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## A SYMPOSIUM ON "NATURAL" DISASTERS

### Foreshadowing Katrina: Recent Sociological Contributions to Vulnerability Science

KATHLEEN TIERNEY

*Department of Sociology and Institute of Behavioral Science  
Natural Hazards Center  
University of Colorado  
tierneyk@colorado.edu*

When Hurricane Katrina struck in August, 2005, people in the U.S. and around the world were dumbfounded by the scope and severity of the storm's impacts and equally astonished by the sheer incompetence of the governmental response to the largest catastrophe to strike the nation in the last one hundred years. Astonishment turned to anger when the public began to realize that, contrary to President Bush's early statement that the breach of the levees and the subsequent flooding could not have been anticipated, the devastating consequences for the Gulf region of a large storm like Katrina had long been predicted. Disaster training scenarios such as the "Hurricane Pam" exercise had already envisioned what would happen in New Orleans following a large hurricane, and the Bush administration had in fact been informed that Katrina was a catastrophe in the making on the weekend before the storm made landfall.

Amid the shock and awe that accompanied the Katrina disaster, perhaps the most riveting images not only focused on how Katrina stripped bare the landscape of the Gulf Region but also illustrated how pre-existing social conditions led to vastly different consequences for the storm's victims. While better-off residents fled the city in their cars, the poor, elderly, and disabled were unable or unwilling to leave (or both), and many residents lost their lives when the levees burst. Those who remained waited days to be rescued, and for some, help never came. Through a social triage process driven by negligence, incompetence, and perhaps even malice, other victims lost their lives in nursing homes, hospitals, and shelters. Victims with the fewest resources and the greatest needs, such as those who sought help at the Superdome and the Convention Center, lived

*The Northridge Earthquake: Vulnerability and Disaster*, by **Robert Bolin** with **Lois Stanford**. London, UK: Routledge, 1998. 272 pp. \$165.00 cloth. ISBN: 0-415-17897-5.

*Dumping in Dixie: Race, Class, and Environmental Quality, 3rd ed.*, by **Robert D. Bullard**. Boulder, CO: Westview Press, 2000. 234 pp. \$29.99 paper. ISBN: 0-8133-6792-1.

*Heat Wave: A Social Autopsy of Disaster in Chicago*, by **Eric Klinenberg**. Chicago, IL: University of Chicago Press, 2002. 320 pp. \$15.00 paper. ISBN: 0-226-44322-1.

*Hurricane Andrew: Ethnicity, Gender and the Sociology of Disasters*, edited by **Walter Gillis Peacock**, **Betty Hearn Morrow**, and **Hugh Gladwin**. New York, NY: Routledge, 1997. 304 pp. \$175.00 cloth. ISBN: 0-415-16811-2.

in miserable conditions and then were transported out of New Orleans by agencies that cared little about their resettlement needs. When community residents stranded in New Orleans tried to survive by taking water, food, milk, and diapers, they were labeled as looters and thugs. When isolated pockets of violence developed after the flooding, New Orleans was treated as a war zone, and threats of deadly force were used against residents, particularly if they happened to be young black males. "Shoot to kill" orders issued two days after the levees broke undoubtedly hampered the ability of those trapped in New Orleans to assist one another.

er. By slowing down search and rescue efforts, this criminalization of disaster victims also helped to raise the death count.

The recovery of the Gulf Coast and the devastated city of New Orleans—if that term can be used in connection with Katrina—is revealing similar patterns. Here, social triage takes another form, as the process of developing recovery strategies drags on, the immense amount of aid the region needs merely trickles in, and members of the elite evidently hope that many among the over one million residents who have been displaced will eventually exhaust their options and give up their efforts to return. Developers and casino businesses, which will be among the largest beneficiaries of the recovery effort—after Halliburton and other contractors take their share—are no doubt eager to see New Orleans reborn as a smaller, whiter, richer, Disneyfied replica of the great city Katrina destroyed.

The indignities visited upon Katrina's victims caused outrage among ordinary Americans and media consumers worldwide. However, for disaster researchers, they came as no great surprise. The patterns of differential vulnerability and differential impacts in the Katrina disaster mirrored those documented by social scientists in other hazard and disaster contexts, particularly those who conduct research within the vulnerability science paradigm.

Vulnerability science is rooted in decades of research undertaken both in the West and in the developing world (see Sen, 1982; Hewitt, 1983; Blaikie et al., 1994; Cutter, 2001; 2005). The vulnerability science perspective argues that disasters result not from physical disaster agents, such as hurricanes, tornadoes, and earthquakes, but rather from the juxtaposition of three factors: (1) the disaster agent itself—whether a hurricane, earthquake, tornado, or some technological or human-induced event; (2) the physical setting affected by the disaster, including characteristics of the built environment (e.g., structures not built to survive the physical impact of the disaster agent) and environmental features that serve to either mitigate the effects of disasters or make them more severe (e.g., diminished wetlands that could have cushioned the impacts of Katrina); and (3) population vulnerability, a complex construct that includes such factors as: proximity to physi-

cal disaster impacts; material resources (e.g., income and wealth); race, ethnicity, gender, age; knowledge concerning recommended safety measures; and factors associated with social and cultural capital, such as routine involvement in social networks that can serve as conduits for information and mutual aid, as well as knowledge that enables community residents to interact successfully with mainstream societal institutions. Populations are also made vulnerable by steps their governments and institutions take (or fail to) to protect them before and after disasters strike.

Seen from the perspective of vulnerability science, the Katrina catastrophe was triggered by the disaster agent itself—a massive hurricane—but its catastrophic effects stemmed from failures in protective systems, social structural factors that produced high levels of vulnerability for many residents, and emergency management systems that were incapable of protecting and caring for victims. Disasters are now understood in this way because of research and publications like those discussed here.

Starting in chronological order, Robert Bullard's research, as exemplified in *Dumping in Dixie* (first published in 1990, now in its third edition) and in his many other publications, constitutes a seminal body of work that both led to the development of the environmental justice/injustice paradigm and provided much of the rationale for the environmental justice movement. Bullard's fundamental research questions centered on the extent to which minority communities were disproportionately exposed to environmental hazards such as those associated with toxic waste dumps and polluting facilities. His basic thesis was that while whites receive disproportionate benefits from industrial activities that produce environmental hazards, blacks and other people of color disproportionately bear the costs of such activities. Bullard's environmental racism approach argued that, consistent with the concept of institutional racism, blacks and other minority groups face the higher environmental and health risks than whites, owing to minorities' proximity to toxic industries, and that these differences result from a combination of economic forces, corporate decisions, and legal and political practices that enable environmentally racist activities. Minority communities that are marginalized and poorly orga-

nized are especially at risk unless they can unify and actively oppose such practices. Because of the quality of Bullard's research and the successes of the environmental justice movement, environmental injustice is now a fully-constructed social problem that has led to a number of significant public policy responses, including Presidential Order 12898, which mandates that federal agencies take into account and address adverse health and environmental impacts of their programs on minority and low-income populations. (The efficacy of those policy responses is a topic for another essay.)

Another important outcome of Bullard's research is that many other scholars began to explore the environmental justice/injustice thesis more fully. While there is no doubt that Bullard's arguments are demonstrably valid in many cases, these other investigators pushed further by asking questions about time order (which came first—minority settlements or toxic industries?), other factors besides minority group membership that resulted in high levels of exposure to toxic facilities, actions that may lessen rather than increase minority exposure to toxic sites—such as deliberately locating job-producing industries *away from* minority communities—and even whether environmental racism exists at all (see Anderton, et al., 1994; Been, 1994; Mitchell, Thomas, and Cutter, 1999; Downey, 2005). Bullard's groundbreaking research and the flood of studies that followed constitute major contributions to vulnerability science.

Katrina was a catastrophe that revealed differential vulnerabilities on an unprecedented scale, but that hurricane was by no means unique. In *Hurricane Andrew*, Peacock, Morrow, and Gladwin documented how that 1992 disaster, which was also badly mismanaged, affected different groups and subpopulations in the impact region. Like other work conducted within the vulnerability science paradigm, their theoretical approach, the "socio-political ecology" perspective, was "consistent with increased interest in political economy and critical perspectives, including the analysis of minority, gender, and inequality issues at all phases of disaster research" (Peacock, Morrow, and Gladwin, 1997: 21). Their work brought to the foreground the ways in which race, class, and gender inequality structure people's experiences in disasters—experiences ranging from

evacuation and sheltering to efforts to obtain recovery assistance. The power of *Hurricane Andrew* stemmed partly from the fact that many members of the research team were based at Florida International University and were themselves victims of Andrew's fury. They also brought to the project a deep understanding of the political economy, politics, and population dynamics of Greater Miami, which provided a context in which to analyze the experiences of households and communities.

The patterns that these investigators documented resonate with those observed in Katrina. Factors such as race, income, and family composition influenced who left and who remained to face the hurricane's devastating impact. Experience with less severe hurricanes made many residents confident that they could stay in their homes and still survive. The worst-off victims—mainly minority group members and the very poor—were housed in crowded "tent cities" set up by the military. Women bore the burdens of dealing with the bureaucratic red tape associated with seeking and applying for aid, while still caring for their children, doing intense "emotion work" within their own families, and often becoming targets of men's rage and despair. Socio-economic status, culture, and household living arrangements influenced household access to disaster aid and subsequent post-disaster recovery trajectories. Racial differences in the provision of aid were also observed, even at the community level: holding damage constant, households in a majority-white community received more aid of all types, including federal assistance, than their equally-victimized counterparts in a neighboring majority-black community. Minority homeowners also received lower insurance payouts, relative to losses, owing to "redlining" in the insurance industry.

In *The Northridge Earthquake*, Robert Bolin and his collaborator Lois Stanford studied the impact of that 1994 seismic event on diverse communities in the Greater Los Angeles area. Their position, like that of other authors discussed here, is that the study of disasters "is not an isolated specialty, but [is] necessarily connected to...issues of development, environmental sustainability, urban geography, political ecology, and critical social theory" (Bolin and Stanford, 1998: 3). Bolin and Stanford present a framework in which

disasters are viewed as events that occur within specific historical contexts and that are produced through interactions among the political, economic, demographic, and environmental processes that are characteristic of specific geographic places. While a seismic event like the Northridge earthquake may serve as a trigger or catalyst for the occurrence of disaster, the true roots of disaster lie in the societally-induced vulnerability associated with places and populations. In Southern California and elsewhere, vulnerability is associated as much with the limited ability of individuals and groups to exercise agency and create viable life options as it is with exposure to hazards themselves. To the extent that their life chances are constrained by the workings of the social order, people are vulnerable to perils of all types, including those associated with disasters. Thus, to understand differential disaster vulnerability in places like Southern California, it is necessary to take into account such factors as: labor markets; the composition of housing stocks; population dynamics; differences in income, wealth, and property ownership; forces that drive economic restructuring; forces that integrate some groups into the political process while marginalizing others; community networks based on racial and ethnic solidarity; and the connections that exist between different populations and governmental and other entities that can deliver aid when disaster strikes.

Within this broader context, the book focuses on four small communities outside the city of Los Angeles whose experiences during and following the earthquake differed considerably. Those differences included, among other things, variations in disaster response capabilities; available housing options; and the extent to which communities were tied into key sources of aid at the county, state, and federal levels. Their populations also differed according to ethnicity, social class, and citizenship status. Two rural towns were populated primarily by Latino agricultural workers, while the other two were minority white, better-off suburban communities whose residents tended to commute to Los Angeles or work in the light manufacturing sector. Throughout the text, the authors explore how these differences influenced victimization and recovery at different scales. For example, one small rural community with

a substantial population of immigrant workers (both documented and undocumented) lacked both visibility and influence within the county. When the earthquake struck, that town was not on the radar screen of county and state response agencies and thus did not receive rapid assistance. Town residents tended to live in old, substandard dwellings that were especially vulnerable to earthquake forces. After the earthquake, many who suffered losses were reluctant to come forward to request aid through official sources out of fear of encountering difficulties with immigration authorities, preferring to rely on their own community-based organizations. In all four communities, class position and other factors such as citizenship and home ownership were associated with access to safe housing options and to insurance and other assistance that could help offset disaster losses.

Like Peacock's research group and others who study the political economy of disasters, Bolin and Stanford also highlight the role played by both disaster events and post-disaster relief programs in reproducing social inequities. In urban areas where affordable housing is scarce, disasters tend to disproportionately damage such housing. Where livelihoods are already precarious, disasters can push households further into poverty. To observe disaster aid and recovery in the U.S. is to see the Matthew Effect in action. Benefits accrue to those who possess wealth and social and cultural capital, while larger proportional losses are borne by the poor and marginalized.

When he wrote *Heat Wave*, Eric Klinenberg considered himself an urban sociologist, not a disaster researcher. Nonetheless, he produced a book that rapidly became part of the disaster research canon, owing to its extensive exploration of social vulnerability in the context of a major heat wave in Chicago, an extreme weather event that directly resulted in the deaths of over 700 people during an eight-day period in July, 1995.

Klinenberg's "social autopsy" of the heat wave explored how and why people lost their lives in the heat wave and, relatedly, why death tolls were higher in some parts of the city than in others. These questions were addressed through a systematic comparison of two communities: a blighted, high-crime majority black community where the death

toll was high and a contiguous Latino community where relatively few lives were lost. Rather than treating heat-related deaths as tragic events that happen randomly, Klinenberg linked individual fates to broader social factors. Being elderly and living alone were risk factors for heat-related deaths, and Klinenberg observed that as our society has continued to age and as rates of geographic mobility have remained high, the elderly are perhaps more socially isolated than ever before. At a deeper level, however, age and living alone *per se* were not what mattered. Equally important were community-level factors, such as crime, quality of life, and community cohesiveness. Elderly residents of the blighted, crime-ridden community were accustomed to staying in their homes and going out as little as possible because they were afraid of drug dealers and gangs. Those same fears led them to keep their windows closed, even during the heat wave. The neighborhood lacked basic amenities that would encourage elderly residents to get out and get to know one another. Thus elderly residents were essentially prisoners in their own homes. During the heat wave, they died as they had lived—alone and afraid.

In contrast, even though residents of the nearby Latino neighborhood were poor, the neighborhood, with its busy commercial areas, vibrant street life, and strong community resources such as the Catholic Church, was an urban ecology that brought people together, instead of forcing them to live in isolation. Rather than being desolate, the streets teemed with activity. Social ties among residents were strong. Although there was crime, and gangs did operate in the community, crime and violence were concentrated in particular areas and during the nighttime hours. The neighborhood ecology was one in which most residents felt relatively safe. Because social networks and community institutions were strong, those most at risk were aware of and able to access various forms of assistance during the heat wave, which kept the death toll low.

Another fascinating section of the book that resonates with recent disaster experiences details how government agencies and the Chicago press refused to recognize the heat wave as a major community emergency, even as bodies continued to pile up in the morgue. In a chapter entitled “Governing by

Public Relations,” Klinenberg discusses the city’s response to the heat wave, which he sums up in three words: deny, deflect, defend. Chicago Mayor Richard Daley’s crisis management and public relations strategy consisted first of simply not acknowledging anything beyond the fact that Chicago was experiencing hot weather. Later, as the death toll rose, city officials shifted to blaming the victims themselves for not seeking help, while continuing to deny that the large life loss was actually a result of the heat wave. (Today Daley would doubtless say that “no one could have predicted that hot weather would kill people.”) For its part, the press started by treating the heat wave as a novelty, and then followed the city’s lead in claiming that so many died because they refused to be helped. Although journalists and editors realized after the fact that they were negligent in their reporting the heat wave, coverage of the story did not continue, because heat waves are, after all, “summer news.” Spinning disasters and biased news reporting have taken on a whole new meaning in the aftermath of Katrina, and Klinenberg’s analyses present a model for exploring these practices.

What is obvious in these fine examples of sociological disaster research is that the field has broadened in ways that expand and supplement traditional, “event-oriented” disaster studies, which tended to focus too narrowly on disaster events, their immediate impacts, and subsequent response and recovery activities. Newer work pays much greater attention to the manner in which pre-existing social inequalities, the political economy of specific geographic areas, and inequities in the provision of aid shape the life chances of disaster victims. In doing so, this work links the study of disasters more closely to other subdisciplines such as social inequality and stratification, political economy, critical urban studies, demography, race and ethnicity, and the study of organizations and institutions.

This essay began with a discussion of Robert Bullard’s work on environmental racism and injustice. Bullard’s perspective, originally applied to situations involving toxic land uses, is equally applicable to natural disaster contexts, as shown so tragically in Hurricane Katrina. Researchers like geographer Susan Cutter of the University of South Carolina, whose work spans hazards and dis-

asters of all types, have begun asking why the standards articulated in Executive Order 12898, which made environmental justice a central concern in the administration of federal programs, are not being applied in disaster settings. They should be—but such changes will not come about without additional advances in vulnerability science, combined with stepped-up advocacy and political pressure.

Finally, Hurricane Katrina has understandably caused many academics from other specialties to become intensely interested in hazards and disasters. Disasters generally attract new scholars to the field and their contributions are badly needed. However, as these newcomers carry out their research, it is important that they acquaint themselves both with classic disaster studies and with books such as those discussed here, which have led to significant advances in the state of knowledge in the field.

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## The Sky is Falling; The Sky is Falling . . . It Really is Falling!

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EUGENE A. ROSA  
*Department of Sociology*  
*Washington State University*  
*rosa@wsu.edu*

*Worst Cases: Terror and Catastrophe in the Popular Imagination*, by **Lee Clarke**. Chicago, IL: University of Chicago Press, 2005. 200 pp. \$22.50 cloth. ISBN: 0-226-10859-7.

*The Vulnerability of Cities: Natural Disasters and Social Resilience*, by **Mark Pelling**. Sterling, VA: Earthscan Publications, 2003. 156 pp. \$111.57 cloth. ISBN: 1-85383-829-2. \$32.60 paper. ISBN: 1-85383-830-6.

*Normal Accidents: Living with High-Risk Technologies*, by **Charles Perrow**.

Princeton, NJ: Princeton University Press, 1999. 451 pp. \$32.95 paper. ISBN: 0-691-00412-9.

*Promoting Risk: Constructing the Earthquake Threat*, by **Robert A. Stallings**. Chicago, IL: Aldine de Gruyter, 1995. 284 pp. \$24.95 paper. ISBN: 0202305457.

*Acts of God: The Unnatural History of Natural Disaster in America*, by **Ted Steinberg**. Oxford, UK: Oxford University Press, 2003. 320 pp. \$19.95 paper. ISBN: 0-19-516545-4.

#### Introduction

Disaster has been a feature of the human landscape for as long as there have been humans. The unavoidable reality, too, is that

disaster—whether from the sky, the ground, or the water—will be a part of the human condition for as long as there are humans. Disasters, as Perrow and Clarke persuasively

argue, are as normal as the setting of the sun in the West. We seldom think of disasters in this way because their episodic occurrence makes them recede from our conscious awareness. How quickly our depth of awareness changes with the next disaster, even more so when disasters come in a cluster, such as the 2003 Columbia accident, the 2004 Asian Tsunami, and the three category 5 hurricanes in 2005: Katrina and Rita that devastated the city of New Orleans and the Gulf Coast and Wilma that inflicted damage around the Caribbean.

How did our distant forebears deal with disaster? We have only sketchy evidence from ancient times, so our best starting point for historical context is the age of classical Greece, where we find records showing recognition and planning for risky undertakings.

Disaster is the tangible realization of risk. The word risk (*rhiza* in Classic Greek) itself is not only traceable to Homer's *Odyssey*, but also codifies a larger recognition of features of our world; that some of our own acts place us at risk while our capacity for agency can help us to avoid, attenuate, mitigate, or compensate for realized risks. Put crudely, risk is a recognition that human agency makes life a balancing act—between putting ourselves at risk while trying simultaneously to anticipate and manage risk, too.

Embedded in this balancing act is a subtle message. The ultimate sin in ancient Greek culture, illustrated repeatedly in myth, literature, and drama, was human hubris. Humans are not gods, said the oracles, and we should never delude ourselves to think that we are or ever could be. In every instance, those mortals who thought otherwise were struck down.

Ancient Greece is also where we find the first codified expression of formal procedures to anticipate and deal with risk. Ships routinely sank then, owing to the storms of either nature or enemies, so we find insurance first in connection with trading ships in the system of "bottomry," the first known form of risk transfer. It was a loan made to a ship owner to finance a ship's voyage, but remarkably enough, the debt was forgiven if the ship was lost or sunk (Ziskind, 1974).

## Fast Forward

The books reviewed here about disaster—on a very long thread from our Greek past—are from two of the principal disciplines developing the topic, sociology (Clarke, Perrow, and Stallings) and geography (Pelling), with a fifth one from history (Steinberg). Each speaks to an unavoidable feature of the human condition—risk—conventionally defined as the probability (one chance in a million) of some event (being struck by lightning) times the consequence (death) of that event (see Rosa, 1998 for a broader, philosophically grounded definition). And they are tied together around a common theme—that too much attention is paid to the probability of risk, to the neglect of peoples' real concerns: consequences (Jaeger et al., 2001).

## Urbanization

Very soon, the majority of the world's population will, for the first time in history, live in cities, including the current 20 mega-cities (UN, 2004). What impact will this demographic change have on natural disasters? The title of geographer Pelling's book, *The Vulnerability of Cities: Natural Disasters and Social Resilience*, promises a direct assault on that question. That urbanization raises human vulnerability (especially from earthquake risks), that meteorological and hydrological risks are highest in coastal areas, that global urban growth is driven largely by rates in the South (especially in Africa and Asia), and that the coastal location of many cities is due to a colonial past means the global framework adopted by Pelling further promises an assault with the right weapons.

While the theme and framework of the book offer great promise, that promise is never realized. Divided into two nearly equal halves, a syncretic framework is laid out first that combines theoretical insights from geography and political science, followed by three case studies—Bridgetown, Barbados; Georgetown, Guyana; and Santo Domingo, The Dominican Republic—representing three contrasting political regimes. The two halves neither complement each other nor hang together in ways expected of coherent arguments.

The syncretic half of the book is devoted to convincing us of the importance of its focus on cities (which it falsely claims have been researched far less than rural areas), of

the need to stretch traditional definitions of vulnerability to include social vulnerability, and of the growing reality of the difficulty of disentangling natural hazards from technological ones (argued, too, by Stallings and Steinberg). But whatever value is contained in the developed framework is lost with a prose that is so dense and stilted that it so deadens the senses that whatever gems it contains are quickly lost.

### Nature or Nurture?

Historian Ted Steinberg's *Acts of God: The Unnatural History of Natural Disaster in America* is worth reading if for no further reason than the detailed historical analyses it provides of key disasters experienced by the United States. We trot after him to a 500-year flood (meaning one whose probability is one in 500) in Hannibal, Missouri in 1993, to Charleston, SC—the 19th century site of the East coast's most powerful earthquake, hurricanes, tropical cyclones, and smallpox and yellow fever epidemics, to Missouri's New Madrid fault line—experienced in severe earthquakes and where the REALLY BIG ONE is likely to occur, to the 1906 San Francisco Earthquake and other seismically active areas, and even to New Orleans where he writes, in the late 1990s with eerie precision: "A dreaded direct hit by a storm of comparable magnitude [i.e. category 4 storm] would likely turn New Orleans into a huge lake 20 feet deep, with mass death a very real possibility."

But there are deeper reasons to read *Acts of God*. Contrary to one wag's cynicism that history is "just one damn thing after another," Steinberg's history is much more. Indeed, his many cases are tied together with a unifying theme that is not only historical but equally sociological with its focus on economic interests, political power, and social justice. While untoward events originating in nature put us at unavoidable risk, disasters are largely the result of human agency, choices that make us more vulnerable when those risks are realized. Local builders and politicians increase that vulnerability with the housing developments they locate in floodplains or on earthquake faults, as does the federal government in building higher levees and floodwalls and offering flood insurance, as does the belief in technology that sanctions such outrageous technical fixes as the proposal to fire atomic

warheads to destroy tornadoes, as do other vested interests.

The source of disasters, since the late 19th century, is to be found in spiritual or profane forces beyond human capacity: to acts of God or to the flukes of Nature, take your pick. Making nature the villain obliterates the causal link to the producers of the disasters, and assigns no responsibility for the excess burden on the poor that disasters often impose. The collective amnesia between disasters adds to the obliteration.

The power of Steinberg's argument lies in the disaster shell game it uncovers. If nature is the problem, then control, not prevention, is the solution—to be done by planning and technology. But this exercise of agency increases our vulnerability ultimately resulting in disasters of even greater magnitude. However, by calling the resulting disasters signs from an angry God or nature's freak show, we can be in denial about the human role in them, fail to assign appropriate blame, and neglect to see that one person's tragedy is on the same string as another person's gain. Most importantly, we may fail to see that disasters are concrete settings that reproduce social injustices.

Steinberg's panoramic look at disasters begs for the zooming in on a single type of disaster for an in-depth look. Robert Stallings' *Promoting Risk: Constructing the Earthquake Threat* does just that, focusing on the disaster which, in the absence of any major occurrence in the U.S. in 12 years, has receded from public consciousness: earthquakes. But the threat clearly remains, especially in California, where the next big one could result in billions in damage and as many as 23,000 deaths in Los Angeles alone. Nevertheless, efforts to "promote" this risk, to establish it fully as a social problem, have been less than successful. Why?

Stallings disciplines his answer with two complementary sociological perspectives: social constructivism and social movements theory. He anticipates Steinberg's recognition that while natural forces in the earth impose risks, disasters are the result of human choices—about where to live, in what kinds of structures, according to what kinds of building codes. Nevertheless, nature is seen as the enemy. With nature as the enemy, there is little that we can do about disasters. Left opaque are the actions of the wealthy who

choose trophy homes in scenic, but dangerous locations, developers who cater to such desires, and local politicians who are active players in local growth machines. And left opaque is the recurrent discrimination of disasters where the poor are often at greater risk.

The earthquake threat, Stallings concludes, is a “partially constructed social problem” (p. 203). The network of government agencies, interest groups, and scientific centers that constitute the earthquake establishment are not organized to be an effective social movement. Hence, the social movement needed for claims making is absent. On the perceptual side of the coin, underdeveloped is the possibility that functional amnesia—out of memory is out of mind—is a natural response to catastrophic possibilities. We can only think about “worst cases” for just so long.

The principal conclusions and insights of *Promoting Risk*—that earthquake disaster is largely social in origin, that vested interests play a significant role in this, and that earthquakes have yet to make it as a full-blown social problem—remain remarkably fresh and instructive, despite their decade-old shelf life. Indeed, the choice of earthquakes—an undeniably real geological event—to develop a constructivist argument prefigured the turn in the SSK (social studies of scientific knowledge) field to more explicitly recognize an underlying reality to our constructions. Nevertheless, despite the realist turn in constructivism, its circumscribed epistemology still falls short of integrating what is real with what is social about risk (see Rosa, 1998).

### System Disasters

No sociological discussion of disasters would be complete without inclusion of Charles Perrow’s *Normal Accidents: Living With High-Risk Technologies*, first published in 1984, reissued in 1999 with an afterward and postscript: The Y2K Problem. The germinal theme, hinted in the title, is that serious technological accidents are not temporary operator screw-ups and correctible over time, but are ineluctable features of the increasingly complex systems we create. System accidents, though rare, are normal. A pivotal reason is that the dominant reductionistic practices that focus on components to ensure safety are inadequate to the task.

The raw material for Perrow’s theorizing is high-risk systems: nuclear reactor operations, airplane travel, seagoing activities, dams, space missions, recombinant DNA technology, and nuclear weapons. All have experienced accidents or near-accidents. But this is not supposed to happen. Technological systems have built-in safety features—redundant components, control devices, backup systems. But, therein lies the problem. Small multiple failures can defeat (and have) the most elaborate safety systems. Technological systems comprising operations that are tightly coupled and complex (such as commercial nuclear power, nuclear weapons, chemical plants, and space missions) are bound to fail: accidents are “normal.”

*Normal Accidents* is one of those rare books in sociology that not only reached way beyond the boundaries of the discipline, but also became a near-instant classic. It still is—despite the age of the original argument (over two decades) and the sharp criticism it has attracted, including the claim that Perrow’s paradigm case, Three Mile Island, was no normal accident after all (Hopkins, 2001). And despite its warts and blemishes, *Normal Accidents* remains a treasure of theoretical clarity and exemplar of a holistic method for understanding technological systems.

The asymmetry between the importance of this book and the amount of coverage here is due to the practical limitations of space. This limitation is not as troubling as it otherwise might be because *Normal Accidents* has been extensively reviewed in *CS* and elsewhere, has been a featured topic in a symposium (Rosenthal and Kouzmin, 1994) and was recently appraised in depth as a “citation classic” (Jermier, 2004; Rosa, 2005). So, rather than reworking well-worked materials, the remaining space is devoted to hypotheses about Y2K.

Perrow extended “normal accidents” to Y2K—a system of systems—and predicted widespread failures and, perhaps, devastating outcomes of unprecedented scope and scale. That Y2K passed with barely a whimper was falsifying evidence of this theoretical test. Nevertheless, it was an important exercise because it underscored the growing reality of interdependencies among systems, a topic desperately needing, but absent of sociological analysis.

### Doom and Terror: Imagining the Worst

Who has never asked: What's the worst that can happen? The answer is so obvious that I won't repeat it, preferring to speculate that few of us ever thought our question was little more than filler or psychic protection against the unthinkable. Not so for Lee Clarke, whose recent book *Worst Cases: Terror and Catastrophe in the Popular Imagination* (WCs hereafter) finds deep wisdom and connectedness in this phrase. Clarke's insight recalls the words of polymath, Jacob Bronowski, who defined science as the search for unity in hidden likenesses. By that definition WCs is not only an engaging sociological thesis, but also an example of doing science. Indeed, one may interpret Clarke's thesis as a compelling case that ordinary folks, in their use of worst-case imagination, mimic unwittingly the accepted practice in science of "thought experiments."

Clarke arrays a wide range of disasters to build a three-part argument about the normality of disasters and their capacity for showing how society works. It begins by exposing the key limitation of conventional risk analysis (and its "magic of probabilistic thinking") as an overemphasis on probabilities, to the neglect of the real concern to people—consequences. We can do better, says Clarke, by recognizing not only the pervasiveness of consequential thinking in everyday life, but also its remarkable potential as an analytic tool. Furthermore, worst cases can be used to expand democratic decision-making, a slower but safer process, over how we think and act in the face of the inevitability of disasters.

WCs convinces us that author Clarke is a successful writer of spy thrillers in some parallel universe. The book's gripping thesis and prose, beginning with the claim that "doom is everywhere," alone make it a must-read for any sociologist (nay, for any curious thinker), not just risk or disaster researchers.

With worst-case analysis in our toolbox we now have an alternative way of looking at the failed predictions about Y2K in the 1999 reissue of *Normal Accidents*. The failure can be interpreted as an effective "worst case" projection that stimulated us to think creatively and critically about the growing vulnerability of our global networks of computer cum infrastructure to disastrous failure.

And, if Clarke is right that worst-case thinking prompted a massive effort to update and remove flaws in computers (although I suspect other factors at work, too), thereby preempting the worst, then it is a shining example of the importance of such thinking.

WCs's argument is not a straw man, but a man of steel, although it has some hollow inwards. In his apparent zeal to criticize traditional risk analysis, Clarke misses important elements of that literature, thereby attracting flaws, not of commission, but of omission. WCs overlooks the fact that worst cases are often included in the very methods Clarke eschews—standard types of risk analysis. WCs are a typical element of probabilistic risk analyses, as reductionistic a method as one could ever find, performed to assess the risk of many complex technologies (e.g., nuclear power plants and space shuttles). For example, in the case of nuclear power plants, the worst case, a LOCA or Loss of Coolant Accident, is an integral part of the risk assessment.

WCs overlooks, too, the sea change in the way that national governments around the world are conducting risk analysis. Important risk analyses to inform public policy now often include interested parties, along the lines of the "analytic-deliberative" process recommended by the U.S. National Academy of Sciences (Stern and Fineberg, 1996). Remarkably enough, even the Bush Administration's program for conducting climate science research reflects this change (CCSP, 2003).

The denouement of WCs is the appeal for a fundamental change in thinking that merges the current risk analytic methodology with a consideration of worst cases. Hidden beneath that straightforward recommendation is the much deeper challenge, the challenge of merging a Cartesian worldview of reductionism with WCs's worldview of dichotomous holism into a common analytic framework. The devil here is not so much in the details as it is in the resistance of cultures and a wide range of powerful institutional actors.

An opportunity for taming the devil resides in, of all places, the history of probability. Overlooked by WCs are both an arresting irony and an opportunity for underscoring the potential for rapprochement between the seemingly antithetical probabilistic and possibilistic approaches—the punch line

of the argument, but also its most problematic feature. Formal risk decisions can be traced to Blaise Pascal, mathematician, mystic, and Jansenist, widely credited with inventing decision theory with his application of probabilistic reasoning to human choice (Hacking, 1984 [1975]). The irony is that he used a worst case, his famous wager (*le pari de Pascal*) about the existence of God, as the example of probabilistic decision-making. And after all, what could possibly be worse for believers than the eternal pain of hell? Recognition of this beginning might ease the way toward the adoption of the joined system advocated in WCs.

### Conclusions

What are the lessons of this suite of disaster books? The proximate ones should be obvious, and beyond reproach: that natural disasters are a normal feature of society, that natural disasters are seldom entirely “natural,” that technology is not just the solution but part of the problem, that the assessment of technological systems begs for sociological analysis, and that natural disasters provide the occasion to refresh our understanding of the structure of society (especially its obdurate inequities) as well as the modern dependency on pervasive technologies.

But their real worth may lie in ideas that at once are subtler, more nuanced, and more profound. The increase in our vulnerabilities, the increase in the untoward outcomes of risk realized, the limitations of human agency to reduce, avoid, or mitigate disaster—these trends raise the question of whether the increase in vulnerabilities is due to overconfidence in our analytic and technological capabilities. The increased intensity, if not frequency of disasters may be warning us that the reach of human agency, imbued with a deep belief in technological fix, exceeds our

grasp. It raises the further question of whether the sin of Classical Greece, hubris, is upon us—not in the way envisioned then, in individual mortals, but in the products of our agency, in complex systems and technologies vested with the hubris of our exaggerated expectations. These questions alone are worth the price of admission into the world of danger where these books lead.

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The Social Construction of Disasters: From Heat Waves to Worst-Case Scenarios<sup>1</sup>

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HAVIDÁN RODRÍGUEZ  
JOHN BARNSHAW

*Department of Sociology and Criminal Justice  
Disaster Research Center  
University of Delaware*

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### Opening Remarks

Terrorist attacks on the United States (September 11, 2001), Madrid (March 2004), and London (July 2005); the Indian Ocean tsunami (December 2004); Hurricane Katrina (August 2005); and the Pakistan earthquake (October 2005), among others, have once again captured the interest of the international community, researchers, academics, and the media. The social science disaster research community has made important contributions to our understanding of disasters and has had a significant impact on disaster preparedness, mitigation, and recovery initiatives, and has managed (albeit limitedly) to bridge the gap between theory and practice. However, the massive failures in the aftermath of the tsunami and Katrina show that, to a large extent, decision-makers have ignored the extensive body of knowledge and the theoretical, methodological, and substantive contributions of disaster researchers, spanning close to five decades, with sociologists as the pioneers of this field of study.

It is in this context that we have selected to provide a brief review of four important books that have contributed to our understanding of how disasters are generated and their consequences for communities throughout the world. Moreover, they allow us to explore the social construction of disasters showing the relevance of these events for scholars interested in issues such as inequality, stratification, organizations, gender, racial and ethnic relations, the environment, and culture. These books focus on the theoretical and substantive aspects of disasters, providing an extensive analysis of sociological issues that allow us to better understand the social aspects of disasters. We proceed by

*Worst Cases: Terror and Catastrophe in the Popular Imagination*, by **Lee Clarke**. Chicago, IL: University of Chicago Press, 2005. 200 pp. \$22.50 cloth. ISBN: 0-226-10859-7.

*Heat Wave: A Social Autopsy of Disaster in Chicago*, by **Eric Klinenberg**. Chicago, IL: University of Chicago Press, 2002. 320 pp. \$15.00 paper. ISBN: 0-226-44322-1.

*Hurricane Andrew: Ethnicity, Gender and the Sociology of Disasters*, edited by **Walter Gillis Peacock, Betty Hearn Morrow**, and **Hugh Gladwin**. New York, NY: Routledge, 1997. 304 pp. \$175.00. cloth. ISBN: 0415168112.

*At Risk: Natural Hazards, People's Vulnerability and Disasters*, by **Ben Wisner, Piers Blaikie, Terry Cannon**, and **Ian Davis**. New York, NY: Routledge, 2003. 464 pp. \$41.95 cloth. ISBN: 0415252164.

discussing *Worst Cases* which provides a critical overview of some of the most important disasters and catastrophes impacting our societies and the factors (e.g., social, political, and economic) that have contributed to the generation of worst-case scenarios. *At Risk* provides an in-depth overview of the factors that contribute to vulnerability and shows why some individuals and societies are disproportionately impacted by disasters. We conclude by focusing on two case studies, *Hurricane Andrew* and *Heat Wave*, which examine the intersection of a diversity of factors and issues, discussed in the previous two books that contribute to transforming a hazard event into a disaster. Recent events provide a unique opportunity to understand disasters within a larger sociological context, es-

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<sup>1</sup> The authors wish to acknowledge the insightful comments provided by Professor Russell R. Dynes. All correspondence should be addressed to [havidan@udel.edu](mailto:havidan@udel.edu).

pecially focusing on issues of race, class, gender, inequality, and vulnerability.

### From Disasters to Worst Case Scenarios

Clarke's book (*Worst Cases*) is a *tour de force* on "worst-case" scenarios that encourages readers to expand their imaginations and think in "possibilistic" rather than "probabilistic" terms, with the goal of allowing us to better prepare for, respond to, and recover from these events. The book reads like an encyclopedia on "who's who" in terms of disasters, some of which have been labeled "worst-cases." Clarke argues that these events are a result of our social, economic, and political structure. Although indicating that the book is written so that "non-sociologists can read it," the book is immersed in sociological tradition, focusing on social and political structures, social organizations, stratification, inequality, and providing important insights on the extensive knowledge base generated by disaster researchers. Clarke focuses on defining, identifying, and preparing for worst-case scenarios; but what is a "worst-case" scenario? The definition remains quite elusive throughout the book (even Clarke agrees that the definition is quite "malleable"). He argues that once you imagine the "unimaginable," it is no longer a "worst case," as things can always be worse! "Worst cases" are relative to time and space; we define them in the context of previous experiences. In Clarke's terminology, a "worst-case" scenario can be anything from having your child or spouse die, to the explosion of the Challenger, to Hurricane Katrina, to a near earth object impacting the planet.

Clarke's sociological contributions are not based on his ability or inability to operationalize what is a worst case, but on his emphasis that these events are the result of the "human condition"; particularly emphasizing how the organization of society and our economic and political arrangements contribute to increasing societies' vulnerability to disasters; how governments, industries, and other bureaucracies choose to ignore the imminent dangers we constantly face; and their reluctance to think about and prepare for catastrophic or worst-case events given their inability or unwillingness to think outside of the "probabilistic" paradigm. Further, interdependencies of social, economic, technologi-

cal, and transportation networks increase our vulnerability to disasters and have the potential for generating cascading events that may result in worst-case scenarios.

Clarke provides several examples showing how disasters result in patterns of suffering and destruction ("structured destruction") based on racial and class divisions. These patterns "mirror the ways humans organize their societies: along lines of wealth and poverty, division of labor, access to health care, membership in organizations, to name a few" (p. 129). Nevertheless, it is argued that these events provide "opportunities for learning, for political gaming, for the development of new ideas, and even for profit" (p. 131). Clarke indicates that "worst-case" thinking can result in stretching the imagination and in innovations to reduce further catastrophes. One major concern regarding this proposition is that in trying to "force" decision-makers, practitioners, and local communities to think about "worst-cases," we may divert their attention from the "common" or "routine" types of hazard events that result in significant societal disruption, economic losses, and human suffering. Asking these groups to think about the "unthinkable" or the "unimaginable" may serve to distract attention from other important disaster-related issues and concerns. For example, since 9/11, the U.S. federal government has increasingly paid attention and resources to low-probability, high-consequence events (e.g., "worst-cases"), emphasizing terrorism at the expense of the more frequently and "naturally" occurring types of hazards. Thus, while "worst-case" planning may seem quite appealing and "exotic," it may lead to increasing populations' vulnerability to routine hazards, particularly in the absence of adequate disaster mitigation and preparedness.

Moreover, some of the disasters described by Clarke were not necessarily the result of our inability to think about "worst-case" scenarios. Many of these events, whether it be 9/11, the tsunami, or Katrina, were the result of structural failures; governments' and industries' inability or unwillingness to provide adequate funding and training where it was needed; lack of resources for emergency management agencies; inadequate attention to disaster mitigation, preparedness, response, and recovery; lack of maintenance of critical infrastructure; increasing population

concentration in high-risk areas; patterns of social inequality based on race, gender, and class; and, in some cases, outright negligence and disregard for human life. Clarke does highlight many of these factors, but ultimately blames the lack of “worst-case” scenario or “possibilistic” thinking for many of these disasters. Clarke also describes how “power and interest mold what is considered legitimate to worry about” (p. 67), based mostly on self-interests and on the political risks that disseminating such information may pose, thus providing the population a false sense of security and negatively impacting disaster planning and management efforts.

All the worst-case scenarios and “what ifs” proposed by Clarke can be daunting, even for those engaged in disaster research, but his basic ideas and recommendations summarize and reinforce much of what the social science disaster community has shown since its emergence. Despite some Malthusian and even functionalist undertones in Clarke’s writing, the aftermath of Hurricane Katrina should provide the momentum to encourage us to critically think about many of the issues highlighted in *Worst Cases*. This recent disaster (catastrophe, some would argue) brought to the forefront critical issues related to race/ethnicity, stratification, poverty, and inequality in American society and, consequently, the differential impact of disasters on some communities. As discussed in the following section, *At Risk* provides provocative and controversial arguments focusing on the causes and consequences of disaster vulnerability.

### The Construction of Vulnerability

*At Risk* has become a classic in the disaster literature, expanding on and making important contributions to the field of disaster research. This book provides a comprehensive overview of vulnerability, how it is generated, its consequences, and potential solutions as well as how social, political and economic processes contribute to generating disasters. The authors argue that disasters and vulnerability are part of everyday life and are a reflection of how societies are organized. *At Risk* examines the relationship between poverty, development, vulnerability, and disasters. It also focuses on how development and global and economic processes have adversely impacted the environment and soci-

eties thus increasing our vulnerability to disasters. The primary focus of this book is on “less-developed” countries, which experience high levels of disaster vulnerability. The authors argue that a number of variables, including “class . . . occupation, caste, ethnicity, gender, disability, health status, age, immigration status” and the “nature and extent of social networks” (p. 11) impact disaster vulnerability. In this revised edition, they pay some attention to the historical and cultural aspects of societies in order to focus on the “deeply rooted character of vulnerability” (p. 9) but, nevertheless, recognizing people’s capacity to deal with and recover from disasters (e.g., resilience). The authors also discuss how factors such as wars, national debts, famines, droughts, illness, and urbanization place people at risk, increase their vulnerability, and makes the disaster recovery process extremely difficult.

The central arguments of *At Risk* revolve around two models which have had far-reaching impacts in the disaster field: the Pressure and Release (PAR) and the Access Models. The PAR model focuses on disasters as the intersection of “opposing forces,” vulnerability (or the “progression of vulnerability”), and the hazard itself. The so-called “progression of vulnerability” consists of three primary factors: “root causes” (e.g., limited access to power, structure, and resources), which reflect the exercise and distribution of power in a society; “dynamic pressures” (e.g., lack of local institutions, training, local investments as well as more macro forces, such as population growth, urbanization, deforestation, and arms expenditures) that serve to transform the “root causes” into “unsafe conditions.” The latter are the result of the physical environment where people live, the local economy, social relations, and public actions, such as lack of disaster preparedness. Although this model may at times seem simplistic, unidirectional, and static, the authors elaborate on its complexity, the multi-directional features of the same, and the interaction of a host of social, economic, and political factors that contribute to the growth and development of vulnerable populations. The “Access Model” is essentially an “expanded analysis” of the PAR model aimed at providing a more in-depth description of risk and vulnerability. The authors conclude by focusing on strategies to create a safer environ-

ment aimed at reducing risk and vulnerability to disasters. They argue that the implementation of these objectives will require the organization and action of ordinary people, emphasizing the need for “bottom-up” approaches or what some sociologists may call social action and social movements.

If some of their intended audiences (those with power that create vulnerability or those with power who are attempting to do something about hazards) had read this book and had attempted to implement some of the authors’ recommendations, perhaps the social and economic consequences of the Indian Ocean tsunami and Hurricane Katrina could have been avoided or mitigated. However, many of the recommended strategies require significant restructuring of societies and the prevailing social, economic and power relationships; termed by some “social revolutions.” If the argument is made that disasters are essentially the product of capitalism (p. 321), then social, economic, and political reforms or revolutions may be needed in order to eliminate or mitigate the effects of disasters. Local and national governments may generally target their efforts at disaster mitigation, preparedness, or response (and even here there have been catastrophic institutional failures!), but thinking about and linking disasters to “root causes” is something that governments and “power elites” are unable or unwilling to do. Moreover, when political and economic interests take precedence over societal well-being, the end results are catastrophes such as the tsunami and Katrina. As we proceed to discuss *Hurricane Andrew* (and think about Katrina), we can only wonder why we failed or refused to see all the looming warning signs.

### Two Case Studies: From Hurricanes to Heat Waves

*Hurricane Andrew* (an edited volume) focuses on the 1992 hurricane that ripped through southern Florida creating a zone of destruction that damaged over 100,000 homes, leaving more than 180,000 temporarily homeless, and resulted (at the time) in the costliest “natural” disaster in U.S. history. However, *Hurricane Andrew* is more than a rich analytical case study because it shows how race, ethnicity, class, and gender interact in the disaster context and beyond. The authors masterfully demonstrate how minorities, particular-

ly black households, were disproportionately located in poorer quality housing and segregated into low-valued neighborhoods, creating conditions that made storm damage more likely and more difficult to rebuild and repair as working-class minorities had fewer economic resources and shorter lines of credit. The authors show that “not everyone was equally affected” by Hurricane Andrew but that minority groups, women, and the elderly were disproportionately impacted and had greater difficulties in recovering from this event: “Homes were not equally damaged. The same level of emergency relief response did not reach every neighborhood. Recovery assistance was not equally distributed among those with similar needs . . . [and] individuals, households, neighborhoods, and even communities did not have the same recovery resources, either human or material” (p. 8).

The multiple datasets used for this case study are quite heterogeneous, resulting from in-depth interviews, focus groups, a telephone survey of a random sample of households in Dade County, and a family impact study, among others. The chapters in *Hurricane Andrew* provide detailed discussions on warnings and evacuations; life in tent cities; the role of women and the importance of gender in the impacts and outcomes of disasters; how social networks, particularly kin networks, impact the disaster response and recovery process; and how damage to the housing infrastructure, relocation of victims, (un)availability of insurance, and the recovery process varied by race/ethnicity, with racial and ethnic minorities confronting the most severe difficulties in terms of access to “adequate” insurance, and in their (in)ability to recover from such events. These discussions are grounded in a “socio-political ecology” perspective, highlighting how social and economic inequality contributes to increasing the vulnerability of the aforementioned groups.

Although this book has been lauded for highlighting issues of gender, an often overlooked component of disaster studies, it is the insightful research on families and households that has often gone unnoticed in this volume. Specifically, this research found that, following Hurricane Andrew, deaths, divorces, and domestic violence injunctions increased, suggesting that disasters may be an important familial factor in understanding

longer term social problems. Intertwined with theory, and quantitative and qualitative data analysis, *Hurricane Andrew* remains a central work in disaster studies for understanding issues of race, ethnicity, class, and gender in the disaster context and beyond. Certainly, there are many parallels between Hurricane Andrew and Katrina. This book is not only a discussion about disasters, but also about social processes and social structures; it is an important contribution not only to the field of disasters but to the social sciences generally and sociology specifically.

*Heat Wave* is also about the social construction of disasters and how social and economic processes increase vulnerability among certain segments of the population, particularly elderly and minority groups, disproportionately exposing them to the devastating effects of hazard events, such as heat waves. Although Klinenberg is not necessarily in the "tradition" of disaster research and, unfortunately (and quite surprisingly), does not recognize or cite the extensive body of the disaster literature that would serve to strengthen his arguments and discussions, this book is a timely and important contribution to the field of sociology and to disaster research.

Klinenberg focuses on one of the hazard events that perhaps claims the largest amount of victims relative to other hazards and yet has been largely ignored by traditional disaster researchers and is not generally treated by governments or the media as a "disaster." It is noteworthy that shortly after the release of this book, a heat wave (August 2003) impacted a number of countries in Europe resulting in approximately 35,000 deaths. Klinenberg recounts the heat wave that afflicted the residents of Chicago during the summer of 1995. Although the heat did not significantly damage houses or temporarily relocate thousands of residents, according to "official" statistics, it resulted in 521 deaths—more than twenty times the number killed during Hurricane Andrew. Also, thousands of people had to be treated in hospitals, thus overwhelming the city's ability to deal with this disaster. Klinenberg's work is not merely a significant contribution because it draws attention to disasters without physical devastation, but because of its sociological consequences. *Heat Wave* highlights the social conditions that made it possible for hundreds

of residents to die from an event whose outcome may have been largely preventable. The Chicago heat wave was not a random event; it impacted people who were socially isolated, poor, males, elderly, and primarily African Americans.

Utilizing both a social autopsy and an urban ecological approach, Klinenberg highlights the intersections between race, class, age, and geography to show how poor, elderly, working-class African Americans were the most vulnerable in urban areas, a theme repeated in the recent aftermath of Hurricane Katrina. *Heat Wave* provides a significant contribution to disaster research in two main areas. First, it examines issues of race, class, age, and geography within a disaster context. Second, it moves beyond the disaster framework in drawing upon various research traditions from urban ecology to social epidemiology to public policy. Above and beyond its focus on a neglected disaster in the United States, *Heat Wave* is about being poor, black, and aging alone in America.

### Concluding Remarks

Disasters are human-induced, socially constructed events that are part of the social processes that characterize societies throughout the world. Rather than isolated events, disasters should be viewed and studied as part of the normal fabric of societies, which reflect their social, political, and economic structures and social organization (or lack thereof). Furthermore, disasters are not random or equal probability events but are the result of existing social and economic conditions. Therefore, it should come as no surprise that those disenfranchised from political and economic power disproportionately suffer the consequences of these events and have the greatest difficulties in recovering from them. In fact, disasters serve to bring to the forefront the social inequities that characterize contemporary societies.

Although nowhere near exhaustive, we have attempted to highlight several significant contributions to disaster studies in a direction that will prove important to research not only following Hurricane Katrina, but also for years to come. As the disaster field enters its fifth decade, these works provide seminal insight into moving disasters beyond a single event or occasion into a broader framework for understanding larger social

processes and problems such as stratification, inequality, and vulnerability. The aftermath of Hurricane Katrina must serve as a wake-up

call to policy-makers, communities, practitioners, and researchers, if we aim to prevent future disasters or “worst-case” scenarios.

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## Causality and “Natural” Disasters

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ROBERT A. STALLINGS  
*Department of Sociology*  
*University of Southern California*  
 rstallin@usc.edu

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Russell Dynes (Dynes 2000a, p. 113; 2000b) calls the 1755 Lisbon earthquake the world's first modern disaster. Government wrested power from the church and assumed primary responsibility for response, recovery, and rebuilding. In the process, a void was created that would later open the way for a naturalistic explanation of disasters to rival the prevailing belief that they were acts of God. In 1755, the priests of Lisbon continued to preach that the earthquake was divine retribution for the “sins” of Portugal (Dynes 2000b, p. 14), and, as predictions of future earthquakes mounted, clerics of the Portuguese Inquisition held an auto-da-fé on June 20, 1756, in order to avert further catastrophes (see Arouet de Voltaire 1966 [1759], p. 12 and footnote 3, same page).

By the time Hurricane Katrina made landfall in August 2005, the cultural repertoire of causal explanations for disasters had grown considerably. Four ideal-type models were available: natural disasters as acts of God, as acts of nature, as products of human agency, and as merely chance or coincidence. All were put to use to explain what had happened to the city of New Orleans. Evangelical ministers preached that God was punishing the city for past sins and for plans to host a gay and lesbian convention. Several scientists and environmentalists speculated that the intensity of Katrina and the subsequent parade of hurricanes including Rita and Wilma demonstrated that indeed the balance of nature has been affected by global warming. Others dismissed the hurricanes as a coincidence of natural forces and saw the various ways in which New Orleans had been besieged as an improbable (read: chance) occurrence that nobody could have foreseen. Above all, the post-Katrina landscape was filled with finger-pointing politicians and pundits who *knew* who was to blame for the

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*Heat Wave: A Social Autopsy of Disaster in Chicago*, by **Eric Klinenberg**. Chicago, IL: University of Chicago Press, 2002. 320 pp. \$15.00 paper. ISBN: 0-226-44322-1.

*The Vulnerability of Cities: Natural Disasters and Social Resilience*, by **Mark Pelling**. Sterling, VA: Earthscan Publications, 2003. 156 pp. \$111.57 cloth. ISBN: 1-85383-829-2. \$32.60 paper. ISBN: 1-85383-830-6.

*Acts of God: The Unnatural History of Natural Disaster in America*, by **Ted Steinberg**. Oxford, UK: Oxford University Press, 2003. 320 pp. \$19.95 paper. ISBN: 0-19-516545-4.

*Perils of a Restless Planet: Scientific Perspectives on Natural Disasters*, by **Ernest Zebrowski, Jr.** Cambridge, UK: Cambridge University Press, 1997. 320 pp. \$24.99 paper. ISBN: 0-521-65488-2.

catastrophe on the Gulf Coast, and they were sure that it wasn't Mother Nature.

The five books reviewed here represent a fairly broad spectrum of perspectives on natural disasters. In what follows, I will describe the etiology of disasters offered by the authors, whether they invoke more than one causal model, and if so how these are interwoven or reconciled.

Ernest Zebrowski (*Perils of a Restless Planet*) holds professorships in both science edu-

cation and physics. Thus the question is not whether natural causes are in evidence, but whether any of the other three causal models are discussed. Sure enough, Nature and Mother Nature (capitalized, even) appear throughout, often anthropomorphically: Mother Nature “behaves” in ways that scientists seek to understand. Human agency does play a role, however. Sometimes it is an “aggravating factor.” More generally, it is the natural human tendency to cluster (p. 126) that provides “Mother Nature with increased opportunities to wreak destruction” (pp. 125–126; see also pp. 96, 98, and 104).

Zebrowski’s treatment of causality is instructive. He reminds readers that for Isaac Newton there were only reciprocal links between objects: “One object does not influence a second unless the second also influences the first. Which is the cause, and which is the effect? It’s the observer’s call” (p. 38). To scientists, the effects of a building on hurricane-force winds are just as important (in understanding how structures dissipate energy, for example) as the role of wind in “causing” the building’s destruction. But the latter “quite natural anthropocentric viewpoint” predominates even though it can “lead to serious oversights”: “A swollen river devastates a growing city, and we view the flood as the cause of the devastation. We are not inclined to question whether the presence of the city itself may have caused the flood (through local deforestation, for example, or through construction of dikes that prevented the river from dispersing onto a natural floodplain)” (p. 38).

Even more interesting is Zebrowski’s discussion of chaos or the *butterfly effect*. While not identical with the chance model that I have in mind, it is similar in that what is unknown is treated as chaotic, that is, having no pattern (p. 281). Natural disasters “have one characteristic in common: a sensitive dependence on seemingly innocuous variations in initial conditions. These are phenomena where small disturbances often escalate to larger ones, and if the initial causative agent changes only slightly, the larger effects can differ quite dramatically” (p. 263). The problem for scientists is the inability to measure these initial phenomena (pp. 263–264). The result is that science may never be able to explain, predict, or control “the irreproducible events that become natural disasters” (p.

286). However that may be, this is splendid background reading for nonscientists on the state of the art in “disaster science” as of the mid-1990s.

Mark Pelling is a human geographer whose focus in *The Vulnerability of Cities* is on the poor, the powerless, and the marginalized in urban areas of the developing world. For Pelling, the balance of explanatory power has swung from nature to human agency; chance and the supernatural have nothing to do with disasters. They may have a “natural trigger” (p. 3), but Pelling rejects any “one-way line of causality” because “risk in the city is an outcome of a myriad of feedback loops” (p. 7); “it is becoming increasingly difficult to separate the human and ‘natural’ causes of hazards and disaster events” (p. 15). Human intervention, primarily poor economic development decisions, has altered the natural environment, increasing both the risks of hazards and the consequences of disasters. These risks and consequences are borne disproportionately by the urban poor.

In the first part of the book, Pelling develops a framework linking the distribution of power and the control of scarce resources such as housing to “the (re)production of human vulnerability and its reciprocal, resilience” (p. 46). In the second part, he presents case studies of cities with contrasting political systems to demonstrate the relationship between political organization and vulnerability. Throughout, Pelling lumps together risk, hazards, vulnerability, and disaster (both everyday or chronic and catastrophic) after carefully distinguishing them early on (Box 1.1, p. 5). Especially convincing is his depiction of the “vicious circle” (p. 55) of catastrophic and chronic disasters (e.g., poor sanitation, substandard housing, and air pollution): the latter contribute to the onset of the former, reduce the willingness to prepare for them, and, after the fact, reduce the ability to recover from them (pp. 15–16).

The book is well-written, and the arguments are clearly spelled out and applied. Still, there is an uncomfortable feeling of tautology about the whole project. Vulnerability and disaster victimization are not only products of the lack of political and economic power, but also the “signifiers” (p. 6) and indicators (p. 182) of them. Although vulnerability is the subject throughout, the book is more about poverty and powerlessness and

about the negative effects of economic development than about disasters *per se*.

Sociologist Eric Klinenberg's *Heat Wave* has been reviewed extensively and was even the subject of a special symposium in this journal (*Contemporary Sociology* 33 (2004): 137–156; see also the author's rejoinder, Klinenberg [2004]). His portraits of the victims in Chicago and of the circumstances of their lives and deaths "suggest that the heat wave was an environmentally stimulated but socially organized catastrophe" (pp. 20–21). Nature, in other words, was necessary but not sufficient; human agency, or in Klinenberg's words "the social and political production of deprivation and suffering" (p. 21), was decisive.

For Chicago's mayor and his administration, the spate of deaths in July 1995 was a potential "political disaster" (p. 167). The city's response included concerted efforts to keep the focus on nature. This required the use of some subtle rhetorical devices. The adjective "heat-related" was added whenever deaths were discussed (p. 174), and the phrase, "government can't guarantee that there won't be a heat wave," was repeated frequently (p. 175). The official report of the mayor-appointed commission that investigated the tragedy avoided the use of "heat wave" and "heat disaster" altogether; its executive summary called the disaster "a unique meteorological event" (p. 179), suggesting it had been a chance convergence of natural forces rather than a predictable summertime phenomenon.

The city administration's efforts to stress the "natural causes" explanation were aided by local news media. Early on, a *Chicago Tribune* editorial argued that "to blame the mayor for an act of God is not only unfair, but it also does an injustice by wrongly framing the debate" (p. 144). Local media made much of the conflict between the mayor and the county's chief medical examiner over whether the heat-related deaths were "really real" (pp. 202–205; on the term "really real," see p. 13), downplayed dissenting voices that pressed other causal explanations for what had happened (pp. 205–206), and generally reinforced the framing of events as having been caused by nature (p. 211). For readers interested in the social construction of disaster causality, chapter 4 (pp. 165–184) on the city's response to its "political disaster" and

chapter 5 (pp. 185–224) on the local news media's coverage of the catastrophe are especially useful.

Ted Steinberg (*Acts of God*) is an environmental historian. His position on disaster etiology is clear: "This study examines the causal essence of calamity, peeling back the layers of obfuscation to find out not so much *what* but *who* is most often responsible for the destruction caused by tornadoes and other 'natural' disasters . . . I'm . . . interested in how drawing a distinction between *us* and *it* and blaming the latter—nature—for calamity has become a tool used to advance various political interests in society" (p. xii; italics in the original). In each of four case studies of hazards and disasters, he makes the case that business interests promoted naturalistic explanations as a way of sustaining postdisaster economic growth.

Steinberg is at his best in unraveling the interplay of God, nature, and human agency in federal disaster relief laws over the last four decades (pp. 173–184). He argues that federal policymakers, by emphasizing that disasters are acts of God, have been able "to evade moral responsibility for death and destruction" (p. 192). By agreeing that disasters are products of unforeseeable natural forces, Congress can avoid accounting for them through the normal budgeting process and instead pay for disaster relief through budget cuts. The result, he argues, is that current federal disaster policy punishes the poor twice—by making it harder for them to receive postdisaster aid and then by reducing funding for the social programs that benefit them the most to pay for disaster relief. If you can overlook the author's occasional outbursts of moral indignation (e.g., "cold-blooded class warfare"; pp. 58 and 193), this book is an exceptional assessment of the political uses of causality associated with disasters.

Lee Clarke (*Worst Cases*), a sociologist, invites readers to imagine the worst catastrophes conceivable, using what he calls "possibilistic thinking" (p. 5) as an antidote for exclusively envisioning future disasters in probabilistic terms (pp. 41–48). He touches upon three of the four explanatory models, but one—human agency—receives greatest emphasis ("Humans cause their own destruction"; p. 161). Nature plays its role in worst cases, of course, but the real villain is hubris

on the part of elites. Coincidence can create or exacerbate some types of calamities, but Clarke points out that invoking chance as an explanation for tragedy allows people to avoid responsibility for past disasters and to do nothing about future ones.

Clarke reminds readers that disasters are normal. As tragic as their consequences are, catastrophes nevertheless constitute learning opportunities if we come to see them as such. They have “silver linings” (p. 150); if viewed properly, they can throw light on the workings of power, politics, and organizations. There is no guarantee that we will learn from them, however. Disaster experience can be a blinder as well as an eye-opener. This is especially true, Clarke contends, when elites are able to impose the law of averages on thinking about future disasters. Such probabilistic thinking limits planning and preparedness, including the mental preparation of the public-at-large, to the most likely event rather than the worst possible event. Thus we are poorly prepared for the atypical, but easily imaginable, calamity such as the terrorist attacks of September 11, 2001, or the devastating effects of a Category 5 hurricane on the city of New Orleans (see pp. 161–162, a paragraph obviously written before August 29, 2005).

Clarke’s amiable chat with his readers includes numerous illustrative cases to make the point that the seemingly inconceivable is entirely possible, given past events. *Worst Cases* is packed with gems for laypeople and scholars alike. For example, to counter the notion that worst cases are unique, one-of-a-kind events, Clarke begins an inventory of their defining characteristics (high body counts; special victims, often children; frightening themes such as radiation; etc.; see pp. 9–16). He also presents an invaluable discussion of the appropriate use of counterfactuals in imagining worst cases including the use of “what ifs” and “if onlys” (see pp. 63, 65, and 81–84). In addition to hubris, the other *bête noire* in Clarke’s narrative is risk communication, which he calls a “shell game” employed to create an uneven playing field benefiting the powerful by justifying undemocratic decisions and hiding the extent to which risks and rewards are unequally shared (see pp. 102–107). In place of risk communication, Clarke advocates *risk deliberation*, a more open and participative process in which

elites and citizens debate future risks (pp. 108–109).

*Worst Cases* is a short book (185 pages of narrative) written in a nonjargonistic, conversational style to make it accessible to a wide readership. It must have been a fun book to write, allowing the author to be free of many of the linguistic and scholarly conventions in more formal academic writing. My hope is that the “right” people—among elites who decide what risks we face, among the public-at-large who share them disproportionately and often unknowingly, and among academics who study them—don’t miss the many insights generously peppered throughout this work.

Overall, these five authors, like the public-at-large, are unwilling to rely solely on nature to explain the causes of disasters. All recognize the role of human agency, albeit in different ways. Unlike twenty-three percent of respondents surveyed for an *ABC News/Washington Post* (2005) poll one month after Katrina struck, none advance an act-of-God explanation for disasters. Only in the work of the physical scientist does chance receive serious consideration.

If I were to quarrel with these authors, it would be over their seeming willingness to accept one (or a combination) of the ideal-typical causal explanations as objectively real. Human agency is now taken for granted as one of if not *the* true cause of natural disasters. Of course, this has a lot to do with tools of the trade in various disciplines—social action or social organization in the case of sociology, for example. Still, I would have preferred that the authors acknowledge that all four causal models are social constructions. Regardless of their own personal views on disaster etiology, they are tools of the trade in our attempts to understand the words and deeds of those we study—including ourselves. Analyzing beliefs about the causes of catastrophes does not require endorsing one and invalidating others (see Gusfield 1984 in response to Becker 1967).

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