

Risking House and Home:
Disasters, Cities, Public Policy

John M. Quigley and Larry A. Rosenthal
Editors

2008
Berkeley Public Policy Press
Institute of Governmental Studies Publications
Berkeley, California

Cover: Loma Prieta Earthquake, October 17, 1989. San Francisco, California.
Collapsed and burned buildings at Beach and Divisadero streets in the city's
Marina District.
Photograph: C. E. Meyer, US Geological Survey

Library of Congress Cataloging-in-Publication Data

Risking house and home : disasters, cities, public policy / John M. Quigley
and Larry A. Rosenthal, editors.

p. cm.

Includes bibliographical references.

ISBN 978-0-87772-427-8

1. Disaster relief—United States. 2. Insurance, Disaster—United States. 3.
Urban policy—United States. I. Quigley, John M., 1942- II. Rosenthal, Larry
A., 1959-

HV555.U657 2008

363.34'80973—dc22

2007043427

Contents

Tables and Figures	vii
Preface and Acknowledgments	xi
1. Introduction: Disasters, Cities, Public Policy <i>John M. Quigley and Larry A. Rosenthal</i>	1
INSURANCE	
2. Public Versus Private Underwriting of Catastrophic Risk: Lessons from the California Earthquake Authority <i>George Zanjani</i>	17
3. Financing Catastrophe Insurance: A New Proposal <i>Dwight Jaffee and Thomas Russell</i>	37
4. Reflections on US Disaster Insurance Policy for the 21st Century <i>Howard Kunreuther</i>	47
CATASTROPHE	
5. Obstacles to Clear Thinking About Natural Disasters: Five Lessons for Policy <i>Alan Berger, Carolyn Kousky, and Richard Zeckhauser</i>	73
6. Macroeconomic Impacts of Catastrophic Events: The Influence of Resilience <i>Adam Rose</i>	95
7. Hurricane Katrina: Catastrophic Impacts and Alarming Lessons <i>Kathleen Tierney</i>	119
GOVERNMENT POLICY	
8. Economic Resilience, Fiscal Resilience, and Federalism: Evidence from 9/11 <i>Howard Chernick and Andrew F. Haughwout</i>	139

9. The Economic Impacts of Alternative Terrorist Attacks on the Twin Ports of Los Angeles-Long Beach <i>Harry W. Richardson, Peter Gordon, James Moore, Jiyoung Park, and Qisheng Pan</i>	173
10. Socioeconomic Differences in Household Automobile Ownership Rates: Implications for Evacuation Policy <i>Alan Berube, Elizabeth Deakin, and Steven Raphael</i>	197
References	223
Contributors	241

Hurricane Katrina: Catastrophic Impacts and Alarming Lessons

7

Kathleen Tierney
University of Colorado

Abstract

Hurricane Katrina was the most damaging catastrophe in US history, with losses far exceeding those recorded for other US disasters. At least thirteen hundred people were killed and many thousands were injured. More than nine months after the hurricane, and with the start of the 2006 hurricane season, little progress had been made with respect to mitigation and reconstruction planning in the Gulf Coast region, and thousands of victims remain displaced. Numerous lessons have been learned as a consequence of the Katrina catastrophe, and longer-term research promises to advance knowledge in the physical sciences, social and policy sciences, and engineering. This chapter focuses on four issue areas that immediately became evident during and after the hurricane: the need for greater recognition of the qualitative distinctions that exist among emergencies, disasters, and catastrophes; the need to view disasters and catastrophes from the perspective of vulnerability science; the need to recognize that the US is not prepared for future catastrophic events, and that current plans constitute “fantasy documents” designed to persuade various audiences that government agencies are capable of managing future extreme events; and the need to understand and address problems associated with “elite panic” in the context of hazards and disasters. More generally, perhaps more than any other recent disaster, Katrina reveals the political dimensions of extreme events and their management.

Introduction

Hurricane Katrina now ranks as by far the costliest disaster in US history. We may never know how many lives were lost as a consequence, but we do know that Katrina is among the most deadly disasters in modern US history. Katrina’s devastating impacts were worsened by a sluggish and ineffective response by all levels of government and by a lack of leadership on the part of high-ranking federal government officials and others who were incapable of recognizing

Katrina's catastrophic potential, even after the storm made landfall. This chapter focuses first on facts and statistics that convey information on why this event was so catastrophic. It then moves on to discuss four key lessons learned from Katrina and their implications for the nation's ability to manage future extreme events, including natural disasters and other perils.

Recipe for Catastrophe: Katrina and its Impacts

Information about the Katrina catastrophe is now widely available, but it is still useful to review basic facts on the storm and its impacts. Katrina was the third major hurricane and the first Category 5 hurricane of the 2005 hurricane season. It was the sixth-strongest storm ever recorded for the Atlantic and the third strongest hurricane on record to make landfall in the United States. Katrina first made landfall in the US as a Category 1 hurricane north of Miami on August 25, 2005. After gathering force over the Gulf of Mexico, Katrina slammed into Louisiana, Mississippi, and Alabama as a Category 4 storm on Monday, August 29. The storm's path traveled just to the east of New Orleans. The storm surge from the hurricane covered over two hundred continuous miles of coastline in the Gulf region, with heights ranging from ten to thirty feet. Biloxi, Mississippi, received a thirty-foot surge, the highest experienced by a US city in recorded history. The hurricane also gave rise to thirty-six confirmed tornadoes.¹

At this time, it is still impossible to determine how many people died as a result of Katrina. Indeed, it may never be possible to fix that number with any degree of certainty. The official death toll indicates that 1,319 people died in the hurricane, counting both landfalls. Eighty-two percent of those killed were from Louisiana. Initial analyses indicate that the elderly were significantly over-represented among those who died; for example, among those decedents who had been identified and examined in the St. Gabriel Morgue outside New Orleans, sixty-seven percent were over sixty years of age, and forty-four percent were over seventy-five—far in excess of the representation of those age groups in the general New Orleans population (Bourque et al., 2006). Many still remain missing as families continue their futile search to locate their loved ones. Recent reporting indicates that Katrina is still continuing to kill, with mortality rates assessed as especially high for the elderly and perhaps in particular nursing home residents that were forced to relocate.

Katrina was the deadliest hurricane to strike the US since another Florida hurricane, the Lake Okeechobee Hurricane, killed over eighteen hundred people in 1928. The largest loss of life in any US hurricane occurred in the 1900 event in Galveston that killed an estimated 8,000 people. One report on Hurricane Katrina observed that "hurricanes with high death tolls mainly predate satellite monitoring and forecasting systems that were thought capable of preventing modern high-casualty events" (Risk Management Solutions, 2005:3). As we

¹ For a good summary of Katrina's impacts, see Risk Management Solutions (2005).

now know, monitoring and forecasting systems in fact did a very good job of tracking Katrina and predicting both its landfall in the Gulf region and its catastrophic impacts. Responsibility for the late and insufficient response to Katrina resides not with the accuracy of models and forecasts, but with the highest levels of US leadership.

Most of those who died as a direct result of the storm were from New Orleans and nearby communities—a metropolitan area that was then home to approximately 1.3 million people. The largest single contributor to the death toll in Katrina was the fact that the storm caused breaches in the levee system in New Orleans, allowing water to flow from Lake Pontchartrain directly into the city. Approximately eighty percent of New Orleans was flooded, and an estimated 100,000 people who had been unable or unwilling to evacuate were trapped in their homes and other locations around the city. It has long been recognized that New Orleans is essentially a bowl surrounded by bodies of water—the lake and the Mississippi River—and only the levee system keeps the city from being inundated. The levee system itself was perhaps only strong enough, at best, to protect the city from a fast-moving Category 3 hurricane. Indeed, the potentially catastrophic impacts of a large hurricane striking at or near New Orleans had already been well-documented (see, for example, Bourne, 2004; Laska, 2004).

With respect to injuries, the US Centers for Disease Control and Prevention reported that an injury surveillance system it had put in place for the Greater New Orleans area received over 7,500 health-related “events”—illnesses and injuries—during the period between September 8 and September 25. This includes both injuries to residents and to emergency workers (Centers for Disease Control, 2005). An epidemiologic study of those who were evacuated to the Astrodome in Houston—the overwhelming majority of whom were from New Orleans—found that thirty-three percent of evacuees had experienced health problems or injuries during the hurricane and resulting flood (Bourque et al., 2006).

The short- and longer-term mental health impacts of Hurricane Katrina are yet to be determined, but given the scope and severity of the event, as well as the mass displacement that occurred as a result of the hurricane, those impacts are expected to be large. Counseling programs funded by the Federal Emergency Management Agency (FEMA) as part of its Stafford Act responsibilities have been set up in twenty states.

Reports issued in fall 2005 indicated that approximately 416,000 housing units were destroyed by Katrina, while 85,000 housing units suffered major damage. The hurricane disproportionately affected renters and low-income households. In a September 2005 report, the National Low Income Housing Coalition (2005) estimated that overall, forty-seven percent of the dwellings that were destroyed were rental units (the proportion in New Orleans was higher—fifty-five percent), and that seventy-one percent were what could be considered low-income or basic “affordable” housing units. A more recent report reveals that damage to and destruction of rental units was especially high in the city of New Orleans, and that many homeowners (not the majority but a substantial

minority) had no insurance to cover their losses (Department of Homeland Security, 2006 [analyses conducted by HUD]). The hurricane left an estimated one million people homeless in what one report called “a humanitarian crisis on a scale unseen in the US since the Great Depression” (Urban Land Institute, 2006:11; see also Nigg, Barnshaw, and Torres, 2006).

Estimates of economic loss vary, depending on how those losses are counted. The total insured losses from Hurricane Katrina have been estimated at between \$40 and \$60 billion—with \$35 to \$50 billion attributable to wind and storm surge during the landfall on the Gulf Coast and to the flooding in New Orleans. Total losses are expected to exceed \$125 billion (Risk Management Solutions, 2005). This number includes only physical losses, not the full costs associated with providing relief and disaster recovery assistance to affected households, businesses, and communities. For the states of Louisiana, Mississippi, and Alabama, the US Congress has passed two supplemental appropriations bills providing a combined \$62.3 billion for relief and recovery needs.² The area affected by Katrina-related disaster declarations spans 90,000 square miles, or an area almost the size of the United Kingdom, which provides some idea of the geographic scope of the relief and recovery challenges. While total losses from this disaster will no doubt rise, to date the assistance provided to the region is only a fraction of what was promised.

The hurricane disrupted business and economic activity over a wide region. The US Department of Labor has estimated that there were approximately 163,000 business establishments in the areas most affected by Hurricane Katrina and later by Hurricane Rita. These establishments employed about 2.7 million workers (US Department of Labor, 2005). While some workers are continuing to be paid by their employers even though those businesses are shut down, others are not. Still others have been offered positions by their companies in other areas.

In the aftermath of Hurricane Katrina, the US and the Gulf region face a set of challenges associated with recovery, reconstruction, environmental remediation, and the mitigation of future hazards that is perhaps the most daunting and challenging in US history. Even the reconstruction of Galveston following the 1900 hurricane and the rebuilding of San Francisco after its 1906 earthquake and fire do not come close to the scale and complexity of managing recovery in such a large regional disaster. Katrina’s absolutely devastating and continuing impacts will require reconstruction of communities that are both livable and safe from future disasters. More than a year after the event, the region and its residents are still awaiting the help they so desperately need.

² It is important to note that not all of these funds will actually be disbursed in the impact region. This total includes monies that will be transferred to other federal agencies, including in particular the Department of Defense, to reimburse those agencies for expenses incurred during disaster response operations.

Katrina's Lessons

Research on Hurricane Katrina will add immeasurably to our understanding of both the causes and the consequences of catastrophic disasters. New projects funded by agencies such as the National Science Foundation will provide insights on topics ranging from broad environmental impacts to the experiences of children who survive catastrophic disasters.³ Results from the many studies that are being conducted on Katrina will become available as those studies are concluded. In this chapter, I focus on four immediate lessons learned (or relearned) following the Katrina disaster. In discussion that follows, I show how Katrina constituted a political crisis as well as a societal catastrophe and discuss how the authorities responded accordingly.

Size Matters

One important lesson that was relearned is that emergencies, disasters, and true catastrophes like Katrina differ in very significant ways.⁴ From a common-sense point of view, disasters are merely large emergencies, and catastrophes are just large disasters. Many emergency managers and members of the general public think this way. However, as indicated in Table 7.1, as the scale of severity escalates from routine emergencies, such as large auto accidents and major structure fires, to disasters, and then to catastrophes, both the impacts and the management challenges associated with response and recovery differ significantly. More important, these differences in scale are not merely quantitative: they are qualitative.

In emergencies, responding agencies are generally from the local area. Agencies follow standard operating procedures, impacts tend to be localized, and emergencies are typically brought under control without the need to request aid from higher levels of government. Emergencies generally do not result in major degradations of communications and management infrastructural elements, nor do they occasion a large outpouring of aid and assistance from the residents of the communities in which they occur. Instead, emergency tasks are handled mainly by uniformed first responders, such as fire, police, and emergency medical service (EMS) providers.

In contrast, disasters, by their very definition, are events that cannot be handled solely by local emergency response agencies. Mutual aid and the provision of assistance from state and federal government are necessary. Resources

³ For details on projects funded through the University of Colorado's Hazards Center, its Quick Response Program, and the National Science Foundation (NSF), see the November 2005 and January 2006 issues of the *Natural Hazards Observer*, downloadable via <http://www.colorado.edu/hazards>.

⁴ This section is partly based on discourse related to the definition of disasters, e.g., Quarantelli (1996) and Perry and Quarantelli (2005).

Table 7.1 Emergencies, Disasters, and Catastrophes

Emergencies	Disasters	Catastrophes
Impacts Localized	Impacts Widespread, Severe	Extremely Large Physical and Social Impacts
Response Mainly Local	Response Multi-Jurisdictional, Intergovernmental, But Bottom-Up	Response Requires Federal Initiative, Pro-Active Response
Standard Operating Procedures Used	Disaster Plans Put Into Effect—But Major Challenges Remain	Massive Challenges Exceed Those Envisioned in Standard Plans
Vast Majority of Response Resources Are Unaffected	Extensive Damage to, Disruption of, Key Emergency Services	Emergency Response System Paralyzed at Local and Even State Levels
Public Generally Not Involved in Response	Public Extensively Involved in Response	Public Extensively Involved in Response
No Significant Recovery Challenges	Major Recovery Challenges	Cascading Long-Term Effects, With Massive Recovery Challenges

needed for the smooth operation of crisis response systems may be rendered nonoperational or even completely destroyed—as occurred, for example, following the 2001 World Trade Center attacks, when New York City lost its emergency operations center, or following Hurricane Andrew in 1992, when the emergency management system was rendered almost useless. In disasters, members of the public immediately become involved in the initial disaster response, performing important tasks such as emergency search and rescue as was seen, for example, in the 1985 Mexico City earthquake, Loma Prieta, Northridge, and many other earthquake events (Tierney, 1994). Public involvement is so extensive because even in what would be considered severe disasters, the “impact ratio” is such that there are more many more survivors than victims.

In disasters, interorganizational and intergovernmental coordination challenges are orders of magnitude larger than they are during routine emergencies. Local responders must work with counterparts from other jurisdictions and the state and federal government with whom they may never have had previous contact. This convergence of resources and volunteers often results in confusion,

turf battles, and time spent on working out roles and responsibilities. Much more so than emergencies, disasters always contain an element of the unexpected: challenges continually develop that require rethinking, redirection of resources, creativity, and improvisation. Unlike smaller-scale emergencies, disasters cannot be run by the book, because new problems continually develop.

Catastrophic events have fortunately been very rare in US history, although they have not been uncommon in other societies. Globally, there have been a number of truly catastrophic disasters in the last hundred years, including the 1923 Great Kanto earthquake and fire in Tokyo, which killed an estimated 143,000 persons; the 1976 Tangshan earthquake in China, which resulted in approximately 250,000 deaths; the tropical cyclone that struck Bangladesh in 1970, which caused at least 500,000 deaths; and, more recently, the Indian Ocean earthquake and tsunami catastrophe of 2004 (Noji, 1997 [statistics on disaster mortality and morbidity]). In the US, probably only four events warrant classification as genuine catastrophes: the 1900 Galveston hurricane, the 1906 San Francisco earthquake and firestorm, the 1927 Mississippi River floods, and now Katrina.

Catastrophes can be distinguished from disasters along several dimensions: there are extremely large physical and social impacts; large areas are affected; there are many deaths and injuries, proportionate to survivors in the impact area; and property and infrastructural damage are very severe and extensive. Of key importance, the systems that normally support social and economic life are destroyed. The formal emergency response system is paralyzed, both because of overwhelming demand and because the system itself lacks the resources to operate under catastrophic conditions. Because the formal aid system in the impact region is not operating, much more formal assistance is needed from outside the impact area. At the same time, it is extremely difficult to deploy those resources once a catastrophe has struck, owing to the sheer damage and disruption catastrophes cause.

Catastrophes thus present unique challenges. However, what they have in common with disasters is that community residents still rise to the occasion and help one another—even when impact ratios are very high. Because this is the case, the informal or nongovernmental sector has a large initial role to play, particularly in the immediate response to catastrophic events.

While disasters always bring large challenges, the consequences of catastrophes are particularly severe and complex. Catastrophic events typically produce massive and unanticipated cascading problems, such as the environmental contamination and public health hazards that have come to light in the Greater New Orleans area and the political struggles accompanying the recovery process throughout the Gulf region.

These distinctions are not merely academic. They have very important implications for policy and practice. At the most fundamental level, qualitative differences in response requirements as events “scale up” remind local governments that their capacity to handle everyday emergencies does not mean they are capable of responding effectively to major disasters and near-catastrophic and

catastrophic events. Further, these contrasts show that standard procedures for initiating and carrying out response activities during disasters will not be sufficient for the management of catastrophes. For organizations and institutions charged with managing extreme events, responding to the challenges these events produce means developing a capacity to “embrace surprise” (LaPorte, 2006).

At the national level, it now appears that in the aftermath of Katrina, federal officials are beginning to realize that the kinds of extreme events that the National Response Plan (NRP) terms “incidents of national significance” and “catastrophes”—designations that the plan’s authors clearly meant to apply to terrorism-related events—can also be triggered by natural disasters. Unfortunately, because this threat was not recognized by the president and other high-level officials, Katrina was not even designated an “incident of national significance” until August 30, the day after the hurricane made landfall. Under existing plans and policies, nothing prevented the federal government from initiating a response even before Katrina made landfall—nothing, that is, except its own inability to grasp that Katrina was a catastrophe (not a disaster) in the making.⁵

Social Inequality Matters

Traditional and common-sense perspectives on disasters see those events as “acts of nature” or “acts of God” that produce random effects and victimize the rich and poor alike. In contrast, recent theoretical formulations—derived from the emerging interdisciplinary paradigm known as “vulnerability science”—conceptualize disasters and catastrophes as occurring at the nexus of three sets of conditions: physical vulnerabilities rooted in the “hazardousness of place,” including vulnerabilities associated with event frequency, severity, and the fragility of the physical environment and ecological systems; the vulnerability of the built environment in at-risk regions, which is associated with land-use and building practices and the physical condition of buildings and infrastructures; and social vulnerability, as indicated by such factors as income, wealth, ethnicity, age, citizenship status, ability to adopt self-protective measures, and social and cultural capital (see Blaikie et al., 1994; Cutter, 2001; Cutter, Boruff, and Shirley, 2003; Cutter, 2005).

Social vulnerability is related to such factors as “the basic provision of health care, the livability of places, overall indicators of quality of life, and accessibility to lifelines (goods, services, and emergency personnel, capital, and political representation)” (Cutter, 2005). Seen in this light, social vulnerability to

⁵ Both the framework for declaring events “incidents of national significance” and the Catastrophic Annex of the National Response Plan give the federal government wide latitude for mobilizing response resources without requests from local or state governments. Broadening the power of the federal government to pre-empt lower jurisdictions was seen as important for waging the so-called “war on terrorism.”

disasters is yet another manifestation of inequities that exist in other realms of social life, including intergroup differences in: access to safe and secure housing, health care, and educational opportunities; political power and influence; and the ability to exercise agency and choose among various options in making life decisions.

These connections were widely discussed in the research literature long before Katrina,⁶ but it took Katrina to vividly demonstrate the meaning of social vulnerability before the entire world. Katrina dramatically revealed the differential impacts and experiences that result from the juxtaposition of place-based vulnerability, infrastructure fragility, and large differences in the options available to individuals and groups, based on their positions in the social order. Southern Louisiana in particular was highly vulnerable owing both to its location and to the ongoing destruction of natural hurricane protections (e.g., rapid loss of barrier islands and wetlands). The survival of New Orleans was dependent on a levee system that turned out to be too fragile to survive a major hurricane without experiencing cascading failures. With respect to social vulnerability, axes of diversity such social class, age, race and ethnicity, and gender structured both life-chances and the assistance that was made available to hurricane victims. To cite just a few obvious examples, social class was one factor determining whether those at risk were able to evacuate. When mandatory evacuations were ordered, those with automobiles and cash and credit to purchase gasoline and hotel rooms were able to act on those orders more easily than those without transportation and financial resources.⁷ Age was clearly another factor. Elderly persons typically have strong attachments to place and are averse to changes in their daily routines—even if those changes may enhance their safety and quality of life. For those reasons, elderly residents were overrepresented among Katrina's "holdouts," and also overrepresented among the dead.

Race and gender were also associated with differential treatment by officials charged with managing the catastrophe. African Americans, and particularly young black males, were heavily policed and labeled as potential safety and security risks in the aftermath of Katrina. Those who were trapped and desperate following the flooding of New Orleans—mainly the poor, people of color, and persons with disabilities and medical problems—were left to fend for them-

⁶ See, e.g., Peacock, Morrow, and Gladwin (1997), Bolin (1997), Enarson and Morrow (1998), Tierney, Lindell, and Perry (2001), and Tierney (2005).

⁷ The mandatory evacuation was issued later than it should have been. In his recent book *Come Hell or High Water* (2006), Michael Eric Dyson reports that New Orleans Mayor Ray Nagin delayed issuing the mandatory order by as much as one full day owing to pressure from business interests. Nagin faced a dilemma that is common in hurricane evacuation situations: if he issued an earlier order, allowing sufficient time for people to evacuate, he would have faced criticism from the business community if the storm missed New Orleans or was less severe than predicted. If he waited until predictions became less uncertain, there would be insufficient time for those left in the city to evacuate. Nagin chose the latter course. In the meantime, residents who had the means to evacuate left voluntarily before the mandatory order was issued.

selves as response personnel focused on looting and lawlessness (see discussion below). Once survivors reached emergency shelter facilities such as the Superdome, they were under constant surveillance, and their movements were restricted.

Initial observations by quick-response researchers indicate that in at least one temporary shelter, located at a military base in Arkansas, blacks and whites were segregated, and armed guards patrolled the shelter for the ostensible purpose of “maintaining order.” Interviews with shelter residents indicate that while whites appreciated the heavy police presence because it made them feel safe, blacks felt criminalized and humiliated (Austin and Miles, 2006). When transportation could be arranged, displaced residents were then relocated, evidently without their consent, to other sites around the US for additional emergency shelter and temporary housing.

It is clear that social class and other social capital factors will structure individual, household, and neighborhood recovery trajectories in the aftermath of Katrina. Nine months after the hurricane, large numbers of former New Orleans residents are being prevented from returning to their homes and neighborhoods, both by official order and by the fact that utilities have not been restored in many parts of the city, such as the predominantly African-American Ninth Ward. The strategies used to supply temporary housing for those lacking other options, such as administering payments so that victims could live in hotels (and then withdrawing that support) and providing trailers and building trailer parks totally lacking in amenities, have become national scandals. One can speculate that such measures are intended to discourage and demoralize poor evacuees and to prevent the formation of social groupings capable of advocating on behalf of these victims, with the goal of ultimately forcing them to give up their hopes of returning to their homes.

Preparedness versus Planning Fantasies

A third lesson learned as a result of Katrina is that the nation in fact has no effective plans for responding to catastrophic events. The US does have the NRP, and that plan does have a section known as its “Catastrophic Annex” (see Department of Homeland Security, 2004). However, those plans were unfortunately not developed with guidance from physical or social scientists, disaster policy experts, or experienced emergency managers. Instead, they reflect the work of nonexperts, consultants, and bureaucrats who were pressed hard to produce documents indicating that the nation can manage future terrorist events. On paper, the Catastrophic Annex does provide a degree of guidance, but the Annex, like the NRP itself, simply reiterates what DHS *wants to do and wants to accomplish* during very large-scale events. Both the plan and federal guidance on extreme event management focus heavily on operational and tactical approaches to disaster response, such as the National Incident Management System (NIMS), while neglecting broader policy and strategic concerns. The re-

sponse scenarios laid out in those plans assume that those in charge, including in particular the DHS secretary and the president, will actually recognize a catastrophic or potentially catastrophic disaster when they see it and will act accordingly. That certainly did not happen before, during, or after Katrina.

Additionally, in federal planning initiatives, the concept of catastrophe is closely linked with chemical, biological, and nuclear weapons of mass destruction. Because funding opportunities for states and local communities closely track federal concerns, it is perhaps understandable that response agencies at all levels of government have followed federal signals, adjusting their plans and activities to focus increasingly on the terrorist threat. Current planning initiatives at all levels are almost entirely focused on perils other than natural hazards, despite the fact that the NRP and its annexes do occasionally mention earthquakes and other natural disasters as potentially catastrophic.

Far more influential for the planning and preparedness establishment is the fact that, of fifteen different scenarios for which all governmental agencies are required to plan pursuant to Homeland Security Presidential Directive #8 and the National Preparedness Goal, thirteen involve various forms of terrorism as well as other exotic threats. Planning to manage the two natural disasters on the list, hurricanes and earthquakes, seems far less challenging than developing plans and training and exercise scenarios for other threats on which all levels of government are required to focus, including attacks using chemical, biological, radiological, nuclear, and explosive (CBRNE) agents, as well as cyberterrorism and pandemic flu. Further research is required, but in Katrina's aftermath it seems highly plausible that DHS leaders like Chertoff, a former Justice Department lawyer, may have considered the problems associated with catastrophic disasters "solved" through earlier governmental efforts.

Disaster plans and other federal initiatives designed to manage extreme events can be viewed as a form of political rhetoric. Gilbert White, professor emeritus at the University of Colorado and founder of its Natural Hazards Center, is known for often telling struggling doctoral students that "the best dissertation is a done dissertation." So too with plans for controlling large-scale and catastrophic events. In Homeland Security Presidential Directive #5, the president ordered the development of the NRP, and the bureaucracy obliged.⁸ In due course, the plan was developed and published in final form in December 2004, over the signature of former DHS Secretary Tom Ridge. However, it is unclear how many officials who were assigned responsibilities in the NRP had actually read and understood the plan as the nation entered the 2005 hurricane season.

Readers will perhaps by now recognize the relevance of Lee Clarke's work on "fantasy documents" for understanding the NRP and other planning initia-

⁸ Following the promulgation of Homeland Security Presidential Directive #5, funding for the development of the NRP was originally provided through a no-bid contract to the RAND Corporation. Initial drafts of the plan were widely criticized by experienced emergency managers and disaster and homeland security specialists. This pushback occurred despite a public relations campaign to "sell" the document to various constituencies. The NRP ended up being developed with significant input from federal officials.

tives. During his research on the 1989 *Exxon Valdez* oil spill, Clarke first observed that aside from whatever else they may seek to accomplish, organizational and government plans have symbolic and rhetorical value. After closely studying the plans developed by oil companies and other entities responsible for oil-spill management in the aftermath of the Exxon spill, Clarke saw that such plans were designed to convey to outside audiences, including regulators and the general public, that catastrophic oil spills such as the *Exxon Valdez* can be successfully controlled—a claim that is at variance with what is actually known about such spills.

Later, in *Mission Improbable: Using Fantasy Documents to Tame Disaster* (1999), Clarke made the case even more strongly, analyzing planning for such events as nuclear war and major nuclear power plant accidents. Clarke's main point is that plans for such events must be understood as a type of persuasive communication, and their purpose is to convince audiences that organizational entities have the capacity to control situations that by their very nature cannot be controlled, at least given state-of-the-art practices. Thus plans exist for cleaning up vast amounts of spilled oil in places like Prince William Sound, even though doing so is a practical impossibility. The NRP and related documents serve the same purpose for terrorism and catastrophic disasters.

Particularly in the period following the September 11, 2001 terrorist attacks, and at a time when the threat of pandemic influenza looms large, the demand for plans to manage large-scale and unfamiliar threats has expanded. In an overheated post-9/11 atmosphere of fear, the credibility (if that term can now be used) of the federal government rests upon its ability to appear prepared for any eventuality. The development of the National Response Plan itself reflects that concern. Although the federal government already had a plan for coordinating federal resources in major disasters, called the Federal Response Plan, that plan was scrapped following 9/11 in favor of new planning efforts.

The new federal plan for pandemic influenza is a model fantasy document. It discusses in great detail what the Bush administration and the Department of Health and Human Services *want to see happen and want levels of government and public and private organizations to do* (and the guidance is direct and detailed), while remaining silent on the feasibility of plan implementation. There are currently no data on what is actually being done, either at the federal level or at other governmental levels, to address the numerous requirements outlined in the plan. Nonetheless, the existence of the plan purports to signal that the federal government and HHS have the pandemic flu threat under control.

Elite Panic and Its Consequences

Decades of research indicate that panic on the part of the public is extremely rare in disasters of all types, including catastrophic events. The virtual absence of public panic has been documented repeatedly in studies of all types of disasters, most recently and notably in the National Institute of Standards and

Technology (NIST) investigation of building occupant behavior in the World Trade Towers at the time of the September 11, 2001 terrorist attacks (NIST, 2005). While the danger of *public panic* during disasters and catastrophes is not a problem, the danger of *elite panic* is. Particularly in the aftermath of Katrina, there is growing evidence that the threat of elite panic, especially in the face of very large-scale disaster events, is quite real.⁹

Disasters and in particular catastrophic events disrupt the social order in major ways, making elites very uncomfortable because they fear both a loss of control and a loss of legitimacy. And elites should harbor such concerns. Both the Somoza dictatorship in Nicaragua and the dominance of the Institutional Revolutionary Party (PRI) in Mexico were undermined owing in part to citizen discontent over government mismanagement following major earthquake events (Olson and Drury, 1997; Olson, 2000). Here in the US, mismanagement of both local and large-scale disasters has had significant negative consequences for elected leaders, as evidenced by political fallout from snowstorms in Chicago and Hurricane Andrew in Florida. On the positive side, the conduct of New York Mayor Rudolph Giuliani following the 9/11 terrorist attacks enhanced not only Giuliani's image but his political capital. Disasters thus have the potential for either strengthening or derailing both political careers and larger political agendas. From the perspective of political rhetoric and dramaturgy, disasters constitute a stage on which political figures and interest groups must perform—and must be perceived as performing effectively.

The research record shows that, with political stakes so high, major disasters and impending threats can fuel elite panic on both local and national levels. Such panic takes a variety of forms, including: pathological fear of social disorder and of segments of the population that are not part of the elite; practices designed to protect private property and other elite prerogatives; and postevent efforts to identify and punish scapegoats and hastily usher in new “reforms.” Elite panic was shockingly evident during Katrina, as evidenced by media and public officials' obsessions with looting and lawlessness, the issuing of shoot-to-kill orders arising primarily out of a concern with property crime, and the rush to act upon rumors that circulated regarding the “savage” behavior of lower-class community residents, immigrants, and people of color (Tierney, Bevc, and Kuligowski, 2006). Although many of the media reports and official actions undertaken in response to Katrina in New Orleans seem reprehensible now, at the time they made sense both to political elites and to many Americans.

Episodes of elite panic like those that took place during Katrina are in fact nothing new. In his recent book *The Great Earthquake and Firestorms of 1906* (2005), Philip Fradkin provides detailed accounts of the draconian measures undertaken against the poor and people of color by government and civic leaders during the 1906 earthquake, the 1871 Chicago fire, and the 1900 Galveston hur-

⁹ For a set of examples of elite panic, see Lee Clarke's presentation, “GIGO about Social Behavior,” downloadable via <http://dimacs.rutgers.edu/Workshops/Modeling/slides/clarke.ppt>.

ricane. Following the 1906 earthquake, for example, “shoot-to-kill” orders were immediately given to control those labeled as looters, and such orders tended to be carried out against poor and working-class earthquake victims. At the same time, as Chinese residents fled the city only to find themselves segregated in camps far away from white victims of the earthquake, well-off men and women, as well as soldiers, looted Chinatown and took away statues, china, antiques, and other valuable goods.¹⁰ Fradkin’s accounts of the vicious rumors that spread following the 1906 earthquake—rumors about so-called “ghouls” who severed the ears and fingers of the dead in order to steal their jewelry, for example—resonate with the tales of murder and rape that spun out of control in Katrina’s aftermath. When she called off emergency rescue operations on September 1, 2005, so that public safety agencies could devote all their attentions to looting, and when she warned that looters would be shot by seasoned Iraq war veterans who were patrolling the streets of New Orleans with their weapons locked and loaded, Governor Kathleen Blanco of Louisiana was not only acting illegally—she was acting much in the same way as other political figures had during previous catastrophic disaster events.

By essentially making disaster-victim status in New Orleans a crime (indeed, a crime punishable by death), these kinds of actions further hampered the response and contributed to the misery victims were experiencing. How many lives were lost in New Orleans while rescue workers sought to put down looting? How much resident-to-resident helping behavior was prevented or suppressed because people were afraid to venture out to help their neighbors out of fear of being killed or arrested? These are the tangible, measurable consequences of elite panic in the face of catastrophe.

Scapegoating, another form of elite panic, also took hold immediately following Hurricane Katrina. Michael Brown, the FEMA director, was an obvious target, even though new policies and plans such as Homeland Security Presidential Directive #5 and the NRP clearly assign ultimate leadership responsibilities in major crises to the DHS Secretary, rather than the FEMA director. First relieved of his post and later forced to resign, Brown was denounced as incompetent and unqualified, demonized by the same government officials that were responsible for his appointment in the first place, and made the brunt of numerous satires by cartoonists and late-night comedians. Meanwhile, others whose egregious errors contributed to the Katrina-response debacle were allowed to resign quietly,¹¹ and many DHS officials continue to hold high-level positions for which they are unqualified.

¹⁰ It should be noted, however, that even in this case the looting was short-lived, and while no measures were taken initially to prevent the looting of Chinatown, it was clear that many San Franciscans disapproved of this behavior, and looters ultimately desisted.

¹¹ For example, Matthew Broderick, head of the DHS Operations Directorate and the Homeland Security Operations Center (HSOC), resigned effective March 31, 2006, following the House of Representatives report on Katrina, which singled him out for failing to inform high-level officials of the storm’s devastating impacts. Broderick, whose HSOC agency is billed as the high-tech “nerve center” in the battle against terrorism,

Elite panic is evident in the post-Katrina “search for answers” and the “search for solutions”—marked, for example, by congressional hearings carried out by the US Senate Committee on Homeland Security and Governmental Affairs and various investigations by the Select Bipartisan Committee (2006), the White House (2006), and other agencies. From the point of view of political rhetoric and symbolism, such investigations must be done, and done quickly, regardless of their effectiveness in bringing about real change. To convince a skeptical public that Katrina was an anomaly, “lessons learned” from the catastrophe had to be incorporated into preparedness initiatives in time for the 2006 hurricane season.¹² At least that is the mindset in Washington—similarly reflected in the passage of the PATRIOT Act immediately following the 9/11 attacks.

Despite calls by the disaster research community for an independent, objective, nonpartisan scientific study of the Katrina debacle, reports generated by these federal “investigations” are in themselves fantasy documents. The White House report quibbles over where to put the deck chairs, recommends measures that emergency management professionals have been doing for years, charges federal agencies to do what they are already supposed to be doing, and argues for an expanded role for the military in disaster response—a recommendation that cannot be justified on the grounds of response efficiency and effectiveness (Tierney and Bevc, 2006). The report of the Select Bipartisan Committee (essentially a Republican body, because many Democrats chose not to join) is much more detailed—and more damning—but again there is a perceived lack of independence from governmental institutions that makes this report less compelling than it could be.

This is not to disparage inquiries like these, or the many other investigations that are being undertaken by the entities such as the Army Corps of Engineers and the American Society of Civil Engineers regarding the levee breaks. Rather, the regrettable fact is that in many cases such investigations and reports constitute only symbolic measures that are meant to stave off harsher criticism, make the public feel that national leaders are once again in control, and demonstrate that the systemic problems Katrina exposed are being fixed. These kinds of “lessons learned” documents can result in sound recommendations as well as symbolic ones. The key question is whether those recommendations that are sound will lead to action and change.

The 9/11 Commission recently criticized governmental agencies for failing to follow through on its recommendations for improving homeland security. Unfortunately, however, tracking the impacts of other postdisaster calls for reform does not inspire confidence. After Hurricane Andrew, for example, the

based his judgments concerning the severity of the hurricane and levee breaks on CNN footage showing revelers in the French Quarter, even though he should have known that 80% of New Orleans was under water at the time.

¹² Among the modifications to the National Preparedness Goal that are currently underway is an expanded emphasis on crime and looting.

National Academy of Public Administration conducted an independent investigation of the poor governmental response to that disaster and what needed to be done to avert future debacles (National Academy of Public Administration [NAPA], 1993). That report stated in part:

- the president should have a domestic crisis monitoring unit to assure that the federal response to catastrophic events is timely, effective, and well coordinated;
- FEMA was like “a patient in triage” that should either be treated or left to die;
- FEMA could only play its appropriate role in disasters if the White House and Congress took significant steps to make it a viable institution;
- the only political appointees in FEMA should be the director and deputy director
- FEMA should develop a competent and professional career staff and should have a career executive director;
- an all-hazards approach should be taken to the management of extreme events;
- FEMA and emergency management were overseen by too many congressional committees; and
- the military should not be assigned a greater role in domestic disasters and crises.

Recommendations developed in the aftermath of Katrina have a lot in common with those developed by NAPA. Questions remain regarding the extent to which post-Katrina recommendations are implemented, and to what effect.

Concluding Observations

One year after Hurricane Katrina, little is known about the fates of those who lost their homes, livelihoods, and loved ones as a result of the catastrophe. There is no meaningful plan in place for conducting recovery activities on a scale commensurate with Katrina’s devastating impacts. Questions remain regarding the longer-term psychosocial and environmental impacts of the hurricane, as well as the ability of the tens of thousands who have been displaced to put their lives back together against all odds. Major issues regarding future hurricane and flood mitigation, rebuilding and reconstruction, and the provision of appropriate and affordable housing remain to be addressed. Recovery processes in the Gulf region will unfold over time, and those processes must be documented. If past research is any indication, those processes will themselves be shaped by exactly the same political-economic pressures and social inequities that characterize everyday life in this nation. Outcomes will be uneven across different social units, and many will never recover. Politics will play a powerful role in deter-

mining who gains and loses as a result of the hurricane, and disaster-stricken communities will change in ways that it is not yet possible to envision.

The issues and findings discussed here raise a number of troubling questions centering on risk, safety and security, future threats, and disaster and homeland security policy. The following is a short list of questions that should be addressed by both researchers and the public policy community:

- If the nation could not ready itself to respond to a familiar and seasonal hazard for which there were days of notice, what are the implications for suddenly occurring disasters (e.g., a 7.0 earthquake event on the San Francisco Bay Area's Hayward fault) and for exotic and unfamiliar threats?
- With the confidence of African Americans, other minorities, and the poor so seriously undermined as a consequence of Katrina, what are the implications for trust in government and in official information sources in future potential crises, such as pandemic flu and terrorist attacks? Can credibility that has been lost be regained? If not, what are the consequences for diverse communities at risk?
- How will key institutions respond to the so-called "lessons" of Hurricane Katrina? What new initiatives will be put in place, and whose interests will they serve? To what extent will the wrong lessons be learned and incorporated into planning for future incidents of national significance, e.g., lessons concerning looting, lawlessness, and the need for strict social control (and, indeed, military control)? Will militaristic and other ideologies associated with the war on terrorism increasingly permeate plans for managing such incidents?
- And finally, what new surprises will subsequent hurricane seasons bring? Will the Gulf region be victimized once again? Will new plans for protecting at-risk populations prove adequate? Will the federal government, with the assistance of the Northern Command (NORTHCOM) immediately federalize and militarize responses to future large-scale disasters? And if so, will the policing of disasters gradually become a routine feature in a nation that previously relied on civil society institutions to manage such threats?

This discourse illustrates the many ways in which hazards, disasters and politics intersect. Disaster scholarship has long noted that decisions regarding hazard and disaster management are fundamentally political ones. Political forces drive decision making across the entire hazard/disaster spectrum, beginning with the initial framing of hazards as social problems requiring governmental intervention, through political agenda-setting, decisions regarding mitigation options such as land use and building codes, crisis planning and response, post-disaster action such as the issuing of presidential disaster declarations and the provision of disaster assistance, and subsequent policy making.¹³ Indeed, as J. M. Barry's gripping account of the 1927 Mississippi floods (1998) shows, occa-

¹³ See, e.g., Rossi, Wright, and Weber-Burdin (1982), May and Williams (1986), Stallings (1995), Sylves and Waugh (1996), Birkland (1997), Burby (1998), Platt (1999), and Olson (2000).

sionally political elites can even decide where disasters will occur and who will be victimized. In that case, politicians and members of the economic elite developed a strategy to bomb levees along the Mississippi River in order to spare New Orleans as a center for capital accumulation, flooding vast amounts of land and incurring severe losses in surrounding parishes.¹⁴ Following the 1906 San Francisco earthquake, political leaders launched a public relations campaign that singled out postearthquake firestorms, rather than the earthquake itself, as the major cause of disaster losses and that downplayed the seismic risk in the Bay Area. This was done to reassure eastern banking interests that San Francisco and the Bay region remained safe places in which to invest (Hanson and Condon, 1989; Fradkin, 2005). While more starkly evident in 1906 and 1927, political agendas and economic interests are inevitably interwoven with the fabric of societal vulnerability and loss. The deeply political nature of hazards and extreme events has perhaps become even more clear in the post-9/11 atmosphere, in which public fears are manipulated by interests seeking political and economic advantage. Indeed, September 11 ushered in an almost continuous state of elite panic, the effects of which will only be understood over time. One thing, however, is certain: as more information on both Katrina's antecedents and its short- and long-term consequences becomes available, the role of politics in the creation of one of the worst disaster debacles in US history will become ever more apparent.

¹⁴ The events of 1927 are part of the history and culture of Louisiana. The knowledge that politicians deliberately decided to sacrifice neighboring parishes during the great Mississippi flood in order to ensure the safety of New Orleans undoubtedly had an influence on the rumors that spread following Hurricane Katrina, which contended that the levee breaches within New Orleans were a consequence of willful acts of sabotage.

Government Policy

