

**Disaster Research and Future Crises:
Broadening the Research Agenda**

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Introduction: A Fork in the Road

Today's crises and disasters pose formidable challenges to politicians, public administrators, first responders, and ordinary citizens. The 9/11 events, SARS, the Asian tsunami, Hurricane Katrina and her sisters, the giant earthquake in the Indian-Pakistan region, and the looming threat of a new flu pandemic—these are but a handful of recent crises that seem to outstrip human capacity for dealing with large-scale adversity.

There is, of course, nothing new about hurricanes, earthquakes, terrorist attacks and epidemics. They pose new challenges, however. Globalization and modernization tightly connect life-sustaining systems, which renders these systems increasingly vulnerable to breakdowns. In addition to causing untold misery within a bounded geographic area, the modern disaster hurts faraway and seemingly unrelated populations. Hurricane Katrina not only destroyed a large part of New Orleans and its neighboring regions, she also sent US airlines into a tailspin, slowed economic recovery in Europe and worsened famine in Malawi.¹ The Asian tsunami killed tens of thousands in multiple countries; it also created a full-blown political crisis in Sweden, as the Swedish government seemed ill-prepared to repatriate its vacationing population (hundreds of Swedes were among the tsunami victims).

The traditional challenges of crisis and disaster management—prevention, preparation, response and recovery—are taking on new dimensions. Questions of prevention become moot when the causes of disaster lie in faraway domains beyond anyone’s direct control (be it terrorism or climate change). As “traditional” disasters seem to follow erratic and unimaginable scenarios, disaster plans lose their meaning. Recent crises and disasters have exposed the inadequacy of traditional processes and structures, which were designed to deal with more traditional forms of adversity. The aftermath of today’s crises and disasters is marked by instant politicization, which all too often creates an entirely new crisis for both crisis leaders and disaster victims.

The prospect of a flu pandemic has authorities across the world now scrambling for plans, tools, conceptual anchors, road maps—some idea, in short, of what to do when such a mega-disaster strikes. The question, then, is what crisis and disaster researchers can bring to the table and in which areas they remain wanting. This article focuses on the latter: which topics do modern crises and disasters suggest for the research agenda?

To be sure, the disaster research community—most broadly defined—has soundly developed and matured in the post-World War II decades. The disaster field harbors a well-developed body of insights and findings with regard to the behavior of people in the face of threatening situations. This field teaches us about—I cite arbitrarily from the catalogue—evacuation behavior, early warning systems, the interaction between media and the general public, the organizational capacity and coordination of emergency services, but also the religious beliefs underpinning the perceptions and behavior of disaster-stricken populations. The crisis field—again broadly defined—has provided us with valuable insights on critical decision-making, political leadership, learning, and aftermath politics.²

These research lessons help us understand traditional crises and disasters, but they may not apply to modern and future manifestations of adversity. In this article, I argue that the disaster and crisis research community has arrived at the proverbial fork in the road. One track leads to a cosy niche for disaster researchers, centers and students: the specialized knowledge with regard to a society’s capacity for dealing with the forces of “natural destruction” guarantees a

sound but bounded future. There will always be hurricanes, floods, earthquakes and the occasional tsunami—so there will always be a need to train operational and supervisory personnel.

This article maps the alternative route that is opening up for the disaster research community. It is the more dangerous yet promising route toward increased relevance, exposure, funding and growth. First, I explore the challenges for academics and practitioners posed by modern crises and disasters. I will then consider how the disaster field can contribute to the research agenda that has emerged in recent years.

From Classic Emergencies to Future Contingencies

We can resort to a wide body of theory and empirical findings that describes and explains how people react to major and sudden disturbances of their lives, as their society suffers from natural mayhem. We know much about the response—both in the short and long term—of citizens, emergency services, public leaders and society as a whole. Moreover, the disaster field offers descriptions and explanations of the way people make sense of such events. It has done practitioners and media representatives a great favor by uncovering age-old disaster myths. All these contributions have proved very relevant for national and local policymakers across the globe in their preparations for potential mayhem.

If the practice of disaster management has improved over the years—there is plenty of evidence suggesting it has—this improvement is, at least in part, due to the professionalization of disaster response. Disaster research has played a crucial role in this development. Successive generations of disaster students now teach disaster courses across the United States and increasingly across the world.

Two long-term developments, however, are creating new challenges for policymakers and first responders alike.³ First, the *context of governance* has fundamentally changed over the past decades, which makes it increasingly difficult for public leaders at all levels of government to deal with minor and major disturbances. Second, globalization and modernization have made the various systems that make our lives easier and increase our prosperity

(e.g. transportation, communication, research, technology systems) vulnerable to *new crisis dynamics*.

The interaction between both trends causes new forms of crises. As crisis authorities try to get a grip on a cascading threat, their efforts become part of media attention and political scrutiny—this context makes it harder to make the right decisions (from a technical point of view), which undermines the response and feeds the criticism merry-go-round. So we see a whole range of critical events that do not fit conventional disaster definitions: Three Mile Island and Chernobyl; mysterious epidemics such as Legionnaire's Disease, AIDS, Veteran's Disease (Gulf War) and BSE (Mad Cow Disease); "new" terrorism such as Waco, the Empire State Building, the Alfred P. Murrah Federal Building in Oklahoma City, 9/11, Madrid and London; Anthrax and the Beltway snipers; Black Monday on Wall Street and global financial meltdowns; KAL 007 and TWA 800; the *Challenger* and *Columbia*; the Heizer stadium tragedy and the LA Riots; *Concorde* and *Koersk*; the Millennium IT threat, black outs and the coming water crisis.

The distinction between the "modern" and "traditional" crisis serves, of course, only an analytical purpose. The modern crisis does not replace but rather adds to and transforms "traditional" forms of adversity, (Quarantelli, Lagadec and Boin 2006). At the same time, it is necessary to carefully describe and map the changing nature of crises and disasters.

Policymakers obviously and understandably do not care which types of adversity fit academic definitions of disaster and crisis. They are perplexed to discover that conventional crisis management repertoires are unfit for dealing with the vexing problems modern crises and disasters create for them. Let us explore how the altered political climate and the tightly knit nature of modern society create challenges that political-administrative elites often find "impossible" to handle.

A New Species of Trouble: Future Contingencies

Not so long ago, social communities were reasonably resilient. In rural times, communities were isolated but self-sufficient. A disaster could wreak much damage, but recovery of life-sustaining functions was relatively easy in comparison with modern times. Today, most

communities no longer control their life-sustaining systems. The modern community is tightly integrated with the rest of society and, increasingly, much of the world. As a result, the life-sustaining systems of modern society have become increasingly vulnerable to attack and increasingly resistant to recovery.

This vulnerability is to an important extent human made. It flows from the very efforts to achieve security and prosperity in the face of all sorts of classic emergencies and natural threats. These efforts impinge on society and its organizations in two ways. First, Western societies become increasingly dependent on complex systems to deliver most basic tasks ranging from garbage collection to national defense. Second, the various subsystems become increasingly tightly coupled, which means that a disturbance in one system rapidly propagates toward another (Perrow 1999).

As societies build increasingly efficient systems that bundle and coordinate their efforts toward a given goal, they also expand the potential impact of unintended consequences.⁴ Modern rational systems protect society from all sorts of harm, but also create “super highways” for seemingly innocent human errors to entangle with technology and randomly produce human-made threat potential.

The potential consequences are extremely serious. The ever-continuing quest to develop more effective, faster and cheaper systems creates a higher chance of new types of crises that may have their roots far away (in a geographical sense) but rapidly snowball through the global networks, jumping from one system to another, gathering destructive potential along the way. Conventional and well-known threat agents may thus cause unforeseen and unprecedented damage.

Illuminating examples are simple to find. The increased speed of modern computers and the interconnectedness of these computers propel economic development, but they also make critical systems vulnerable to relatively simple disturbances introduced by virus-producing youngsters or professional hackers. The international travel network facilitates global interaction, but also brings terrorists efficiently within our borders and helps viruses to survive and rapidly proliferate.

The same systems that move cash flows across the world facilitate the spread of economic crises and make it possible to finance terrorist networks.

To be sure, there is nothing new about this. The very same shipping routes that were set up to bring ivory from eastern African shores to the Roman empire helped to spread Bubonic Plague, which would play a major role in the final demise of that empire (Keys 1999). Modernization has always created a potential for new disasters.

Future contingencies, however, may take on biblical proportions as threat agents are changing as well. In most regions or countries, natural risks were typically well known, understood and quite predictable (cf. Perry and Lindell 1997). Climate change promises to reshuffle the deck. For instance, before 1997 when the first of three floods hit the Czech Republic, there was no emergency plan for floods. The Czechs now routinely deal with flood preparation. The Dutch, on the other hand, are used to preparing for water-related threats. Some recent worst-case scenarios, however, predict that the Western half of the Netherlands will be flooded by the year 2030 as a result of the rising sea level and regardless of any remedial actions (other than moving away).

These future crises share two characteristics: they are impossible to prevent and extremely hard to manage. Not only do they escalate rapidly, they also remain invisible as they propagate through networks that have become so complex and intertwined that they can no longer be understood let alone controlled. The only way to stop these crises is to shut the system down.

But there is a paradox at work here: modern society has become so dependent on these systems that it cannot shut them down. In bringing one system to a halt, many others are affected—the total costs in terms of casualties and financial damages are staggering.⁵ That creates a Catch 22 for future crisis management: shut the affected system down (if it is clear which system is affected) or the system will shut society down. The only escape from this conundrum lies in the creation of buffers between systems that allow us to halt the progress of these future contingencies. But these buffers halt economic development and add to the complexity of modern systems, which, in turn, increases societal vulnerability.

In recent years, we have seen several prototypes of this new species of trouble. The Chernobyl explosion demonstrated how ill prepared modern systems are in the face of invisible threats: the relatively light threat to one system (the European food chain)

triggered a wave of reactions in other systems. The BSE (Mad Cow disease) threat—albeit remote by any measure—affected the entire food chain and created a political crisis in the European Union (Grönvall 2001). The Y2K threat demanded a huge investment to avert the escalation of a minor software glitch escalating into ITC meltdown. The SARS epidemic killed far less people than the flu does annually in Holland alone, but the worldwide impact on tourism and travel was enormous. These were all “near misses”—in the sense that modern systems were sufficiently effective in stopping these crises from escalating. The 1997 financial crisis, which spread from Asia to South America, on to Russia and Turkey, was not. It was a clear demonstration of the human-made vulnerability to slight disturbances somewhere down the system (Eichengreen, 2002).

Several scenarios, which circulate widely in policy circles, predict that the worst is yet to come. A recent Pentagon study mapped out a few scenarios for a sudden climate change that would lower the temperature a few degrees (Stipp 2004; cf. Keys 1999). This would initiate a chain reaction of droughts and floods, failing crops, shortages of drinking water, epidemics, political turmoil, inter-state tension and new wars—enough to elevate the issue of climate change on the Pentagon’s agenda.

Recent concerns with biological terrorism have led experts to consider what nations could do to stop a smallpox attack. They discovered that even a credible rumor of smallpox would have the capacity to shut the international economy down. The volatility of the disease, the relative ease by which it can spread through means of mass transportation and the near certainty that terrorists would be involved (which would carry the additional risk of genetic manipulation) would force countries to limit face-to-face interaction. Or consider what would happen if one of the many computer viruses that have successfully infected ICT systems in recent years would actually cripple hospitals or air traffic control systems. Western society cannot function without computers. And what would happen if hackers would devise a virus that would instruct computers to execute tasks in slightly different ways?⁶

These future contingencies create new challenges that may demand new practices and structures. If the only available crisis management option is to shut critical systems down, it is best

exercised at the *highest* possible level. However, this would require a shift in thinking, as classic emergencies are best dealt with at the *lowest* possible level. It may be comforting to know that the chances of such a crisis occurring actually appear to be quite low. It is also clear, however, that not much can be done about it other than shutting systems down in time, minimizing damage and resuming operation as soon as possible. The consequences of such a shutdown may dwarf anything we have seen in recent decades. Public authorities must ponder all this in an altered and less forgiving environment, as we will discuss in the next section.

The Modern Crisis: A Matter of Perception

The second crucial development pertains to the *context of crisis management*. In Western societies, disturbances of any kind are less and less tolerated by citizens and politicians alike. The modern citizen has little patience for imperfections; s/he has come to fear glitches and has learned to see more of what s/he fears. In this culture of fear—sometimes referred to as the “risk society” (Beck 1992)—the role of the modern mass media appears to be crucial. Driven by an insatiable appetite for “stories that sell”, media representatives eagerly report minor glitches into major crises. The modern politician, heavily dependent on big media, is a willing accomplice. This interplay between media, politicians and concerned citizens is changing the context in which authorities must deal with new and old disasters.

Three characteristics of this altered climate appear especially relevant. First, the manifestation of crisis and disaster has increasingly become a social construction. Hard figures (number of casualties; financial damages) have given way to hard perceptions. Some disasters, which produce unmistakable numbers, hardly make a dent on public consciousness or political agendas. The examples are manifold, but two stand out: the AIDS scourge in Africa and the effects of climate change attract disturbingly little attention. Other disturbances of normality, however slight and seemingly minor, assume crisis proportions overnight.

All this leads to seemingly absurd “crisis” events. When freak weather temporarily disturbs traffic flows in large metropolitan areas,

society grinds to a halt. A relatively brief time period without electricity sends the modern work force to the streets, as they cannot work without power. These disturbances no longer qualify as inevitable hindrances, but give rise to official investigations and political debate.

Second, the altered climate gives rise to “construed crises” that have very real consequences. Traditional questions of prevention and preparedness become meaningless when we consider how these “modern” crises develop. These crises are the outcome of a highly interactive process between random errors, general perceptions, media reporting, political reactions and ill-defined crisis management responses. Public organizations and their leaders often do not seem to understand how this process of framing and feedback works. But they ignore these crises at their peril, for a “failed response”—however that is construed—has the potential for instant politicization and delegitimization.

There is a paradox at work here: the professionalization of crisis management may have lessened the impact of (natural) disasters, but it has also nurtured the sense of invulnerability that gives rise to these modern crises. The 2003 heat wave in France shows how consequential these changes can be: thousands of elderly died unbeknownst to the medical profession, which, in itself, symbolizes modern development and prosperity (Lagadec 2005).

Even successful interventions may erode the legitimacy of government. A near-miss may cause a crisis of perception. Nipping a crisis in the bud—a hallmark of effective crisis management—may lead to pervasive questioning of the robustness of the system. If something was corrected, something has apparently gone wrong.

The third characteristic of the altered climate pertains to the aftermath of crisis.⁷ One would expect an emergency to end with the removal of threat, the return to normalcy, the beginning of reconstruction, and the learning of lessons. The management of the aftermath is not necessarily smooth or easy in this scenario, but the challenges are relatively straightforward. In the contemporary context, however, aftermath management is better described in terms of image management. The social construction of who is to blame overshadows the technicalities of victim assistance and reconstruction—these challenges are readily subjugated to the

professional bureaucracies that exist for this purpose alone. Leaders are left to worry how politicians and voters perceive their actions.

Today's governing context is marked by deep insecurity. Crisis management is inherently politicized while politics itself has become more and more "crisified" (Boin et al. 2005). In traditional terms of casualties and financial damages, Western societies have become remarkably secure. The classic emergencies are still with us, but they have become, in a sense, manageable aberrations or routine emergencies. The changing context of governance creates new complexities that undermine the lessons learned as captured by disaster researchers. It is, for instance, fascinating to see how classic emergencies in this modern context now seem to require immediate central involvement: routine crises rise rapidly to the executive table, which, of course, is not where they belong (the Katrina debacle is a telling example). It does confirm the ready perception of a serious crisis, which fuels the dysfunctional interaction between media and politics.

The crisis and disaster research community has begun to explore the political nature of crisis and disaster management (Stallings 1995; Boin et al. 2005). Two topics in particular require much more research, however. First, the process by which a crisis is "construed" into a disaster is not well understood. Both researchers and practitioners must shed their understandable reluctance to engage with "concocted crises." We must learn to understand why some seemingly innocent events come to be perceived as major threats, whereas objectively verified threats fail to register. To answer this question, an interdisciplinary approach is required that draws from such diverse fields as public administration, political science, psychology and communication.⁸ Second, it is not clear how risk and crisis communication plays out in this altered context. The importance of risk and crisis communication has long been understood, but we must wonder how time-proven practices will hold up in the jittery environment that characterizes contemporary government settings.

Towards a New Research Agenda

Public leaders must prepare for a befuddling mix of classic emergencies, modern crises, and future contingencies.⁹ The looming

implications of contemporary threats—the new terrorism, economic shifts, natural disasters, climate change, and impending epidemics—receive broad attention in popular media and political arenas. As politicians, reporters and citizens look to the research community for new approaches that can improve the safety of modern society, we must ask what this community can offer.

The disaster community harbors a deep understanding of how social communities deal with traditional threats (natural or human-made). The rapidly changing nature of these threats, however, creates new questions with regard to the causes of dynamics of modern disasters and the ways in which communities can deal with these threats. The disaster community should muster its intellectual resources to address these newly emerging issues of vulnerability and resilience. Disaster researchers must prioritize these “big” questions and seek to provide scientifically sound answers.

The first “big” question asks how modern crises develop. We need to understand the dynamics of crises: how do seemingly innocent disturbances snowball into compound disasters? This question has two dimensions. One dimension pertains to the framing of events in terms of (non)threats: why do people act on this risk but ignore so many others? The other dimension applies to the physical vulnerability of complex systems: why do small disturbances sometimes have disproportionately large consequences?¹⁰

A related question asks what can be done, if anything, to prevent or foresee these modern crises and disasters. Policymakers must somehow equip public and private organizations—we live, after all, in an organizational society with the capacity to detect minor disturbances, to trace and intercept them, and to recognize their escalatory potential. This can only be done, of course, when the dynamics of crisis and disaster development are better understood.

The second question inquires into the coping patterns of effective and not so effective crisis response systems. We need to know why some systems appear well prepared to deal with these new contingencies, whereas some other systems seem criminally unprepared. It would be of particular interest to learn whether the state of preparation can be related to certain structural features of a system (the level of centralization, certain legal requirements, or the

institutional design of that system). In addition, we would have to check whether certain processes (planning, organization, decision-making) explain effective preparation.

These inquiries can be extended into the immediate response phase as well as to the aftermath of a disaster. Some towns, organizations or countries respond better to rapidly emerging threats than other social systems do. We need to understand why the response to Hurricane Katrina was a failure, whereas New York City's response to the 9/11 event is widely heralded as a success case. We must make sure that explanatory factors hold up both in cases of effective and not so effective disaster response.

By studying what distinguishes effective response systems from ineffective ones, researchers may help to develop a toolbox of best practices as well as a list of avoidable pathologies. Two issues seem especially relevant, given the nature of future contingencies. We must learn how to coordinate routinized responses between the systems and across the networks; it is crucial to understand which systems require active coordination and which ones will self-organize when left alone. Moreover, we need to know if and how resilience can be organized, as this appears to be one of the crucial determining features of effective disaster management. More to the point: if crisis management boils down to controlled shutdown of critical systems, resilience is a condition for its effectiveness.

Moving Ahead

These are questions that disaster researchers have dealt with in the past. Disaster researchers should retrieve the classic answers from the disaster research treasure trove, reexamine them in the light of contemporary and future developments, and communicate them across academic fields and policy areas. They need to develop interdisciplinary research alliances, which will help to enrich their insights with findings from other fields.¹¹

Before embarking on this path, however, the disaster community would have to do two things. First, disaster researchers must free themselves of self-imposed definitional limitations that prevent them from studying the many modern crises (apart from natural mayhem)

that beset modern societies (cf. Quarantelli 1998; Quarantelli and Perry 2005). The theoretical roots of mainstream disaster research gave rise to valuable insights, but they may limit the scope and range of current disaster research. Successful research traditions may keep the community from future success, especially if it sticks with old definitions that do not cover newly emerging threats. A lack of theoretical flexibility could eventually translate in limited funding and academic obscurity (cf. Boin 2005).¹²

Second, disaster researchers should again ask the big and ambitious questions that helped to put this field on the research map. The disaster community must inquire into the causes, characteristics and consequences of breakdowns in society's critical systems. In addition to the "normal science" of mapping social behavior during natural disasters, the disaster research community must unlock its findings and insights for the much wider community of researchers and academics that deal with the manifold crises that feature prominently in Western society.

The protection of our societies against deadly disturbances requires a generic approach to adversity. Modern crises feature deadly dynamics, regardless of their origin: an earthquake, heat wave, bush fire, computer worm or terrorist attack—these "threat agents" all have the capacity to paralyze society and cause tremendous damage. The time has come to forge close cooperation with all those researchers regardless of their academic background or home—who study any type of "un-ness" (cf. Hewitt 1983). A newly emerging field could sprout a generic approach that informs and guides practical efforts to enhance the resilience of modern society.

Notes

1. Hurricane Katrina pushed up the price of corn. Corn is the most important food article in Malawi (and must be imported as a result of failed harvests).
2. See Boin and 't Hart (2006) on the relation between disaster and crisis research. In the remainder of this article, I will use disaster and crisis researchers interchangeably.
3. This point is further developed in Boin et al. (2005).

4. The classic statement is the late Barry Turner's (1978) *Man-made disasters*.
5. For instance, one of the simplest prescriptions often heard in preparing for major events is "to close all schools." However, this very decision would bring many critical systems to a halt as mothers typically do not sit at home in the modern society. A substantial part of the workforce would have to return home, thus severely undermining the functioning of other subsystems.
6. For several interesting scenarios, see Rochlin (2001).
7. The hearings on the handling of pre-9/11 intelligence by the Clinton and Bush administrations illustrate the point.
8. A good start would be Bovens and 't Hart (1996); see also Birkland (1997).
9. See the discussion between Yehezkel Dror, Patrick Lagadec, Boris Porfiriev and Henry Quarantelli (2001).
10. The young area of complex systems research may be helpful here (see Buchanan 2001).
11. For instance, a promising avenue of research may be found in the "classic" field of organization theory in which researchers investigate why some organizations have much better sense-making capacities than others.
12. Some researchers do, of course, employ a wider scope that includes non-natural disasters. The Disaster Research Center, for example, is a driving force in modernizing the field, as evidenced by their academic ambitions and actions (studying the characteristics and consequences of 9/11).

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