this is not surprising, as these populations have historically occupied the lowest status, highest risk, and lowest paying jobs in the United States. We also know that, from historical research and public health studies, the workplace is a site where many people are first exposed to toxics and other pollutants (Hurley 1995). Furthermore, the level and intensity of exposure to toxics at work is often much greater than that experienced by persons living in homes nearby (and of course, in many cases the home is the workplace).

Moreover, students of environmental sociology and social movements might have a particularly pronounced interest in this topic for two reasons. First, cross-movement coalitions between labor and environmental movements are undertheorized and largely ignored in the academic literature, though they are of inherent importance to developing a deeper understanding of the politics and possibilities of intermovement collaborations (see Obach 2004). Second, research on labor-environment coalitions finds that they succeed when they frame their concerns around broad notions of health (Mayer 2008). There is a budding area of scholarship at the intersection of environmental sociology, labor, medical sociology, and social movements (Brown 2007), and we suggest that this is an exciting nexus of ideas, methods, and theoretical work.

Critical Animal Studies

Lastly, if environmental sociologists are concerned with the implications of the inseparable relationship between human and nonhuman

natures, then a fruitful area of study is research on animal-human relations. An emerging field that environmental sociology is already crossing paths with is Critical Animal Studies (CAS). CAS is a field that differs significantly from traditional Animal Studies—the area of scholarship associated with agriculture and experimental research on nonhuman animals (Best et al. 2007). CAS is something entirely different in that it is dedicated to the abolition of animal and ecological exploitation and advances the claim that there is a commonality of oppressions, such that speciesism, sexism, racism, ableism, statism, classism, militarism, and other hierarchical ideologies and institutions are linked (Torres 2007, Twine 2012). CAS is interdisciplinary, antihierarchical, and anarchist in that it rejects reformist, single-issue, nation-based, legislative perspectives on social change. It explores how multiple forms of inequality and oppression work together to produce the present social terrain in which humans and nonhumans coexist and asks what can be done to challenge such arrangements (Best 2009).

CAS is a close relative of ecofeminism and owes some intellectual debt to the deep ecology and social ecology traditions (Bookchin 2005, Devall & Sessions 1985). It is also part of the growing scholarly and political movement to articulate a posthumanist critique of the academy and society (Cushing 2003). These scholars reject a humanism rooted in speciesism (i.e., human dominance over other species) and dominionism (human dominance over nonhuman natures) that reflect, for most of us, the unexamined and unearned privileges of membership in the human species. In their view, the future well-being of humanity is necessarily bound up with the future well-being of other species and ecosystems. That observation is one of the fundamental lessons that Karl Marx's analysis of the metabolic rift presents us as well (Marx 1974, 1976, 1981). Finally, CAS has strong affinities with the recent growth and resurgence of interest in anarchist or autonomist theory (see Smith 2011). Both environmental sociology and social movement theory (and for that matter,

sociology generally) are deeply state-centric in their orientation toward theorizing and imagining social change. And although the state has clearly been a critical element in the way social change unfolds throughout modern history, anarchist and autonomist theories remind us that there are antiauthoritarian and antihierarchical ways of governing and making decisions that have worked well at various scales for many groups across numerous societies (Scott 2009). These scholars challenge conventional forms of governance via states out of a concern that such forms of power are often authoritarian and predisposed to exercising what Max Weber called a monopoly on violence (Weber 2004). Of course, there are numerous theoretical and methodological challenges and weaknesses to such approaches, and their promise can only be realized after years of careful and rigorous analysis and debate.

CONCLUSION

Environmental sociology has entered the twenty-first century as one of the most promising fields of inquiry within the discipline. Four decades since its founding, scholars in this field are steadily moving sociology forward in theoretically and methodologically exciting directions. Furthermore, classical theorists such as Max Weber, Émile Durkheim, and Karl Marx are now recognized as early environmental sociologists, thus lending greater visibility and status to the field as a central sociological enterprise. Both Weber and Marx articulated much of the core environmental sociological project by emphasizing the perils associated with the power of states and capital in the production of social inequality and differential life chances across human and nonhuman populations, and together with Durkheim, they acknowledged the inseparability of human and nonhuman natures. Environmental sociology's future is inextricably tied to the future of the discipline of sociology, and both will gain greater presence in the academy as they more deeply embrace interdisciplinarity and critical challenges that other fields have yet to resolve.

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