

# **Environment and Society**

7b

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## *Environmental Risks and Environmental Justice, Or How Titanic Risks Are Not So Titanic After All\**

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Some of the best-known social scientific theories of risks are those that have been elaborated by Anthony Giddens and Ulrich Beck. Although their arguments differ greatly, they agree in seeing the technologically induced risks of today's "Risk Society" as global—so pervasive that they transcend all socioeconomic as well as geopolitical and national boundaries. Most empirical work, however, provides greater support for a theoretical tradition exemplified by Short and Erikson. In this paper, we argue that many of the technological mega-risks described by Giddens and Beck as "transcending" social boundaries are better described as "Titanic risks," referring not so much to their colossal impact as to the fact that—as was the case for the majority of the victims on the *Titanic*—actual risks are related to victims' socioeconomic as well as sociogeographic locations. Previous research has shown this to be the case with high-risk technologies, such as nuclear energy and weaponry, and also with localized ones, such as toxic waste disposal. This article illustrates that the same is true even for the most genuinely "global" risks of all, namely those associated with global climate disruption.

### Introduction

The revolutionary idea that defines the boundary between modern times and the past is the mastery of risk: the notion that the future is more than a whim of gods and that men and women are not passive before nature. (Bernstein 1996:1)

Social theoretical approaches to technological risk and society relation have grown since the 1980s, as an increasing number of social scientists began to participate in discussions that were previously monopolized by engineering and other similar technical fields. Sociologists have offered multiple dissenting views on the issues of risk, but as Alario and Freudenburg (2003) suggest, it is possible to discern two main patterns in the accumulated macrosociological work regarding this issue. In the present paper, we focus on one of the main axes of social theoretical division previously identified: The degree to which present-day risks should be seen as "transcending" versus exacerbating socioeconomic and sociogeographic divisions.

The “transcendence” perspective is perhaps best exemplified by the work of Giddens and Beck. Despite their differences, both conclude that the risks of today’s global risk society have become so major and pervasive that, to use Giddens’s words, they can be expected to “transcend all values and all exclusionary divisions of power” (Giddens 1990:154). The competing perspective, associated with Short, Erikson, Clarke, Freudenburg, Perrow, and others, is nearly the opposite—and is arguably superior in terms of theoretical usefulness (see e.g., Alario and Freudenburg 2003, 2007; see also Freudenburg and Alario 2007). Drawing from empirical as well as theoretical work, we propose that the “high-consequence risks” stressed by Giddens and Beck may better be understood as “*Titanic* risks.”

As is well known, at least among those who are familiar with what happened when that ill-fated ship struck an iceberg at high speed, the entire ship did indeed sink, but the death rate was far higher for those who could not afford first-class tickets. The implications of this lesson appear to have been less widely recognized, at least to date.

The *Titanic* was a British Olympic-class ocean liner that sunk on her maiden voyage, on April 15, 1912. The tragedy of the *Titanic* remains one of the worst marine disasters ever, particularly during times of peace, and it was certainly the worst to involve supposedly superior or “unsinkable” technology. Subsequent U.S. investigations estimated the death toll at 1517, while the British estimate of the death toll is 1490. Of more than 2200 passengers on board, 712 were saved, but only about 50 of them were traveling in third-class sections of the ship. Survivors also included 70 in second-class compartments, most of whom were children, per the principle of “women and children first.” By contrast, even though the ship carried fewer first-class passengers, nearly 600 of them were rescued. The first-class passengers, who included some of the richest and most prominent people in the world, were notified of the accident within the hour, and they began to be evacuated soon after. Those in first class who did not survive were largely those who decided to stay, in many cases because the *Titanic* was thought to be unsinkable (see <http://www.encyclopedia-titanica.org>).

Technological risks—whether those involving toxic wastes, nuclear and other high-risk technologies, the effects of global climate change, or others—reveal a striking resemblance to the patterns established on the *Titanic*. First, most such technologies have been described at one time or another as representing the “successful” management of risks—the rough equivalent of being depicted as “unsinkable.” Second, they have been revealed in practice to be significantly short of infallibility. Third, when they have failed, many commentators—not limited just to well-known sociological theorists, but others, as well—have seen the entire ship, proverbially speaking, as sinking, with

the resultant risks being interpreted as “transcending” social divisions. Fourth and finally, the reality has been that the risks have been socially structured, falling predominantly on those without the power or wealth to travel in the first-class sections of society.

These points can be illustrated by the risks associated with climate change, which has been identified by both sociological and non-sociological members of the scientific community as one of the twenty-first century’s most ominous global challenges (see the Intergovernmental Panel on Climate Change 2007). We will do so in three main sections. In the first section, we review the existing social scientific theories of risk, contrasting Giddens and Beck’s theories (which describe present-day risks as transcending all boundaries) against other sociological assessments, which instead see present-day risks as exacerbating socially structured and sociogeographic divisions. In the second section, we turn to the issue of climate change, more specifically, noting that while the issue may indeed be global, its effects are anything but evenly distributed. In the third and concluding section, we note that our research raises challenges to well-known social theoretical works on risks, while supporting and suggesting the need for further attention to works that, even today, remain less well known.

### **“Transcendent” Risks Meet *Titanic* Risks**

While the vital and still-growing body of sociological theory and scholarship on technological risks is both extensive and diverse, we have previously argued (see especially Alario and Freudenburg 2003, 2007) for the usefulness of noting the differences between works that see the sociologically significant risks as either transcending or exacerbating socioeconomic and political divisions (including geographic location and rural–urban status, as well as class, race, and gender). The former position is perhaps best exemplified by the social theories of Giddens and Beck, while the latter involves the work of sociologists who share Short’s emphasis on “risk to the social fabric” (1984).

The risks associated with global climate change or high-risk technologies, such as nuclear weapons, are good examples of what Giddens and Beck have in mind when they speak of risks that “transcend all values and all exclusionary divisions of power” (Giddens 1990:124–25), as well as those risks that involve the kind of uncontrollable consequences that cannot be limited in time or space. Giddens’s *Consequences of Modernity* (1990) and Beck’s *Risk Society* [1986] 1992 and *World Risk Society* (1999) share this perspective. For both, the background is not modernity, as once understood, but rather globalization trends that extend beyond the scope of nation-states. Still, although both theorists focus on large-scale risks, they do so with important differences, particularly with respect to the capacity of expert systems for

reflexivity and awareness about the magnitude of risks to society—and the ability of the same systems to correct themselves when unforeseen problems are encountered.

The important collaborative work, *Reflexive Modernization* (Beck, Giddens, and Lash 1994) captures the ongoing debate on this issue. For Giddens, unlike Beck, the accumulation of areas of expertise and the development of expert systems can permit the kind of reflexivity that may act as correcting mechanism for the unintended consequences of a global risk society—leading to Giddens’s trust in the capabilities, and the possibilities for reflexivity and critical self-appraisal, associated with science and technology. Beck’s view differs sharply from this perspective. Rather than agreeing with Giddens’s mostly unproblematic take on science and technology, Beck’s position is characterized by distrust and even skepticism. In fact, Beck argues that scientific and technological systems have a demonstrable record of destruction, as well as a demonstrated inability to control the kinds of risks that such systems have manufactured. For Giddens, in a nutshell, expert systems facilitate reflexivity, while for Beck, they embody a system of “organized irresponsibility” (Alario 2000; Beck 1988, 2000; Picou and Gill 2000).

The differences that exist between the two well-known authors’ views on the issue of risk transcendence are less distinct. At least in Giddens’s early work on structuration theory (Giddens; 1984:2), he appears to have recognized the kinds of “risk to the social fabric” that are noted in the more theoretically useful work of Short and others. In his subsequent writings on risk, however, Giddens expresses views on the issue of risk transcendence that are closely comparable to those of Beck, while being starkly different from theorists such as Short (1984), Perrow (1984), Freudenburg (1988, 2005), Erikson (1994), or Clarke (1999). By contrast, Beck’s later work on *Cosmopolitan Vision* (2006), taking on cosmopolitanism, international law, and human rights, advances the same basic views of globalization already initiated in his work on risk, although Martell notes, in his analysis of Beck’s vision of human rights and global inequality, “one of the characteristics of Beck’s theory is that he often outlines such abstract frameworks without much concrete reference” (Martell 2009:263).

Still, despite these differences, Giddens and Beck generally express comparable views on the issue of risk transcendence. The implications of Beck’s *Risk Society* and Giddens’s *Consequences of Modernity*, for example, are both clear and consistent on this point. Both theorists see technological advances as having created the kinds of ecological risks that are global and shared—not having the potential to be “exported” or sent to other places, in the ways in which, for instance, rich nations can ship their toxic wastes to poorer countries. Even if poverty afflicts a significant fraction of the population in a socially

structured society, and even if it characterizes the majority of the world's population, both Giddens and Beck see a truly global risk society, characterized by mega-threats that are boundless, not being constrained by "conventional" socio-economic, political, or sociogeographic boundaries.

A starkly different set of predictions emerges from the second body of sociological risk scholarship, involving the works of those who have continued to test and expand on the perspective first expounded by Short (1984). This second body of work focuses not just on technological risks, as traditionally understood by engineers, but also on what Short first called "risk to the social fabric." Unlike the work by Giddens and Beck, the theorizing work in this second tradition calls attention to the importance of "precisely those risks that do *not* transcend all values and all exclusionary divisions of power" (Freudenburg 2000:112, emphasis in original).

The "risk to the social fabric" approach is often seen as having focused on the kinds of risks affecting citizens in their everyday lives, including air and water pollution, hazardous wastes, and local toxic contamination incidents, such as that at Love Canal, near Niagara Falls (see especially Levine 1982; Kroll-Smith and Couch 1990; Gibbs 2002; Brown 2007). It is also seen as reflecting the ascendant influences of "business-friendly" policies and the emphasis on environmental deregulation that accompanied the administration that Ronald Reagan brought into the White House starting in January 1981 (see e.g., Clarke 1999). In earlier analyses of nuclear technologies and toxic waste contamination, Alario and Freudenburg (2003, 2007) have concluded that the "risk to the social fabric" perspective of Short and others provides a much better "fit," both theoretically and empirically, than the "transcendent" perspectives of Giddens and Beck. What remains to be seen, however, is whether the same conclusion would be warranted with respect to what has emerged as the defining issue of global risks for the early years of the twenty-first century—the phenomenon that even includes the word "global" as part of its common designation, namely global warming or global climate disruption.

### **Global Climate Disruption and Other Titanic Risks**

Despite organized and persistent attacks from ideological and/or industry-sponsored "think tanks" (see Freudenburg, Gramling, and Davidson 2008; Jaques, Dunlap, and Freeman 2008; McCright and Dunlap 2000, 2003), the best known and best respected of the available assessments of the effects of global climate change are those prepared by the Intergovernmental Panel on Climate Change or IPCC (see e.g., IPCC 2007). The IPCC was first established by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) in 1988. From its inception, the

objective of the IPCC was to assess and to evaluate the scientific, technical, and socioeconomic information relevant to understanding the risks of human-induced climate change, its potential impacts, and options for adaptation and mitigation. The IPCC performs its tasks largely through assessments of the state of knowledge on climate change, prepared at regular intervals, although the IPCC also prepares Special Reports and Technical Papers on topics where independent scientific information and advice is deemed necessary. The IPCC is also responsible for lending support to the UN Framework Convention on Climate Change through its work on methodologies for National Greenhouse Gas Inventories.

In a series of reports that have been worked out over a period of roughly two decades, the scientists of the IPCC have expressed growing levels of confidence in the evidence indicating that climate disruption is a serious problem and that it is to a large degree human induced or anthropogenic. The climate disruptions have also been associated with the increasingly serious global ecological and economic consequences. The First IPCC Assessment Report, completed in 1990, laid the groundwork for the establishment of the Intergovernmental Negotiating Committee for a UN Framework Convention on Climate Change (UNFCCC) by the UN General Assembly—a step that provided the overall policy framework for addressing the climate change issue. A Second Assessment Report, *Climate Change 1995*, provided key input to the negotiations, which led to the adoption of the Kyoto Protocol to the UNFCCC in 1997. The Third Assessment Report was completed in 2001.

Scientifically speaking, however, the clearest statements to date are contained in the Intergovernmental Panel on Climate Change 2007 assessment—technically known as the Fourth Assessment Report, or “AR4.” In the concise and unqualified words of that report, “Warming of the climate systems is unequivocal” (for the full report, go to <http://www.ipcc.ch/2pm040507.pdf>). Despite years of efforts by conservative “think tanks” and fossil fuel interests to undermine and challenge such conclusions (see especially Fisher 2004, 2006; Freudenburg, Gramling, and Davidson 2008; Jaques, Dunlap, and Freeman 2008; McCright and Dunlap 2000, 2003), the 600 scientists who participated in the study ultimately proclaimed key conclusions with what they calculated to be a 90 percent level of certainty. Along with former U.S. Vice President Al Gore, the scientists working on the IPCC also earned the 2007 Nobel Peace Prize for their efforts. Since then, the evidence has become even stronger (United Nations Environment 2009).

Although the details can get quite complex, the basic findings from the scientific work can be summarized concisely: the burning of vast quantities of fossil fuels has resulted in the release of comparably vast quantities of “greenhouse” gases—carbon dioxide and other substances that have been given that

name because they let in the sun's warmth while keeping much of it from escaping again, like the glass on a greenhouse—raising the temperature of the entire earth by a few degrees. The Swedish chemist and 1903 Nobel Prize winner in chemistry, Svante Arrhenius, was the first to quantify global warming due to carbon dioxide emissions, doing so more than a century ago (see <http://www.nobelprize.org>). With ever-increasing levels of confidence, the IPCC assessments have also reported that what may initially seem to be small increases in temperatures can actually lead to major and potentially irreversible changes in global climate systems. Among other effects, the changes are responsible for raising sea levels around the globe, as well as causing longer droughts, flood-causing downpours, more extreme heat waves, and more extreme weather patterns in general. Although the scientists have repeatedly taken pains to note that the overall patterns cannot be said to have “caused” individual storms, such as Hurricane Katrina in 2005, the patterns *can* be said to be likely to lead to a higher probability of Katrina-type storms.

The example of Katrina brings us back to the issue of transcendence. As much as any event in nature, a hurricane can be understood as affecting everyone who has the misfortune to be in the way of the storm's fury, but as became evident to millions of Americans who watched the unfolding damage from Katrina, the negative effects were far from being evenly distributed. Katrina destroyed property and life, for rich as well as poor residents of New Orleans and the Mississippi Gulf Coast. Particularly in New Orleans, however, the suffering was concentrated predominantly among those who were old and poor, and the diaspora was far more pronounced for those who were black rather than white (see Barnshaw and Trainor 2007; Baxter, Jenkins, and Kroll-Smith 2008; Freudenburg et al. 2009).

As the IPCC reports make clear, moreover, the non-shared nature of the risk burden from global warming becomes even more starkly evident when the world-wide pattern of emerging changes is taken into account. In the words of the chairperson of the most recent IPCC report, Rajendra Pachauri, “it is the poorest of the poor in the world, and this includes poor people even in prosperous societies, who are going to be the worst hit.” More broadly, the work of the IPCC and of other researchers (see e.g., the assessment of heat impacts in Phoenix by Harlan et al. 2008), suggests that, even with the literally global risks of “global” warming, just as in the case of the more apparently localized risks associated with high-risk technologies or other environmental harms, the expectation for risks to “transcend all values and all exclusionary divisions of power” (Giddens 1990:154) simply fails to reflect reality (see also Molotch 1970; Crenson 1971; Wynne 1992; Freudenburg and Alario 2007).

Indeed, while humans' technological “accomplishments” may now well include the development of the potential capacity to destroy all life on



earth—or to paraphrase E. O. Wilson, while growing technological prowess may have made the “birth of death” a reality—the expectations by Giddens and Beck for the risks and suffering to be distributed in ways that “transcend” social divisions simply are not borne out by the available evidence. Instead, just as in the case of the sinking of the ship *Titanic*, the people of the global south (and the poorer people of the richer nations of the global north) are the ones who are most likely to be afflicted by patterns of climate change—and most likely to lack the economic and technological capital to “adjust” to climate changes in less painful ways. **Although the IPCC calculations indicate that already-prosperous or industrialized nations are responsible for about 60 percent of the greenhouse gas emissions—many of which will stay in the atmosphere for decades—and although the industrialized world will almost certainly not be spared entirely (see the Stern review of 2007), the IPCC assessments make it clear that the worst effects are likely to be felt in the developing and small island nations that have played an extremely little role in creating the problem.**

The multidisciplinary yet predominantly natural-scientific approaches of the IPCC are instructive, but it is from sociopolitical and historically informed research that deeper and more discerning insights can be gained on the human costs that are likely to emerge. The need, however, is to focus on—rather than to dismiss as theoretically inconsequential—the global political and economic structures that render many humans more vulnerable than others. The recent work by Roberts and Parks (2007), *A Climate of Injustice*, offers a good case in point. As they note, climate impacts are being created, and experienced, within a global structure of inequalities among nations and peoples. Far from having been “transcended,” even by this most global of risks, that global structure of inequalities has remained largely intact. **Instead, as noted by Kirk Smith, anthropogenic climate disruption is effectively the “world’s biggest regressive tax: the poorest pay for the behavior of the rich”** (see *The Economist* 2008:67). Insisting on seeing climate disruption as being strictly global would be to obscure the ways in which the impact is socially and unevenly distributed, both across nations and within them.

### **Sociostructural Analysis and the IPCC Research**

Since the time when the first draft of this paper was prepared, natural scientists have reached an even clearer consensus about the “manmade” causes of global warming—and for once, the sexist terminology may indeed be appropriate. Now is the time for social scientists to be more discerning about the social dimension of the problem—and it is increasingly clear that, both in terms of which social groups have enjoyed most of the benefits, and which appear likely to bear most of the costs, anthropogenic climate disruptions are anything but “transcendent.” As in the case of the *Titanic*, although the

entire ship may have been lost, the consequences of that loss did not fall evenly on the rich and the poor.

In the case of global climate disruption, as in the case of many other environmental threats, the emerging scientific findings illustrate at least three of the forms of environmental inequality identified by Wilkinson and Freudenburg (2008): *environmental justice* (equity and inequality in the impacts being experienced at a given time), *disproportionality* (equity and inequality in the creation of the risks), and *sustainability* (equity and inequality across generations). In terms of environmental justice—the issue of where the impacts fall—climate disruption is clearly having its most severe consequences for the poorest of the global poor, particularly women, children, and the residents of polar regions and small inland states. In terms of disproportionality—responsibility for creating the problem in the first place—the evidence is even more clear that the majority of the harm has come from a minority of the world’s citizens, mainly those in wealthier countries such as the United States. Finally, in terms of *sustainability*—equity or inequality across time—global climate disruption has already begun to produce erratic weather patterns, but climate scientists expect the problems to become increasingly pronounced in the future, affecting future residents of the earth who will have had nothing to do with creating the problem in the first place.

Even in terms of impacts across time, initial evidence suggests that the greatest impacts may affect activities that are most important to the poorest citizens of the world, including dryland farming, tropical forest practices, and subsistence-level fishing (see [http://www.Brookings.edu/events/2008/0801\\_development.asPX](http://www.Brookings.edu/events/2008/0801_development.asPX)). Other foreseeable impacts include eroding coastlines and the spread of pests and waterborne diseases. For all of these impacts, and more, poor nations and regions will have nothing like the capacity of richer ones to “mitigate” the problems—or to follow the *Titanic* metaphor, to reach the lifeboats. A report by *The Economist* (2008:67) summarizes the calculations of the World Resource Institute, based on estimates from UNDP, UNFCCC, the World Bank, and Oxfam, indicating that the costs are likely to be in the range of US \$50 billion (see also *The Economist* 2009:3–22).

In short, while global climate disruption is indeed an important challenge, even this most “global” of all risks does not correspond to the expectations of Giddens or Beck for risks to be distributed or for that matter generated in ways that “transcend” traditional socioeconomic and sociogeographic boundaries. *Instead, like other kinds of technological risks, the risks associated with global climate disruption are more appropriately seen as representing what this paper has called Titanic patterns.* Even these vast risks tend to be distributed in socially structured ways, reinforced by global political and economic

inequalities that perpetuate the disproportionate use and abuse of the natural environment and its natural resources.

By contrast—as in the case of other environmental and technological risks—to depict global climate change as “transcending” relevant social divisions, a la Giddens and Beck, fails to capture the actual social distribution of *Titanic* risks. It is not sufficient to speak of climate disruption as being simply global, and neither is it sufficient to see the risks simply in terms of technological, bureaucratic, and/or natural scientific descriptors. Whether we consider north–south divisions, or the fates of socially vulnerable groups even in more prosperous nations, environmental risks prove to reflect socially structured inequalities. The idea that these global environmental risks will “transcend all divisions” simply fails to recognize the striking inequalities and injustices that permeate patterns of environmental risk exposure and the destruction of nature. What we have witnessed at the beginning of the twenty-first century goes against and beyond the understanding of the “risk society” as developed by Giddens and Beck.

By contrast, the evidence suggests the need for a competing research agenda on “*Titanic risks*.” Human misuse of the natural environment—far from being accurately depicted as a problem of the “commons,” or as a matter of shared or common responsibility—fundamentally reflects problems of equity and inequality (Wilkinson and Freudenburg 2008). Even the most ominous threats of all—whether we are speaking of global climate change, or nuclear and other high-risk technologies, or the generation and disposal of toxic and other wastes—not only fail to transcend, but effectively exacerbate, existing patterns of social and sociogeographic divisions.

This realization is essential, we believe, precisely because it provides a backdrop against which we can reconsider the sociological realities that underlie and indeed permeate “technological” risks. The need is particularly clear in light of the fact that such vital questions of equity and inequality have been surprisingly absent even in past analyses—including analyses by sociologists who are not merely well known, but who are well respected for their theoretical sophistication and insights. Faulty sociological thinking about risks can be problematic under any circumstances, but it is perhaps most troubling when it exists within the thinking of the sociologists who are the most well known and well respected.

Given that inequalities appear to be not just present but characteristic of environmental decision making and outcomes, and given that the generic “transcending of all divisions” argument fails so completely to correspond to actual outcomes, the time has clearly come to stop deferring to theorists who may be well known but are wrong. One small step in that direction may be to consider the pattern that this paper has called “*Titanic risks*.” Even in cases

where the risks may appear initially to be massive or indeed global, a closer examination still reveals that neither the causes nor the consequences can accurately be considered to be evenly distributed. For the newest kinds of risks, as well as for the scourges of the ages, richer still means safer.

#### ENDNOTE

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