CHAPTER 1

Risking More, Losing More

Thinking About Risk and Resilience

DISASTERS, RISK, AND RESILIENCE

The first decade of the twenty-first century was marked by disasters of epic proportions, both in the United States and around the world. The terrorist attacks of September 11, 2001, left over two thousand dead and ushered in a new age of terror. In late 2004, the Great Sumatra-Andaman Earthquake and the tsunamis that followed killed approximately 230,000 people in fifteen nations. Hurricane Katrina struck the Gulf Coast in August 2005, washed away coastal communities, and drowned the city of New Orleans, killing at least 1,800 and displacing hundreds of thousands of people. In May 2008, tens of thousands died in a major earthquake in China's Sichuan province. A crisis in the global financial system, which began slowly and almost invisibly gained momentum, came close to causing a total meltdown of the world financial system in the fall of 2008. Complete collapse was averted, but the United States and other nations around the world were plunged into a deep and prolonged recession. In January 2010, a 7.0-magnitude earthquake struck Haiti. The death toll in that catastrophe is in dispute but could number as many as 300,000. More people lost their lives in Haiti than in any disaster that had ever occurred in the Western Hemisphere. Relative to the size of Haiti's population, the death toll made the earthquake the deadliest disaster to strike any nation in modern times. Just weeks later, a massive 8.0 earthquake struck off the coast of Chile; it was among the largest temblors ever recorded. In April 2010, a volcanic eruption in Iceland resulted in widespread flooding in that nation and spewed ash into the atmosphere, shutting down air travel to and from numerous airports in Europe, including its two largest, London Heathrow and Frankfurt, for days. That same month, on April 20, an explosion on the British Petroleum-operated *Deepwater Horizon* oil platform and drilling operation caused the largest oil spill in U.S. history, far surpassing the 11-million-gallon *Exxon Valdez* spill

of 1989. The environmental, economic, and human consequences from that event were catastrophic for a region that was still in the process of recovering from Katrina.

As the first decade of the twenty-first century closed, the bad news kept rolling in. The summer of 2010 saw massive wildfires in Russia that blanketed Moscow in an ashen haze and threatened facilities storing nuclear material. Pakistan saw the worst flooding in its history that same summer as the rain-swollen Indus River inundated one fourth of the nation's land and affected over twenty million people. In 2010 and 2011, a series of earthquakes devastated the central business district and numerous residential areas in Christchurch, New Zealand. Then in March 2011 came the most costly natural disaster of modern times: the Richter magnitude 9.0 earthquake in Japan and the deadly tsunami it spawned, which was followed by a nuclear power plant emergency that rivaled Chernobyl in its severity. This trifold horror was the best-documented disaster in history. People around the world were stunned by images of the almost unbelievable destruction caused by the earthquake and tsunami—images that were soon replaced by those of damage, explosions, and frantic efforts to avert total catastrophe at the troubled Fukushima Daiichi power plant. Many asked how such a series of events could so devastate a nation that is considered a model for earthquake hazard mitigation and preparedness.

In 2012, Superstorm Sandy battered New Jersey and New York City, washing away parts of coastal downs, inundating large sections of New York City's underground infrastructure, destroying or damaging hundreds of thousands of homes and businesses, and causing life-threatening power failures. Sandy was the second-most costly hurricane in U.S. history, after Katrina, and its destructiveness served as a wakeup call for those who either don't believe that climate change is real or think that its impacts will be felt far in the future or somewhere else.

While disaster losses continued to escalate, scientists around the world increasingly endeavored to understand the extent to which heat waves, wildfires, floods, and other extreme events could be attributed to a changing climate and to discern what the future might hold with respect to climate-related extreme events. Sea-level rise began to affect

communities in Alaska and elsewhere across the world, and the term "environmental refugees" gained currency as a way to describe people and communities moving in retreat from the impacts of climate change.

At the same time, the public and the media struggled to make sense of what they were seeing and experiencing. As the first years of the new century wore on, people in the United States who had been stunned and traumatized by the 9/11 attacks became less concerned about the potential for a terrorist attack and more concerned about burgeoning losses from disasters like Katrina and Sandy and the ongoing fallout from the financial crisis and the BP oil spill. Decisions about the usefulness of purchasing insurance for hazards like floods, hurricanes, and earthquakes became more problematic, and insurers and reinsurers worried about their exposure to catastrophic events. At the same time, disaster experts continued to advocate for insurance premiums that would reflect the risk of building or buying in a particular location. New flood risk maps released by the Federal Emergency Management Agency caused widespread public dismay and no small measure of outrage, as property owners who previously believed they had some idea of the risk they faced from flooding were told that they were more, or sometimes less, at risk than they thought.

Like the Three Mile Island nuclear disaster of 1979 and the Exxon oil spill of 1989, the *Deepwater Horizon* catastrophe and the Fukushima nuclear disaster led direct victims and the general public alike to again question the faith they place in the ability of corporations and the governmental institutions that oversee them to manage risky technologies. Throughout this ceaseless parade of misfortune, people were always happy to contribute aid to disaster victims, both in the United States and around the world, but compassion fatigue became increasingly common as media attention skidded from one disaster to the next.

The first years of the new millennium left little doubt that whatever else economically well-off and technologically advanced nations like the United States have achieved, they have not discovered the antidote for disaster. More lives are lost as a result of disasters in less developed nations than in developed ones, but economic losses tend to be much greater, and on the increase, in developed countries; and as the earthquake that

struck Kobe, Japan, in 1995 and the 2011 triple disaster demonstrated, disasters in prosperous nations can also exact large death tolls when the right—or rather, wrong—conditions are present. Poverty often leads to high disaster vulnerability, but vulnerability does not always translate into larger impacts. Not only does wealth have perils of its own, like exposure to disruptions in global air travel and the cyber infrastructure and to nuclear accidents, but the lack of wealth can motivate poor people to develop mutual aid and support systems that help them cope and recover well when disaster strikes. The idea that high incomes automatically provide protection from danger, like most oversimplifications, is undercut by evidence of disasters that affect the rich as well as the poor. Similarly, as discussed later in this volume, even though the poor often suffer disproportionately when disasters strike, the notion that poor people are invariably helpless in the face of disaster is another simplifying trope that is invalidated by empirical findings.

The experiences of the new millennium's first few years raise many questions. What accounts for escalating disaster losses, and why do they seem so out of control? With so much available scientific knowledge regarding hazards and risks, why do we seem to be unable to anticipate and prevent future disasters? Why was the nation blindsided by the financial meltdown that occurred in 2008? Worse yet, why didn't trusted financial experts like former Federal Reserve chief Alan Greenspan see the meltdown coming and warn us? Why did the *Deepwater Horizon* disaster resemble the *Exxon Valdez* spill so closely, with BP standing in for Exxon Shipping, first offering reassurances about its ability to fix a massive oil gusher a mile under the Gulf of Mexico, and then promising to make whole the victims of its risky drilling strategy, even as it became increasingly clear that those statements were falsehoods? Was nothing learned in the twenty-one years that separate those two catastrophic spills?

This book offers a framework in which to view questions like these. The general answer is that disasters of all types occur as a consequence of common sets of social activities and processes that are well understood on the basis of both social science theory and empirical data. Put simply, the organizing idea for this book is that disasters and their impacts are socially produced, and that the forces driving the production of disaster

are embedded in the social order itself. As the case studies and research findings discussed throughout the book will show, this is equally true whether the culprit in question is a hurricane, flood, earthquake, or a bursting speculative bubble. The origins of disaster lie not in nature, and not in technology, but rather in the ordinary everyday workings of society itself.

The idea that disasters are socially produced represents a departure from current and historical ways in which disasters have been characterized. Looking at disasters as social productions requires a shift in thinking, away from the notion that the forces of nature—or in the case of financial catastrophes, human nature—produce disasters and toward a fuller understanding of the role that social, political, economic, and cultural factors play in making events disastrous. A key contribution of this book is to connect events that the general public, the media, and many risk scholars consider unique events and to show that despite their surface differences, such occurrences can be traced back to similar causal factors.

This book also focuses on the concept of disaster resilience and the ways in which risk and resilience are related. While risk and disaster scholarship have historically focused on disasters and their negative consequences, studies have only recently focused explicitly on preexisting, planned, and naturally emerging activities that make societies and communities better able to cope, adapt, and sustain themselves when disasters occur, and also to develop ways of recovering following such events. Like risk, resilience also arises from the social order as an inherent property of social organization, as a consequence of intentional actions aimed at lessening the impacts of disaster, or as a spontaneous outpouring of collective innovation when disastrous events occur.

Because the roots of both risk and resilience exist within the social order itself, societies, communities, and organizations have the power to reduce risk and become more resilient. This theme appears throughout the volume. Catastrophic disasters like Hurricane Katrina, the Haiti earthquake, and the BP oil spill and economic disasters like the financial meltdown of 2008 and its aftermath were not inevitable. A key element in preventing future catastrophes is to better understand the social forces that produce them, and then to take action to address those forces and

strengthen our capacity for resilience in the face of future threats. Floods, hurricanes, and earthquakes will inevitably occur because of natural processes that are outside our control, but flood, hurricane, and earthquake disasters can be greatly reduced through a broad range of risk reduction and resilience-enhancing activities. The boom-and-bust cycles that are characteristic of global capitalism can be made less extreme, and measures can be instituted that cushion the negative effects of economic downturns. An argument anchoring many of the book's discussions is that we already know a great deal of what we need to know in order to reduce the pain, suffering, and other losses associated with disasters, but that applying that knowledge is difficult because of institutional inertia and especially because of the benefits those in power obtain through activities that increase risk.

UNDERSTANDING RISK AND RESILIENCE

Risk and resilience are the twin topics that guide the discussions in the chapters that follow. Risk represents the potential for loss—a potential that is actualized in the presence of "triggers" that are either external or internal to social systems. Such triggers can include natural occurrences (such as tornadoes and heavy rainfall, leading to floods), accidents involving technology, and crises in societal sectors such as financial institutions.

The book also focuses on resilience, a term that has become something of a buzzword in research and policy circles, but that understood appropriately, points to ways in which risks and losses can be reduced. The concept of resilience refers to the ability of social entities (for example, individuals, households, firms, communities, economies) to absorb the impacts of external and internal system shocks without losing the ability to function, and failing that, to cope, adapt, and recover from those shocks. Like risk, resilience arises from the social order. It is no accident that some families, communities, and societies are more resistant to and better able to cope with disastrous events than are others. Disaster resilience in its many forms is rooted in a range of social structural, economic, and cultural preconditions. Moreover, I argue that the same general social arrangements and attributes that enable social entities to be resilient in the face of many other types of crises operate in similar ways

in disasters. Risks and subsequent losses can be contained if individuals, groups, and other entities undertake actions that make them less "brittle" and failure-prone, and more robust, flexible, and adaptable. In a certain sense, then, resilience is the obverse of risk; risk-inducing processes set the stage for more frequent and (in particular) more catastrophic failures and losses, while resilience-inducing processes counter that tendency.

Considering risk and resilience in tandem is important. While risks can be reduced—and must be, unless we are willing to tolerate ever-ballooning losses—no society can eliminate risk. Increasing resilience can both contain risk, making disastrous events less likely, and help those who are at risk better cope with crisis when it happens.

The theoretical and conceptual frameworks introduced here are based on a range of sources. Prior research on the sociology of disasters and the social production of risk is one such source. Research on organizational performance, adaptation, and risk-reduction strategies is another. Discussions of the financial collapse draw upon materials ranging from recent publications to news reports and analyses.

The discussions of societal resilience are based on scholarship in a number of fields, including ecology, psychology, engineering, and sociology. Here again, the emphasis is on identifying and analyzing the social and institutional sources of resilience. Like a number of other scholars, I characterize resilience as consisting, on the one hand, of inherent and preexisting qualities and attributes that enable at-risk entities to absorb stresses caused by external shocks, and on the other, of adaptive or post-event activities and processes that enhance coping capacity. As with risk, my perspective on resilience is shaped by my prior research experience, which includes work on resilience conceptualization, predisaster capacity building, and resilient postdisaster responses.

The book is divided approximately equally between discussions of its two primary concepts. This chapter sets the stage for later discussions by arguing that because both risk and resilience have their origins in the social order itself, communities, societies, and organizations have the ability to reduce their risks and increase their resilience; however, powerful social forces stand in the way of such improvements. The second chapter focuses on the concept of risk and on some of the ways it has

been studied in the past. While scholars have done a good job of shedding light on some aspects of risk, such as the factors that influence how people perceive risk, their laboratory experiments have not done as well in illuminating how risk-related decisions are made in the real world. More significant from my point of view, they have almost always ignored even more important questions, such as how risks are generated in the first place. I take up that question in Chapter 3, describing in general the societal sources of risk, including culture and institutional and organizational practices that contribute to the buildup of risk. The ideas are unsettling, because they show that risk is a normal consequence of everyday practices employed by societies and communities as they go about their business. I then delve more deeply into the social production of risk. Chapter 4 provides a perspective on cultural assumptions and cognitive styles that help to produce risk, such as the value placed on continual growth and wealth accumulation, faith in technology's ability to protect us from risk, routine aspects of organizational cultures that suppress knowledge concerning the riskiness of places and practices, and other cognitive blinders that create an inability to envision what can happen when things go disastrously wrong, as they did in the financial crash of 2008. Chapter 5 discusses institutional and organizational arrangements and practices that increase risk or cause organizations and institutions to overlook it. One such practice is the offloading of risk, which occurs when social actors create risks that are passed on to others. Another is the failure to learn and change behaviors in response to crises and near failures. We like to think that the risks that arise from our dealings with nature and technology do so in a manner that is unintended. However, discussions of disasters in this chapter and elsewhere in the book show how the potential for catastrophic failures is often well understood beforehand, but is ignored or downplayed. In Chapter 6, the final chapter in the section on risk, I discuss broader trends in the social production of risk, such as globalization, urbanization, and lax controls on land use.

Many of my discussions on risk-producing processes, as well as the examples I provide, draw upon principles from the field of political economy, which, broadly speaking, emphasizes the links that exist among politics, the exercise of political power by elites, and economic activities,

as mediated by formal institutions and informal cultural practices. This intellectual influence can be seen in my emphasis on the politics of the local growth machine as a driver of risk production; on various forms of rent seeking, such as regulatory capture and the use of political influence to increase land values and profits while also increasing risk; and on the dark side of globalization, which too often culminates in the expansion of disaster vulnerability. Using a political economy lens shows us that risk is quite often a byproduct of the pursuit of profit, enabled by too-pliable institutions that unknowingly or knowingly allow risk to expand.

Chapter 7 focuses on the concept of resilience and discusses two types of resilience: inherent and adaptive. In addition to already existing in particular types of social arrangements, resilience is commonly enhanced through planned activities (for example, appropriate land-use management), as well as through spontaneous or emergent actions that develop during crises. The chapter concludes with discussions on inherent resilience. Chapter 8 focuses on adaptive resilience, which is activated when disasters occur. Adaptive resilience is manifested in many ways; examples include the spontaneous mobilization of people and resources during disasters, improvisation, and collective sensemaking. Along with Chapter 7, this chapter discusses how to assess and enhance the capacity for postdisaster adaptation. Both chapters emphasize the role of social capital in cushioning the effects of disasters, encouraging successful postdisaster coping, and speeding recovery.

The concluding chapter revisits the argument made in this one that both risk and resilience are socially produced—pointing out again that since this is the case, societies, communities, institutions, and organizations can reduce risk and achieve higher levels of resilience. However, because risk and vulnerability are outcomes of the exercise of political and economic power in their various forms, confronting risk also means confronting power. For this reason, risk- and resilience-related efforts must go far beyond current approaches.

Throughout I offer examples of the ways risk is produced and allowed to grow, as well as examples of resilience-enhancing activities. Cases focus on risk management successes and failures, and discussions deal with disasters that have occurred and disasters that are waiting to happen,

such as a catastrophic earthquake in Northern California and perhaps even in the New Madrid Fault Zone in the Central United States. Here again, the point is that a lot is already known about risk buildup and how to slow it; however, because current political and economic arrangements keep that knowledge from being applied, risk and vulnerability will continue to expand.