

# Collaborative Crisis Management



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Inter-Organizational Approaches to Extreme Events

Edited by Fredrik Bynander  
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# Collaborative Crisis Management

## Inter-Organizational Approaches to Extreme Events

*Fredrik Bynander and Daniel Nohrstedt*

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Doing things together in order to protect society from harm is a self-evident activity in most societies and cultures. Yet, the study and practice of collaboration in relation to crisis management is a minefield of false starts, conceptual confusion, and practical difficulty. Collaboration, and its many related concepts (e.g., cooperation, coordination, co-management), has come to signify everything from coexisting at an accident site to long-term co-planning and investing in generic capabilities to mitigate and manage trans-boundary hazards across national borders. The effect of the catchall nature of the concept of collaboration has been to diffuse expectations of common behavior in the crisis preparedness arena and create standards for participating actors that are extremely hard to meet in practice. When forging the public blueprint for collaborative crisis management in a country or region, administrative realities, operating procedures, resource allocation, and a number of other practical and organizational factors must be reconciled with expectations of public administration activities that are inflated and oftentimes unrealistic.

Recent advances in political science, public administration, public management, and related disciplines and subfields have significantly increased our awareness and knowledge of collaborative governance and management on many important fronts (Nohrstedt et al. 2018). There is also a growing recognition among policy actors, stakeholders, and practitioners that complex policy problems have to be managed by initiating and maintaining various organizational architectures to facilitate collaboration among actors working together across organizational boundaries spanning sectors, jurisdictions, and levels of authority. But despite these insights and experiences, there are still important lessons that can be learned about collaborative governance in different problem settings.

This book focuses on collaborative approaches to crisis management (“collaborative crisis management,” in short), which we define broadly as involving joint efforts of multiple autonomous actors to work across organizational borders, levels of authority, and sectors to prepare for, respond to, and learn from risks and extreme events that disrupt our modern society. In policy circles and academic discourse, there is a strong emphasis on the advantages and benefits associated with collaboration but also recognition of barriers, hurdles, and pitfalls. One dominating paradigm suggests that because the risks and hazards that face modern society are so complex and uncertain, there is a need for institutional arrangements and governance approaches that enable flexible solutions and responses based on capacities to innovate, improvise, and adapt to rapidly changing circumstances and complex problems. Traditional hierarchical bureaucracy might still be apt to meet known contingencies (so-called “routine emergencies”) but more complex and large-scale crises generally require mobilization of more diverse networks of organizations that pool different mandates, resources, skills, and capabilities (Nohrstedt 2016). In this perspective, safety and security are contingent upon the aggregated capacity of diverse sets of actors and stakeholders to work together across organizational boundaries to

ensure swift mobilization of knowledge and expertise, both of which are required to cope with events that outstrip the capacity of single organizations. Ideally, these collaborative arrangements and networks should also be capable to adapt by retaining abilities to learn and adjust procedures and working methods in the face of experience (Farazmand 2007).

At the same time, the historical record testifies to the difficulties involved with realizing these governance ideals in practice. Multi-organizational crisis responder networks often underperform, or even break apart, due to difficulties to develop common understandings and achieve effective coordination, sharing of information, and joint decisions. Individuals with different organizational backgrounds, experience, knowledge, resources, and skills will face considerable transaction costs that have to be overcome to enable fruitful collaboration. Oftentimes it is difficult to find proper levels of overlap between networks of organizations that work together to plan and prepare for crises and those networks that emerge in response to acute events. Another common problem is that the circle of participants is drawn too narrowly, which can lead to the exclusion of organizations with relevant expertise and other resources required for an effective response (Boin and 't Hart 2010). Waugh and Streib (2006, 132) succinctly capture the challenge:

On the one hand, emergency response requires meticulous organization and planning, but on the other hand, it is spontaneous. Emergency managers have to innovate, adapt, and improvise because plans, regardless of how well done, seldom fit circumstances. Blending these conflicting needs is no easy task.

These demands and expectations concerning streamlined collaborative approaches to risks, hazards, and security have been shaped by broader strategic developments in society. For one, in the post-Cold War world, the strategic focus shifted gradually from territorial integrity and national security to a notion of *societal security*, which rests on the premise that security is about “safeguarding the critical functions of society, protecting people, and upholding fundamental values and structures of democratic governance” ('t Hart and Sundelius 2013, 445; see also Buzan 2008). Second, many governments have adopted a *whole-of-society* approach for societal security, promoting continuous cross-sectoral collaboration between public organizations and nongovernmental partners and stakeholders outside the sphere of government (Lindberg and Sundelius 2012). Third, the guiding principle for the whole-of-society approach for societal security is *societal resilience*, referring to the capacity of any given system to “withstand” or “bounce back” from disturbance, which necessitates collaboration on a broad scale and over time to build trust and collaborative skills among multiple stakeholders to ensure adaptation to increase societies’ readiness to respond (Comfort, Boin, and Demchak 2010). A fourth trend is the emergence of the *risk reduction* paradigm (Smith 2013), which places the emphasis on long-term plans and strategies for identifying and reducing vulnerability and risk (“flood risk management” and “drought risk management” being vivid examples). In this perspective, collaboration is depicted as a means to reduce risk and vulnerability by community-based participation to facilitate integration of information, knowledge, and experiences (Thomalla et al. 2006).

While collaborative approaches for crisis management have become a key priority around the world, issues of collective-action in response to risks, threats, and extreme events have long been on the social science research agenda. Already in the 1960s disaster sociologists began studying *coordination* in disaster and emergency, with a focus on “the cooperation of independent units for the purpose of eliminating fragmentation, gaps in service delivery, and unnecessary (as opposed to strategic) duplication of services” (Gillespie 1991, 57). These studies advanced the understanding of community



coordination in relation to crisis management operations “on the ground” (Drabek 2007). Two central insights emerged from this research. The first is that coordination structures and processes designed to cope with “routine emergencies” do not work particularly well in the context of major disasters, which rather tend to produce alternative coordination mechanisms. This observation spurred additional comparative work on coordination in different types of organizational systems (Quarantelli 1966; Dynes 1978) including:

- established organizations – the first-line of response to an unfolding acute emergency
- extending organizations – dealing with the economic, social, and psychological impacts of crises and disasters on the lives of victims/communities
- expanding organizations – human services organizations within and outside government that have crisis management as a key (though not core) component of their mission, yet they have the majority of their personnel routinely committed to other tasks
- emergent organizations – emerging spontaneously and unexpectedly, often in reaction to hitherto unplanned needs or perceived deficiencies of the existing response efforts, e.g., victims’ groups, recovery networks.

Horizontal cooperation between such different responding parties is easily undermined by both technical and cultural communication problems. They are likely to entertain different notions of the meaning and necessity of coordination. Disaster research has demonstrated some recurrent fault lines between these four types of response organizations (Boin and ‘t Hart 2012).

### **Professionals Versus Amateurs**

The well-trained first responders – often eager to show that they are ready – may be shocked or dismayed (or both) with the perceived lack of speed and experience that “bureaucrats” from extending organizations can display during a crisis. While first responders have their “feet in the mud,” they see how the “bureaucrats” fail to “ramp up” to high-speed, high-volume processing requirements. They wonder aloud how the “do gooders” of expanding organizations can deliver (“we will have to find something for them to do”). The “bureaucrats,” in turn, will try to explain that their organizations were doing the best they could, given the impossible tasks at hand. The volunteers of expanding organizations are astounded to learn that their contributions are not being valued.

### **Operational Versus Strategic Perspectives**

In the thick of crisis, first responders tend to be solely and urgently concerned with the safety and survival of (potential) victims. This is their mission; it is what they train to do. This operational perspective, and the total lack of concern with the long term (the here and now is the only thing that matters), conflicts easily (and often rapidly) with the perspective that extending organizations bring to the scene. Other values – fairness and accountability, for example – enter the decision-making arena. Conflicting values can give rise to vehement disagreements that play out on-site, fueling already existing misperceptions about underlying motivations. As the crisis unfolds, the search and rescue dimension of disasters tends to lose importance quickly, making the other organization types more relevant and important. This can lead to frustration among first responders, which feeds mounting disrespect (“we have done our job, why can’t you?”). The operational fixation and apparent blindness to the bigger policy picture and long-term considerations beyond the incident at hand tend to confound members of the other organizational types.

## Local Versus Wider Interests

Members of expanding organizations typically enter the response network from “outside.” They are volunteers who rushed to the scene, leaving behind families and jobs (“we’re here to help”). Appreciation for these volunteers may not last long (“nobody here asked you to help”). When outside organizations establish themselves in the arena and claim authority, locals may resist. They may not immediately recognize the competence, ability, or legitimacy of these incoming organizations. This perception can be further strengthened if expanding organizations play to their funders, sticking to an action repertoire that is in line with their mandate and refusing to take on additional tasks – or worse, when expanding organizations start fighting each other for “turf,” performing in the lights of TV cameras.

These are but three examples of potential fault lines; empirical research suggests there are more. Other studies – e.g., Auf der Heide (1989); Gillespie and Colignon (1993); Perry and Lindell (2003) – point at the intricate relationship between preparedness activities and disaster response and map the coordination challenges that flow from it. We do not mean to suggest that coordination problems will always play out along these fault lines, but we do propose that those who will be held responsible for coordination failures should consider these types of fault lines.

The second key finding from disaster sociology was that the need for coordination increased demands on the professional emergency manager to take on the role as the “community coordinator” that actively interacts with government officials and representatives of the broader disaster relief community (Waugh and Streib 2006). This insight turned the spotlight on managers as “facilitators” and the strategies that enhance interagency coordination as well as barriers to coordination (Drabek 1987). While emergency and disaster response operations were the dominating focus of these studies, some work was also conducted on coordination processes in relation to recovery operations, mitigation, and vulnerability reduction.

The vast academic literature that has evolved in the recent decades confirms the growing importance of collaborative arrangements and processes as a strategy to cope with a range of complex policy issues and societal challenges on different scales and in different parts of the world. This work spans a variety of theoretical and empirical fields and has evolved into an interdisciplinary endeavor where scholars apply different cases, concepts, assumptions, theories, and research methods. But despite these overlaps, studies rarely exploit the potential benefit of examining parallel literatures (O’Leary and Bingham 2009; Nohrstedt et al. 2018). Consequently, the literature on inter-organizational collaboration lacks a common framework of analysis and clear definitions to specify the meaning and measurement of collaboration.

Collaborative public management and crisis management have previously been connected in various ways in the literature. One example is the notion of “collaborative emergency management,” which turns the spotlight on inter-organizational communication, information technologies, and mechanisms for fostering joint decision making (Kapucu, Arslan, and Demiroz 2010; Mendonça, Jefferson, and Harrald 2007; Patton 2007). A similar conceptualization (McGuire, Brudney, and Gazley 2010) emerged around “the new emergency management,” involving cross-sectoral collaboration in emergency response operations. This work set the focus on issues such as professional competencies of emergency managers, criteria for assessing performance, and conditions for building theory around collaborative crisis management. In another study, Ansell, Boin, and Keller (2010) chartered a research agenda to address the “transboundary dimensions” of crises and disasters with four boundary-spanning mechanisms that constitute an effective

transboundary crisis response: *distributed sensemaking* (merging conflicting problem definitions), *networked coordination* (institutional design to support cooperation), *surge capacity* (overcoming problems of supply logistics), and *formal scaling procedures* (clarifying decision-making structures and procedures).

These separate contributions are useful starting points for advancing our understanding of collaborative crisis management, but more work clearly remains to be done to define and investigate the drivers, structures, processes, and outcomes of collaborative crisis management across settings (Nohrstedt et al. 2018). In this book, we contribute to this effort by studying a selection of multi-organizational arrangements and efforts to prepare for, respond to, recover, and learn from extreme events that exceed the capacity of any single organization to manage alone.

## Conceptual and Analytical Dimensions

Throughout the different chapters of this volume we highlight five conceptual dimensions that are helpful to unpack and systematically examine collaborative approaches to extreme events and crisis management. First, we take a broad *temporal perspective* on crisis management. Our definition of collaborative crisis management is not confined to reactive behaviors and processes limited to the acute phase of crisis management, including joint decision making and collaboration in the midst of urgency and uncertainty. Although we are indeed interested in advancing insights regarding multi-organizational responses to acute crisis episodes – situations characterized by a combination of uncertainty, threat, and limited response-time – we adopt a broader analytical perspective on crisis management that also includes efforts associated with planning, preparation, lesson drawing, and crisis-induced policy change and reform. In addition, we take a relatively broad view of planning and preparation, which includes crisis preparedness as well as collaborative approaches associated with risk reduction measures. Hence, we seek to enhance knowledge of collaborative management in the various temporal phases typically associated with crisis management.

Second, we seek to capture a broad selection of *different crisis trajectories*, which has implications for the nature and purpose of collaboration. Our perspective departs from the insight that extreme events follow different dynamic patterns based on the speed of development (fast versus slow) and pace of termination (abrupt or gradual). Using these dimensions and borrowing from ‘t Hart and Boin (2001), we discern four ideal-types of crisis trajectories including: (1) the “fast-burning crisis” (sudden onset, sharp closure), (2) the “cathartic crisis” (long and gradual onset, abrupt termination), (3) “the slow-burning crisis” (incremental escalation, fades away rather than being resolved), and (4) “the long-shadow crisis” (sudden occurrence, followed by drawn-out political or institutional crisis). These trajectories are analytical simplifications but nevertheless helpful to delineate what types of organizations and actors take active part in collaboration and also the specific objective of collaboration.

Third, we consider a *range of collaborative arrangements and efforts*. Based on the insight that organizations pursue different notions of collaboration, we adopt a relatively inclusive understanding of collaboration spanning the range of collective arrangements and efforts in which organizations engage. For instance, we consider different types of collaborative institutions, ranging from institutionalized venues (more or less formalized forums or arenas (Fischer and Leifeld 2015) where stakeholders participate regularly over time to formulate and work toward some common goal) to *ad hoc* multi-organizational arrangements (temporary forums or areas where stakeholders work together to jointly address a specific problem or situation). In addition to the arrangements where collaboration takes

place, we are interested in the different goal types that guide collective-action during disruptive crisis situations, including exchange of information, formulation of joint goals, coordination of activities, sharing of resources, and so on. Oftentimes any given area is likely to consist of multiple interconnected collaboration networks that pursue partially overlapping goals and that are bound together by people, knowledge, and resource dependency (Kapucu and Hu 2014; Bodin and Nohrstedt 2016). Together these overlapping networks create a complex “ecology” of actors and institutions. Although these “networks of networks” are part of the reality that many stakeholders face every day, this is an area where research lags behind (Lubell 2013).

Fourth, we investigate collaborative crisis management along *different spatial scales* – from the local to the international level as well as cross-level networks and interactions. Our starting point is the insight that crises increasingly transcend organizational boundaries (Ansell, Boin, and Keller 2010) across sectors and levels of authority, raising the need for approaches to enhance the understanding of information sharing, the alignment of expectations and actions across organizations, and the willingness and ability of managers, policymakers, and stakeholders to do so (Drabek and McEntire 2002). Trends associated with increased interdependency between social, political, economic, and ecological systems increase the importance of understanding horizontal (within levels) and vertical (across levels) collaboration, which is often nested within complex and multileveled “polycentric” governance systems (Galaz et al. 2017). In this perspective, we exemplify patterns of collaboration on different scales of government, from relatively localized phenomena to events and processes of interaction at the international level.

Fifth, a final important distinction concerns the type of actors that are engaged in collaboration, which include a *range of different constellations* that occur within and between states, private actors and interests, and communities. At the state level, various inter-agency networks are important to coordinate public resources and actions (Kapucu 2005). In addition, scholars stress the importance of collaboration among political officeholders, agency leaders, and other public executives at the strategic level (‘t Hart and Boin 2010; Nohrstedt et al. 2018). While crisis and emergency management is subject to increasing professionalization (Waugh and Streib 2006), there is also a parallel trend of security privatization to “outsource” security issues to private firms and interests (Bryden and Caparini 2006). As a consequence, increasing demands and expectations are imposed on these diverse interests to develop collaborative skills and competencies to interact with a variety of collaborators. The same goes for community actors, such as nonprofit organizations (Simo and Bies 2007; Demiroz and Hu 2014) and voluntary associations (Brudney and Gazley 2009). Finally, collaborative crisis management also hinges on social ties forming across these actor categories, including co-management between state and community actors (Næss et al. 2005), public-private partnerships between state and private interests (Koliba, Mills, and Zia 2011), and private-social partnerships involving communities and private interests (see Lemos and Agrawal 2009).

## **Modes of Collaboration in Crisis Management**

One implication of the conceptual dimensions outlined earlier is that we need a way of discriminating different “modes” of collaboration, which differentiates between types, goals, and levels of intensity of interactions among stakeholders. However, even if there has been an explosion of research on collaborative governance and management in recent years, the term “collaboration” still lacks a common definition. There is also a broad variety of indicators and benchmarks to guide empirical research and evaluate effectiveness and performance, yet little consistency regarding the application of these measures across cases



and contexts. As the concept of “collaborative governance” has been discussed extensively elsewhere (e.g., Ansell and Gash 2008), we settle here with a relatively common basic distinction between three types of interactions that are helpful in unpacking the notion of collaborative crisis management.

Obviously, there are numerous ways of categorizing and scaling “modes of collaboration,” but ours is quite straightforward: it assesses the amount and complexity of interaction needed to make joint outcomes compliant to the mandates, interests, and repertoires of influential actors and stakeholders while satisfying the “problem-solving priorities” of each organization (Bryson and Crosby 2008; Gray 1989). This results in a qualitative scale between combinations of tasks associated with **cooperation** (communication in order not to get in each other’s way and to foster a suitable division of labor around commonly agreed upon problems and objectives), **coordination** (demanding dialogue and negotiation to settle priorities between organizational goals and societal values), and **collaboration** (generating new structures, defined relationships, resource-sharing, and continuous communication in pursuit of jointly defined goals). In this conceptualization, collaboration “is best examined as a dynamic or emergent process rather than a static condition” (O’Leary and Vij 2012, 508; see also Nohrstedt and Bodin 2014). The implication of making this rather crude distinction in the context of crisis management is to balance the “supply side” of collaboration (which level and quality of collaboration can the actors achieve) with the “demand side” (which level and quality of collaboration does the situation demand). Collaborative structures are currently much too tailor-made for specific problem sets; in fact, there is room to develop and fine-tune structures and processes of collaboration that are more efficiently adapted to a wider spectrum of hazards. The chapters presented in this book will each probe a set of problem-defining factors and the way the response units collaborate to meet them.

## Chapter Summaries

Together, the contributions to this book illustrate the idea that findings in collaborative governance and management are applicable to risks, threats, and extreme events and their fast-evaporating room for action in relation to different challenges and political contexts. Public organizations are increasingly expected to cope with crises under the same resource constraints and mandates that make up their normal routines, reinforced only through *collaboration*. Our book explores how this panacea plays out on the ground and in various decision-making contexts and how insights regarding collaborative practices can shed light on the outcomes of complex inter-organizational challenges across cases derived from different problem areas, administrative cultures, and political systems. It hereby places modes of collaboration under the analytical microscope by assessing not only the collaborative tools available to actors, but also how they are used and to what effect.

This introductory chapter has provided a common conceptual framework for studying very different contexts in which collaboration takes place. The authors have combined deep empirical knowledge of their cases and the contexts in which they evolved, with a shared objective to extract processes and qualities significant of collaborative practice and ways in which that may change over the period of study. Thus, the dynamic qualities of how collaboration evolves in each case will inform our findings and produce a more nuanced understanding of collaboration in relation to different types of extreme events.

Table 1.1 gives an overview of the range of empirical cases and how they contribute to the book theme. The categories present themes for summarizing current areas of emphasis in collaborative crisis management research. It should be noted that the categories detailed in Table 1.1 are on a continuum with blurred boundaries; hence, the classification of each chapter is based on dominating emphases.

Table 1.1 Chapter focus and topics

| Case thematic and geographical focus (authors)                           | Temporal perspective                     | Crisis trajectory                      | Arrangements and efforts                                  | Spatial scale      | Actor constellations                               |
|--|--|--|---|--------------------|--|
| Wildfire response, Sweden and Canada (Nohrstedt et al.)                  | Crisis response                          | Fast burning                           | Pre-planned collaboration, low-fidelity                   | Cross scale        | First responders to local and regional authorities |
| International summits, Canada and the Netherlands (Kuipers and Swinkels) | Planning and preparedness                | Slow burning                           | International collaboration, national lead, high-fidelity | Cross scale        | National coordination of several national agencies |
| Migration crisis, Sweden (Hansén and Deverell)                           | Crisis response                          | Cathartic crisis with rapid escalation | Ad hoc collaboration, overburdened lead agency            | Cross scale        | National coordination of local authorities         |
| Security communication system, Sweden (Larsson)                          | Preparedness and emergency communication | All trajectories                       | Organizing response organizations, high-fidelity          | National coverage  | Government infrastructure                          |
| Wildfire crisis management, Sweden (Bynander)                            | Crisis response                          | Fast burning                           | Low-fidelity to <i>ad hoc</i>                             | Local to regional  | Public and private                                 |
| Earthquakes, Turkey (Hermansson)   | Crisis response                          | Fast burning                           | Hierarchical, centralized                                 | Specific locations | National/local                                     |
| Transregional crisis management, Africa (Hollis and Olsson)              | Crisis response                          | Fast burning                           | Low-fidelity, diplomatic                                  | Multilateral       | Governments  |
| Counterterrorism, the Netherlands (Douglas, Bos, and Noordegraaf)        | Preparedness, mitigation                 | Slowburning                            | Intelligence based  | Cross scale        | Law enforcement, social workers                    |
| Avoiding CM failures (Parker and Sundelius)                              | Preparedness, lesson-drawing             | All trajectories                       | Organizing response organizations                         | No specific scale  | Government policy planning                         |
| Flood risk management, Switzerland (Ingold and Gavilano)                 | Lesson-drawing                           | Long shadow                            | Policy process  | National-local     | Government, public administration                  |

Source: Table Created by Authors

The chapters in this book serve as an illustration of the different analytical approaches and methods that can be employed for empirically studying collaborative crisis management in different countries and contexts. In the field of crisis management there is a strong tradition of utilizing in-depth single case study approaches to reconstruct crisis events and situations as a basis for understanding and explaining behaviors and responses. Crisis management scholars have also frequently resorted to cross-case comparisons to uncover similarities and differences across cases. Both these approaches are exemplified in the contributions to this book. Chapters utilizing a single case study approach include the 2015 migration crisis in Sweden (Hansén and Deverell, this volume), the 2014 Västmanland wildfire (Bynander, this volume), the Dutch response to the ISIS threat (Scott, Bos, and Noordegraaf), and secure communication systems in Sweden (Larsson, this volume). Comparative case studies include wildfire responses in Canada and Sweden (Nohrstedt et al., this volume), global summits in Canada and the Netherlands (Kuipers and Swinkels, this volume), experiences of crisis management failures and proposed prescriptions (Parker and Sundelius, this volume), and the “within-case comparison” of earthquakes in Turkey (Hermansson, this volume) and collaborative governance in Swiss flood risk management (Ingold and Gavilano, this volume). Finally, the chapter on transregional crisis management in Africa (Hollis and Olsson, this volume) is an illustration of a comparative approach involving a larger number of cases and observations. In addition, the chapters also illustrate the breadth of data collection methods employed to retrieve information about actors, events, and processes and structures for collaboration. The main data sources include interviews, various public documents, and news media reports, which have enabled detailed insight into the structures and processes of collaborative crisis management.

Enhancing the understanding of collaborative crisis management – including its drivers, practices, and consequences – depends on empirical research to inform theory and practice. We share the impression by many other scholars that the field of collaborative governance is rich on concepts and theory while empirical application still lags behind. Hence, we agree there is a need for more systematic empirical work to shed light on the usefulness of our concepts and to probe the descriptive and explanatory validity of our theories in this area. Offering a theoretically informed empirical perspective on collaborative crisis management is a key ambition and key goal of this book. Each chapter can thus be read as a stand-alone story of a particular event, phenomenon, or case, which may serve as a guide for practical and theoretical lesson drawing. But in addition, each individual chapter also adds to an overarching story of collaborative crisis management, which hopefully can help advance the scientific knowledge frontier and also provide some useful lessons for crisis management practitioners.

We encourage and challenge the readers of this book to contemplate what the most important message is from each chapter and the book as a whole to the broader field of collaborative governance, as well as to the emergent field of collaborative crisis management. Hereby we can promote a collective effort to build new knowledge by identifying the most relevant research questions and engaging in empirical work to answer those questions. The concluding chapter (Nohrstedt and Bynander, this volume) serves the purpose of summing up some of the lessons and insights that have emerged from each chapter, as well as some general patterns that we see across cases.

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# Avoiding the Failures of Collaborative Crisis Management

## Lessons from Research and Practice

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### Introduction

Governments are increasingly expected to provide for the protection of their citizens and to respond effectively when disaster strikes (Boin et al. 2017; Parker, Persson, and Widmalm 2019; Ansell 2019). It is an obligation of good governance to prepare for the unthinkable and to allocate the necessary resources to minimize the impacts on people and society from catastrophic events. An array of responsible organizations must be able to collaborate across sectors, disciplines, jurisdictions, territorial boundaries, and levels of authority in order to effectively prepare and respond to complex crises, such as natural hazard events, terrorist attacks, pandemics, or other large-scale accidents and emergencies (Nohrstedt et al. 2018). Providing societal security – protecting citizens from harm, protecting critical infrastructure, and protecting the ability of the government and civil society to function under pressure – requires a holistic whole-of-government approach, and often even a whole-of-society approach, and therefore requires collaborative governance and collaborative crisis management capacities (Sundelius 2005; Sundelius 2006; Ansell and Gash 2008). This, in turn, requires collaborative political and organizational crisis leadership.

Organizations that are responsible for the protection of citizens and crisis management face special challenges (Widmalm, Parker, and Persson 2019). Just like other government institutions they are expected to engage in long-term planning and prepare for foreseeable dangers while at the same time scanning the horizon for novel threats. When a crisis hits, they are also expected to respond rapidly and to successfully coordinate multiple actors to respond correctly and resolve the situation. The occurrence of a crisis is the ultimate stress test and a poorly managed crisis can result in suboptimal outcomes and thus can have painful policy and political consequences (Boin, McConnell, and ‘t Hart 2008; Bovens and ‘t Hart 2016).

This chapter argues that leaders can improve their performance and reduce the chances of falling victim to a policy fiasco if they utilize the lessons from research and practice to help them avoid common failures of collaborative crisis management and if they better make use of scientific advice in their planning, preparedness, and response efforts (Parker and Stern 2005; ‘t Hart and Sundelius 2013).

Often we urge leaders of responsible governmental authorities and civil protection organizations to invest more seriously in preparedness for crisis management. Sometimes leaders listen to this advice, but often they do not find the time or energy as the seemingly urgent pushes away the truly significant. Bridging the gap between the world of research and practice is challenging, and practitioners often have little time for abstract theories or checklists of nostrums of how, in an ideal world, they might optimize performance (Eriksson and Sundelius 2005). A pedagogical approach drawn from problem-oriented research

turns the abstract optimization perspective around and urges leaders and practitioners to work toward avoiding a number of well-known common failures of crisis management. If the mishaps of the past can be avoided, leaders and organizations stand a better chance to come out well when confronting a challenging crisis situation.

No leader or organization wants to be exposed to an apparent public failure, which, in the post-crisis accountability phase, may turn into a harsh blame-game contest (Boin et al. 2008). The ambition we stress here is not to reinvent the wheel but to learn from research findings and from previous experiences of known pitfalls. A number of well-known failure types and foreseeable surprises can be identified and the challenges associated with them can be better managed (Parker and Stern 2002; Posner 2004; Clarke 2006). Of course, future complex situations fraught with uncertainty may very well include novel dangers or events leading to other types of suboptimal outcomes. The yet unknown failures cannot all be foreseen, although we can point to an impressive catalogue of common mistakes to be avoided and common obstacles to be overcome.

This is a good starting point for convincing leaders and organizations to invest in preparedness long before their crisis management abilities are tested. Lessons from past experiences can point the way to a range of core capacities that need to be developed and mastered. The nexus of humans, organizations, social components, and even the political context interact in complex ways to facilitate or hinder efforts to build preparedness (Comfort, Boin, and Demchak 2010). The even more ambitious objective to think in terms of capacities for collaborative crisis management, as is done in this book, requires a holistic approach and a long-term investment strategy.

The overall failures of collaborative crisis management can be unpacked into several more specific challenges or failures. We can help leaders and organizations recognize these ahead of time, provide insights on how to avoid them when possible, and better manage particular challenges when they occur. In this way research-based knowledge and lessons from past events can guide efforts of planning, preparedness, capacity building, and training.

Based on our review of past research and the empirical record of policy failures, we have identified five failures to be avoided by leaders and their organizations (Boin et al. 2017; Bovens and 't Hart 2016; 't Hart and Sundelius 2013; Parker and Stern 2002, 2005; Parker et al. 2009): (1) Failures of imagination; (2) Failures of initiative; (3) Failures of coordination and cooperation; (4) Failures of credibility; (5) Failures of learning. In the following sections we go through each of our five failure proscriptions and give examples of how they have manifested themselves in past crises. We follow the discussion of each failure with prescriptions leaders and organizations can take to diminish their occurrence and improve their ability to cope with them.

## **Failures of Imagination**

According to the 9/11 Commission, the September 11, 2001, terrorist attacks revealed a “failure” in “imagination” (9/11 Commission 2004, 339). The panel’s final report determined that the analytical methods developed after Pearl Harbor to avoid surprise attacks had not been adapted and had fallen into disuse. As a result, the U.S. government and its intelligence community were insensitive to the warnings that were produced and were unable to “connect the dots” to prevent the attacks (Parker and Dekker 2008, 258; Parker and Stern 2002, 2005). Many similar surprises with grave consequences for people, property, and values have been noted in the rich literature on this topic. The effect of the 2004 Boxing Day Tsunami in Southeast Asia that impacted over 20,000 Swedish vacationers and took the Swedish government by surprise has been well documented. In Norway,

the surprise attack by a lone wolf terrorist who bombed a government building and carried out a mass shooting in July 2011 shocked an unprepared country. More recently, in 2015, a massive influx of migrants to Europe, especially to Germany and Sweden, caught authorities off guard and caused considerable upheaval with long-term effects for society and for the political agenda.

Failures of imagination can lead to painful surprises and policy failures. These events are in some way contrary to previous expectations and often reveal faulty threat perceptions regarding acute dangers (Levite 1987). Since surprise events are to some degree unexpected, the initial cognitive framing of what is happening can be faulty as well. If the initial frame is false or incomplete, it may lock in a certain path of action with suboptimal results. Therefore, investments in robust procedures for threat assessment and quality sensemaking under conditions of uncertainty, stress, and limited time are needed to help decision makers and their organizations to avoid this frequent type of failure. Also, to be effective, sensemaking needs to be shared among all the relevant actors in order to provide a coherent framing that allows them to work in concert to achieve a shared objective.

### **Prescription: Institutionalize the Exercise of Imagination and Foster Shared Sensemaking**

To avoid, or at least reduce, the incidents of surprise events it is vital to find ways of routinizing and institutionalizing the exercise of imagination (9/11 Commission 2004, 344). However, since all eventualities cannot be avoided, robust sensemaking capacities, which are necessary for any good warning and response system, are needed to collect and process information to help the responsible decision makers detect, properly diagnose, and correctly respond to emerging contingencies (Boin et al. 2017, 15). Therefore, as part of their risk assessment and preparedness activities, organizations and their leaders need procedures for hypothesizing possible crisis scenarios and risk mapping; procedures for assessing the likelihood and consequences of possible contingencies; and capabilities to manage and respond to expected and unexpected events (Bracken 2008).

A standard recommendation for enhanced collaborative capacity is to note the value of greater information sharing across relevant actors. System integration and good collaborative practices can allow the various actors to connect the dots of vital pieces of information that in isolation would not create a meaningful picture (Bracken 2008, 23–25). Only by sharing what we know and putting the available signals together can we reduce unpleasant surprises. However, sharing information is merely an initial step toward the more ambitious objective of shared sensemaking. In order to make joint determinations and act in a coherent manner, a shared situational awareness across jurisdictional borders and diverse mental maps needs to be established.

There is a qualitative difference between simply sharing information and intelligence that may be interpreted in different ways versus taking the next step of successfully using the available knowledge to spur a shared sensemaking process that underpins collective decision making and action. This is the diagnostic task that brings the dots together and jointly solves the puzzle of what is happening and what the proper response to the situation should be. Crises are ambiguous, rich with value clashes, and riddled by uncertainties. In the midst of a crisis and facing time pressures, it can be hard to agree on a common frame of the situation that can give direction to decisions and actions (Boin et al. 2017).

Therefore, it is a collaborative crisis leadership task to force the organization and its mid-level leaders to train their mental preparedness for possible difficult contingencies. Scenario-based training exercises can help improve diagnostic performance when it matters the most (‘t Hart and Sundelius 2013). Staff with operative responsibilities, mid-level

leaders, and the top leadership ought to be urged to engage regularly in such training programs. Scenarios can be used to stretch the imagination beyond the obvious and into the seemingly unthinkable (Lempert 2007).

### **Failures of Initiative**

*A Failure of Initiative* was the title of the House Select Committee report that documented the inadequate handling of the flooding and damage caused by Hurricane Katrina in August 2005 (SBC 2006). Hurricane Katrina and the catastrophic flooding overwhelmed all levels of government (local, state, and federal) and resulted in a suboptimal response to the crisis.

The breached levees and massive flooding wrought by Katrina disabled most communications systems and hindered first responders from reaching the scene, let alone functioning effectively. In such a situation, standing standard operating procedures (SOPs) dictated that state and local governments should make detailed requests for appropriate types of federal assistance, which proved to be an impossibility given the circumstances. The National Response Plan (NRP) and the SOPs in place at the time failed to account for a situation in which the responsible authorities lacked the capabilities to carry them out (Parker et al. 2009, 214). The limitations of the NRP, inflexible procedures, and a fear of making procedural errors delayed and hampered an effective response. Leadership failed in its sensemaking task and in its sense-giving obligations to subordinates, who instead failed to act decisively and fell prey to inertia, which, according to the House Select Committee, caused “death, injury, and suffering” (SBC 2006, 1).

Crisis leaders that fail to provide proactive guidance and organizations that are more focused on procedures than on problem solving are well-documented formulas for failures of initiative. When the after-action reports are written and the often difficult accountability processes are to be handled, these shortcomings often surface and affect the leadership. In worst-case scenarios, leaders can be removed by judicial or political procedures. Many European political leaders have lost their high positions as a result of not being able to adequately mobilize their organizations in the face of a disaster or high-stakes crisis.

### **Prescription: Push to Overcome Capacity Deficits**

The people engaged in shared sensemaking are embedded inside social and institutional settings that influence their work. Moreover, the surrounding political context sets parameters for action and gives clues for how to solve dilemmas like value clashes. The interface of these softer elements with technological capacities, such as support tools for information collection and data sorting, should be tested in scenario-based exercises (Stern 2014). Then pitfalls can be exposed without significant cost to leadership. The endurance of organizations, equipment, and, not least, humans can also be tested without jeopardizing the enterprise. The leadership capacity of sense-giving to followers on different levels can be enhanced through such exercises as well. Sense-giving from the top is required to move the organizational machinery toward the stated objectives in times of emergency. But this leadership task can be executed in different forms and styles.

Preparedness for resilient collaborative response and recovery in different scenarios helps improve the chances to avoid future failures of initiative. Such capacity building evolves over time and clear benefits to leaders are not necessarily reaped immediately. The greatest challenge for such enduring investments is not simply funding but the ability to keep the key people motivated during the long stretches that can elapse between severe disasters and crises. There is also a risk that regular involvement in exercising becomes so routine that the players become very good exercisers but are not as well prepared as they



should be for real-life contingencies. Such an effect can be self-defeating and can actually harm organizational resilience. Therefore, one should not simply exercise for success but rather to uncover hidden weaknesses and capacity deficits that may matter greatly in real emergencies. As Craig Fugate, the former head of the Federal Emergency Management Agency in the U.S., has observed, the point of training exercises is to expose problems: “People are afraid to fail. I’m seeking failure. . . . I want to break things. I want to see what’s going on so we can fix it” (Ripley 2009).

## Failures of Coordination and Cooperation

In the complex and interdependent modern world of today, crises that start in one place can quickly cascade across borders and sectors, increasing the risk of regional or even global harm (Galaz et al. 2011). Complex emergencies and extreme events can also exceed the capacity of any single country to manage on its own, requiring outside assistance that must be coordinated. The reality that extreme events and crises can overwhelm single actors and cross geographical, organizational, and sectoral boundaries has created the need for organizations to coordinate their efforts, horizontally and vertically, to meet these challenges (Comfort et al. 2010; Ansell, Boin, and Keller 2010; Boin and Bynander 2015).

A key objective of this book is to illuminate the obstacles to and the inducements behind fostering coordination among stakeholders in crises. As past research has shown, coordination and cooperation problems were central to the suboptimal outcomes seen when warning-response systems failed in connection with the 9/11 terrorist attacks (Parker and Stern 2002) and Hurricane Katrina (Parker et al. 2009). Communication disconnects and crisis coordination failures were also implicated in the flawed response to Hurricane Andrew in 1992 (Boin and Bynander 2015, 132).

Due to several contextual features of modern society and of contemporary demands on governing, effective crisis management requires collaboration across various boundaries. Isolated expert sectors, the public-private divide, professional corps, levels of authority, and jurisdictional mandates all offer numerous gaps to be bridged in acute and consequential situations of extreme stress (t Hart and Sundelius 2013). These bridges are potential weak links in the “system of systems” for crisis management in Europe and maybe also on other continents.

The tight technological interconnectedness and real-time flows across Europe make for ripple effects without the traditional cushions of time and space. Also inter-organizational interdependencies may be more inter-blocking than interlocking in high stakes situations. Public services that are vital to the functionality of society and to governance are often interconnected with private businesses that own or operate these critical assets. Public service media, like the traditional BBC, drown in a sea of alternative sources of information and, more recently, by the richness of social media. The boundaries to be bridged are plentiful and the geographical borders of Europe are not necessarily the most difficult to cross (Sundelius 2006).

In addition, the notion of ill will and antagonistic actors must be added to this contextual complexity and ambiguity, even in Europe. Flow-based risks and geopolitically based threats in combination seem to define the operative setting for the national and EU officials responsible for coherently leading this continent with its many parts through its next disaster or crisis.

## Prescription: Prepare for Transboundary Coordination

Past research and lessons from existing cooperative platforms, for example in the EU, provide prescriptive advice and point to the core performance attributes that are essential

for building effective transboundary crisis coordination and response capacities (Ansell et al. 2010; Boin and Bynander 2015; Parker, Persson, and Widmalm 2019). Formal platforms, sensemaking and information tools, and scaling procedures for sharing and distributing resources and expertise all should be part of a transboundary crisis management system. In order to be effective, such a system must be able to provide: (1) means and practices for distributed sensemaking (the ability to overcome conflicting problem definitions in situations characterized by uncertainty); (2) the means and procedures for coordination, cooperation, and communication tasks (the ability to act in concert with the appropriate actors); and (3) the resources and procedures for supply logistics to distribute needed resources through clear decision-making structures and procedures (Ansell et al. 2010).

There are several interesting systems that attempt to facilitate the types of horizontal and vertical coordination transboundary crisis management requires. As Boin and Bynander (2015, 133) point out, in their study of success and failure in crisis coordination, the Incident Command System used in the U.S. and the U.K.'s Bronze-Silver-Gold structure are good examples of platforms that "appear to be quite successful in bringing together many actors in a semi-structured environment." However, the EU and its Union Civil Protection Mechanism (UCPM) is the system, despite some remaining shortcomings and problems, which has made the most progress in developing a true transboundary civilian collaborative crisis management capacity (Widmalm et al. 2019; Kuipers et al. 2015; Bossong and Hegemann 2015). The UCPM is the linchpin of the Union's effort to assist member states in the event of a disaster or other major crisis and is an instructive example of a collective effort to develop transboundary coordination and response capacities (Boin, Ekengren, and Rhinard 2013; Parker et al. 2019).

Since the effectiveness of transboundary coordination and response is limited by the weakest links in the chain, asymmetries must be compensated for and addressed (OECD 2018). The UCPM, for example, has mostly worked well in responding to requests for assistance to deal with disasters both inside and outside of Europe; however, there were times when it did not deliver as hoped for in specific instances. This was the case during the 2017 forest fires, which occurred when multiple member states were facing disasters simultaneously. In response, the EU has approved a new plan, rescEU, to address its weak links, namely the coordination and capacity gaps that the fires revealed. RescEU attempts to do so by boosting both national and EU level capacities (Parker et al. 2019).

Finally, if a collaborative coordination platform, such as the UCPM, is to be effective the actors and people involved in the system must trust its protocols and procedures as well as the information it produces, the utility of its communication channels, and its capacity to respond appropriately in the face of a crisis (Boin et al. 2013). Clearly, so-called hardware factors – a coherent legal framework, appropriate formal structures, and sufficient resources and technical equipment – are important for making crisis management work well. However, so-called software factors – leadership, training, networks, and trust in the people involved in the system – are equally crucial, if not more so, to the quality of coordinated action and response in the face of transboundary contingencies (Widmalm et al. 2019).

### **Failures of Credibility**

What leaders and responsible authorities do and say before, during, and after a crisis matters greatly. Compelling communication, to all the involved actors, in the preparation stage is vital for establishing priorities, mobilizing resources, and building recognition and response capabilities. For example, years before the September 11 attacks, George

Tenet, who served as the Director of Central Intelligence (DCI) under both the Clinton and Bush administrations, declared war against Osama Bin Ladin. However, the mobilization of resources and manpower did not match the threat (Parker and Stern 2005, 319). A congressional inquiry attributed this framing failure to a “fragmented Intelligence Community that was operating without a comprehensive strategy for combating the threat posed by Bin Ladin, and a DCI without the ability to enforce consistent priorities at all levels throughout the Community” (Joint Inquiry 2002, 40). This failure to establish priorities and communicate them went all the way to the top. President Bush admitted that prior to the 9/11 attacks he “didn’t feel that sense of urgency” (Woodward 2002, 39), which sheds light on his failure to establish terrorism as a top-tier security threat or back the importance of a plan to eliminate Al-Qaeda before September 11 (Parker and Stern 2005, 320).

Once a crisis strikes, what those in charge appear to do or fail to do in the face of a disaster is crucial. In the wake of the 2011 tsunami that resulted in the Fukushima nuclear disaster, Japanese Prime Minister Kan unhelpfully involved himself in the operational response to the disaster, while failing to effectively communicate and engage with the press (‘t Hart 2013, 102). As a result, Kan botched the meaning-making process and suffered a loss of public support. The decision of Laila Freivalds, the Swedish Minister of Foreign Affairs, to attend the theater after being informed of the 2004 Boxing Day Tsunami, which killed over 500 of the some 20,000 vacationing Swedes caught up in the disaster, became emblematic of the Swedish government’s sluggish and inadequate response (Swedish Tsunami Commission 2005). After the BP Deepwater Horizon oil disaster in the Gulf of Mexico in 2010, the Obama administration took too long to act, dramatically underestimated the amount of oil escaping into the gulf, and was slow to provide accurate information on the magnitude and nature of the spill (Witze et al. 2014, 362). By the time the administration acknowledged the existence of the oil plume from the gushing wellhead, it had undermined the trust of outside scientists and had lost public confidence in its handling of the crisis.

One core element of effective and credible crisis response involves offering a convincing and credible narrative of the situation, its consequences, and what is being done to address it. Meaning-making is a task that leaders can use to reach their audiences and to stay ahead of fake news or false rumors (Boin et al. 2017). Legitimacy is an important quality for leadership, and this element can suffer in disasters even if the actual handling on the ground and in the field is effective. Particular images may take over the media coverage, and any shortcomings in communications with the public or to concerned parties can symbolize and convey a skewed meaning of the situation that differs from the one that leadership sees or wants to promote.

The failure of meaning-making during the Hurricane Katrina response serves as a vivid case in point of what can happen when leaders at all levels of government are unable to credibly explain what is going on in a crisis and are unable to rebut widely spread misinformation and rumors (Boin et al. 2019, 137–52). As a recent reappraisal of the crisis management of Katrina shows, responsible leaders failed to counter a “mayhem narrative” that was inaccurate and instead engaged in a blame game battle that hindered the response and harmed the legitimacy of the responsible actors and institutions that sorely needed it (Boin et al. 2019, 151).

But credibility is not always lost or undermined in crises. There are examples, which we discuss later, when forward looking thinkers and proactive meaning-makers actually strengthen their credibility as political or organizational leaders as a crisis unfolds in front of them. Emergencies are both challenges to leadership as well as opportunities for leadership.

## **Prescription: Invest in Prompt Meaning-Making**

So far we have advocated for a comprehensive management approach to the central challenges of collaborative crisis management. Such an approach is a necessary component of failure avoidance in crises, but it is not sufficient. Effective leadership also requires that due attention be given to the symbolic, emotional, and communicative dimensions of crisis response. This means investing in public information and media liaison capacities before a crisis hits (‘t Hart and Sundelius 2013, 455). For it to be effective and credible it is crucial to include all important stakeholders in the communication process of meaning-making. This includes citizens, the private sector, and other concerned interest groups. The survival of leaders in and after crises is often tied to their symbolic actions and their credibility as storytellers who are able to provide the media and the public with a convincing narrative of what is happening and who provide optimism that touches the minds and hearts of followers (Boin et al. 2019, 176).

German Chancellor Gerhard Schröder’s response to the 2002 flooding of the River Elbe is a good example of effective symbolic and performative leadership. By visiting the flood stricken areas and rapidly supplying emergency funding, Schröder communicated empathy and demonstrated the ability to take decisive action to ameliorate the suffering of the victims; these actions were widely credited for helping him prevail in his election victory some weeks later (‘t Hart 2014, 127). Other examples of leaders that successfully provided meaning-making to the public in the immediate aftermath of devastating crises include New York Mayor Rudy Giuliani after the 9/11 attacks, Norwegian Prime Minister Jens Stoltenberg after the 2011 Breivik bombing and mass shooting, and President François Hollande after the 2015 Paris terror attack (Boin et al. 2017).

In a time of free flowing and fast-paced news stories emanating from many sources, credible meaning-making must be formulated well ahead of social media rumor mills, which, if not addressed, can undermine the legitimacy of leadership. Blame games are destructive and should be avoided as emerging blame game dynamics may have unforeseen effects on society and on governance (Brändström and Kuipers 2003; Boin et al. 2019). When blame spins out of hand, trauma can be inflicted upon the society at large and on the affected individuals. Such consequences may not be merely short-lived episodes but can linger for a long time and even turn into societal myths.

Closure needs to be constructed by leadership to avoid such a fatal projection from an emergency or disaster. Symbolic gestures, public speeches by prominent officials, and memorials can be used toward this end. Public faith in governance and in the ability of leaders to govern needs to be restored after a fatal disaster or controversial crisis. When sitting in the hot seat of crisis decision making, many leaders tend to overlook the severe consequences of ignoring the power of meaning-making. Such neglect can be fatal to their futures as leaders.

## **Failures of Learning**

After dramatic disasters it is very common to establish blue ribbon commissions that document these events in detail, identify the turning points, assign responsibility, point to flaws and shortcomings, and offer recommendations for reform (Parker and Dekker 2008; Boin et al. 2008). For less significant disasters, so-called after-action reports by experts are generally produced and these also include suggestions for changes to avoid similar shortcomings in the future. Lessons from the past are identified, documented, and transformed into action items for leadership execution.

Considerable research has shown that post-crisis investigations and reform proposals often do not lead to organizational learning in the sense that practices in the field or

inside an organization markedly improve. Implementation slippage persists within large organizations and in political systems with fairly brief election cycles. In spite of the best intentions and the good use of scholars and experts in these potential learning processes, achieving meaningful collective behavioral changes is challenging. Although there might be symbolic changes or perhaps altered mandates following a policy failure, post-crisis inquiries and the recommendations they produce rarely result in dramatic change or substantial reform (March and Olsen 1983; Zegart 2005).

Personal and organizational preparedness to avoid known failures is only built over time and not by some quick fix alteration of organizational charts, formal mandates, or even a massive infusion of funding. It is important to avoid the pathology of “fix-it-and-forget-it” approaches to crisis learning and change (Comfort et al. 2010). A major limitation to capturing and capitalizing on lessons learned is that the leader who is willing to invest in preparedness may not serve long enough to benefit from this capacity building effort. This is one factor behind the implementation shortfall that commonly occurs after the spotlight fades in the wake of reform proposals.

### **Prescription: Disseminating and Institutionalizing Lessons Learned**

If policy-oriented learning and policy change are to result in more effective practices for collaborative crisis management, leaders and the involved organizations will need to transform lessons documented and spread them throughout the system, so they are implemented and institutionalized. To make this happen it is important to establish organizational practices and mechanisms, such as training exercises (Stern and Sundelius 2002), to ensure that the lessons learned by individuals are effectively spread within and across organizations (Nohrstedt and Parker 2014, 248). Disseminating lessons across organizations is imperative if they are going to significantly improve the capacity to collaborate in the pursuit of shared objectives (Comfort et al. 2010).

Although a range of psychological, organizational, and political hurdles need to be overcome if meaningful reform and improved performance is to be achieved (Parker et al. 2009), there are some success cases that illustrate that it is possible to successfully address key failings and problems in the wake of a crisis (Birkland 2006; Nohrstedt and Parker 2014). A good example is the revised European aviation crisis management system that emerged based on the lessons learned and the post-crisis reforms that were carried out after the 2010 Eyjafjallajökull ash cloud crisis paralyzed the European aviation transport system for an extended period (Parker 2015).

After an improvised solution ended the acute phase of the ash cloud crisis (Parker 2015; Larsson et al. 2015; Nohrstedt 2013), the lessons learned were utilized for post-crisis reform and policy change. These were carried out at the international, EU, and national levels in order to improve crisis preparedness in aviation and to better coordinate future responses for dealing with volcanic ash (Parker 2015, 102–3).

The reforms that were implemented were then followed up with training and simulation exercise, based on an ash cloud scenario from the eruption of Iceland’s most active volcano, Grímsvötn, to test the effectiveness of the new system. This exercise proved to be a beneficial dress rehearsal for the more effective management of the real eruption of Grímsvötn that occurred only a month later, in May 2011, in which the involved actors benefited from the fact that they better understood the new system and had made some adjustments based on the lessons learned from the exercise (Parker 2015, 103–5). This is a prime example that training exercises can provide useful opportunities to reflect on the strengths and weaknesses of the system as well as generate new insights that can help improve the system (‘t Hart and Sundelius 2013, 456–57).



## **Conclusion: Improving Collaborative Crisis Management Through the Mobilization of Critical Knowledge for Strategic Purposes**

Many policy areas are characterized by a high reliance on research-based knowledge as underpinnings to policy and practice. Public health, transportation, energy, and environmental issues are all policy domains that are deeply steeped in the foundations of science and science-based practices. However, in other policy spheres, such as military operations, police work, civil protection, and emergency management, the role of science has been less prominent, and instead experience-based knowledge has to a greater extent shaped practices and policies. Disasters and emergencies can be highly complex events and therefore scientific knowledge and technical expertise from multiple disciplines are needed to prepare for, respond to, and recover from the wide range of potential contingencies facing modern societies. In short, effective collaborative crisis management requires access to cutting-edge scientific and technical advice (OECD 2018).

Multidisciplinary scientific knowledge can play multiple roles in all aspects and phases of collaborative crisis management. Scientific advice can be utilized in a variety of ways, including: scanning the horizon for novel threats; mapping, understanding, and anticipating emerging risks; preparing for crises through scenario building, response planning, and training exercises; contributing to crisis response through data collection and analysis and sensemaking for decision support; and helping with recovery and post-crisis lessons learned activities that evaluate and document what did and did not work and what should be done differently in the future (OECD 2018, 31).

The U.K. government has been in the lead in its ambition to utilize science-based knowledge in building public policies, and this is also the case in the high-stakes area of emergency management. The Civil Contingencies Secretariat of the Cabinet Office has for several years relied on a Chief Science Advisor and a pool of specialized researchers to consult in acute emergency situations. This function has been helpful in providing guidance in several poorly understood and complex crisis situations, where choices among uncharted paths of action would be consequential. One example was the Pandemic Flu in 2009, when experts first investigated, compared, and assessed the potential spread of the infectious disease before any official action was taken. The UK's Scientific Advisory Group for Emergencies (SAGE) has inspired several other European governments and the EU Commission to try to build similar science-based support functions. British officials have noted that reliance on the natural sciences has proven its value, while it has been more difficult to lean on actionable scholarship in the social and behavioral sciences (OECD 2018).

Climate researchers, for example, have greatly influenced the approach taken by many governments to climate change. Numerous countries were influenced by the Intergovernmental Panel on Climate Change (IPCC) when drafting their national climate assessments, and the IPCC's scientific assessments strongly influenced the goals of the 2015 Paris Agreement, which aims to hold global warming to well below 2°C and to pursue efforts to limit it to 1.5°C. In this area, critical knowledge has, over time, successfully been mobilized for strategic purposes with concrete policy results.

In the life sciences, it has become evident that progress in the public health sector builds upon the evolving research results of many scientific groups in many nations. In the everyday safety sphere, considerable scientific work has contributed to reduced fatality rates from fires, car accidents, and the spread of disease. How can these impressive safety and health benefits, which have enhanced the lives of millions of people, inspire preparedness for handling less expected and more ambiguous contingencies and events?

Many governments invest continuously in science and technology for safety and security. The U.S. Department of Homeland Security supports a huge Science and Technology

Program. Part of the EU Horizon 2020 funding goes to a similar science program on Secure Societies. Many national programs exist, such as in Sweden, Norway, the Netherlands, Germany, and Canada. Some emphasize the science aspects, while others focus more on technological development. Some focus on the long-term usefulness of the results, while others are concerned with more immediate benefits from the scientists. In the social and behavioral fields, some have faith in research-based applications, while others tend to rely more on experience-based best practices. Still, it is agreed by many in this field of work that both research-based and experience-based knowledge should be drawn upon to enhance practices, something that has been done for centuries in the medical field.

To address the gap between the abstract world of science and the practical world of emergency management, education and training can play an important bridge-building role that “fosters familiarity and mutual understanding” (OECD 2018, 58). Future professionals should not be trained by simply teaching them about how things were done in the past in previous work contexts or by passing on old habits based on outdated findings. Science-based knowledge and novel technologies ought to infuse educational curricula, mid-career training programs, and top-level learning retreats. Even if old habits may reign among the very experienced, for good and bad, the incoming generation of professionals should have every opportunity to bring with them more recent findings, tools, and approaches to the difficult work ahead. This opportunity and even obligation goes for incoming leaders as well (Stern and Sundelius 2002).

All of the potential failures discussed in this chapter can only be fundamentally avoided by drawing on critical knowledge and on training and preparations that utilize scientific expertise from multiple disciplines. In this sense, the failure of learning is the most consequential failure, as this omission affects all of the other noted potential mishaps in critical ways. Failures of collaborative crisis management are possible, and even likely, unless those parties needed for collaboration to function effectively are open to the application of novel technologies and new knowledge to carry out their collective work. Capitalizing on this core insight is primarily a matter of shared mindsets and is crucial for transforming learning into improved preparedness for future events and better collaborative crisis management.

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