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The Response to Hurricane Katrina

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Hurricane Katrina occurred four years after the attacks of 9/11, three years after the subsequent creation of the Department of Homeland Security (DHS), and one year after the DHS had created a National Response Plan. But despite the heightened attention to homeland security, the response to Katrina was a failure. The world watched as government responders seemed unable to offer basic protection from the ravages of nature. The titles of two congressional reports summarised the sense of failure. A Select House Committee [House Report, 2006] identified "A Failure of Initiative" while the Senate Committee on Homeland Security and Governmental Affairs [Senate Report, 2006] judged the United States "A Nation Still Unprepared."

The poor response arose from a failure to manage a number of risk factors. The risks of a major hurricane striking New Orleans had been long considered, and there was enough warning of the threat of Katrina that declarations of emergency were made days in advance of landfall. But responders failed to convert this information into a level of preparation appropriate with the scope of the impending disaster. The dispersed nature of authority in the US intergovernmental response system further weakened response, as federal responders failed to recognise the need to more actively engage. In any case, many of the key institutional capacities to manage the response at every level of government were inadequate. In particular, the Federal Emergency Management Agency (FEMA) had been weakened during the Bush administration. The DHS was also an untested organisation, unsure of how to deploy its authority and resources. A key failing of DHS leadership was an inability to understand Katrina as an incident of national significance on par with 9/11. Instead, they responded as if it was a routine natural disaster until it was too late.

Overview of the Risk Issue

Hurricane Katrina was the largest natural disaster in the United States in living memory, affecting 92,000 square miles and destroying much of a major city. Over 1,800 people died and tens of thousands were left homeless and without basic supplies.

Katrina evolved into a series of connected crises, with two basic causes. The primary cause was the hurricane itself, but no less important was the collapse of man-made levees meant to protect a city built below sea-level. These factors unleashed a series of cascading problems that characterises Katrina as an example of a new type of complex crisis. Patrick Lagadec [2008: 7] describes this complexity: "Katrina caused persistent flooding, a series of industrial disasters, critical evacuation challenges, widespread lethal pollution, the destruction of 90% of the essential utility networks (energy, communications, water etc.), unprecedented public safety concerns, concern over the possible loss of the port area (which is essential to the continent's economy), even uncertainty as to whether portions of the city could be saved."

The threat of such a disaster had been noted for some time, and even had its own name – "the New Orleans scenario." In the years prior to Katrina, FEMA staff ranked the New Orleans

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scenario as being one of the most critical potential disasters facing the US. A time-line of the days prior to the disaster reveals early warning of the impending storm, although uncertainty accompanied such warnings. A tropical depression was observed on Tuesday, August 23, becoming a tropical storm by Thursday. By Friday, this depression had become serious enough that the Governors of Mississippi and Louisiana declared states of emergency. National Weather Service forecasts changed predictions, first saying that the hurricane was heading to New Orleans at 11 a.m. on Friday. By 4 p.m. the storm was predicted to hit the Mississippi Coast. By 4 a.m. on Saturday New Orleans was again expected to be hit. On that day voluntary evacuations began in Louisiana, President Bush declared a state of emergency and FEMA and state emergency responders began 24 hour operations. By 7 p.m., the National Weather Service warned that levees could be topped in New Orleans, causing catastrophic flooding.

The Mayor of New Orleans, Ray Nagin, ordered a mandatory evacuation by 9.30 a.m. on Sunday, and the Superdome was opened as a refuge of last resort. Katrina made landfall by 6.10 a.m. on Monday, and later that morning levees began to be overtopped and breached. Search and rescue operations began by Monday afternoon, but communications also began to fail around this time. On Tuesday, Mayor Nagin opened the Morial Convention Center as a shelter of last resort. On Thursday, buses finally arrived to begin evacuations from the Superdome, although evacuations were not completed until Saturday, and some remained stranded on highways until Monday.

The critical period of response lasted just over a week, from the point where it became clear that Katrina might not be just another hurricane, to the point where almost all the evacuees were accounted for. Given limited time, poor decisions and an inability to coordinate the network of responders had dramatic consequences.

Stakeholders Involved

The response to Hurricane Katrina involved an inter-governmental (federal, state, and local) and cross-sectoral (public, private and non-profit) network of actors. The introduction of a National Response Plan in 2004 sought to formalise the role and responsibilities of at least some of the central actors in crisis response. The Plan identified a series of Emergency Support Functions for different federal agencies to provide support to FEMA. FEMA's traditional role for large-scale disasters is to act as a coordinator, orchestrating the capacities of the federal government, while working with state responders.

As a crisis takes on a larger scale, more responders will be needed, and as the crisis creates more tasks, a greater variety of capacities will be required. The Katrina network was so large that there was a failure to fully comprehend all of the actors actually involved (partly because of a large voluntary component), the skills they offered, and how to use these capacities [House Report 2006: 302]. One study counted over 500 different organisations involved in the weeks after landfall [Comfort, unpublished data].

These organisations responded to a central goal: reducing the suffering and loss of life that resulted from the hurricane. Consistent with this overarching goal, there were many more specific goals during the response phase: e.g., evacuation; delivering materials (food, water, ice and medicine); recovering bodies and providing mortuary services; providing medical services; restoring public safety; restoring communications and power; search and rescue; and providing temporary shelter. A network was affiliated with each of these specific goals. There were, therefore, multiple task-specific networks inside the broader Katrina network, although membership of these networks tended to overlap a good deal from one task to another.

While many of these task-specific networks provided an unprecedented response, there were basic problems in coordination both within and across these networks, and disagreements between actors about what to do and who was to do it. One such example is the responsibility to collect dead bodies. FEMA pushed for the state government to take charge, but state and local officials were overwhelmed, and Louisiana Governor Blanco blamed FEMA for the delays in body recovery. The state would eventually sign a contract with a private organisation [House Report, 2006: 275]. The federal Department of Health of Human Services is supposed to take the lead in victim identification and provide mortuary services, in coordination with the Department of Defense, but was slow in doing so [House Report, 2006: 269]. Eventually, Defense took the lead. The lack of coordination further delayed body recovery.

Network theory and crisis management literature both suggest that large diverse networks of the type seen in Katrina have a more difficult time resolving basic issues of coordination than small and homogenous networks. “While there is no theoretical upper limit to the number of agencies that can be part of a network, after surpassing a certain size, any network will become less effective because of increasing coordination costs” [Provan and Milward, 2001: 418]. Participants bring to the network the perspective of their home agency, profession or training, which may clash with the perspectives of others network members. This creates a form of uncertainty about how members will behave and interact with one another [Koppenjan and Klijn 2004]. The experience of Katrina brings to mind Quarantelli [1988: 383], who said: “The larger the scope of a disaster and the greater the number of responders, the less is the likelihood of success of any organizational coordination...The magnitude and increased frequency of new tasks to be performed, coupled with the need to integrate too many established, emergent groups and organizations, minimizes the effectiveness of overall organizational coordination during disaster situations.”

Risk Governance Deficits and Risk Handling Process

B1 Responding to early warnings

The Katrina disaster cannot be classified as a surprise. In both the short and long-run, ample warning of the coming disaster was met with insufficient preparation.

The consequences of a major hurricane had been long-anticipated for New Orleans in particular, due to the dangers of a levee collapse for a coastal city built mostly below sea level. But the concerns about such a disaster were not met with an appropriate level of preparation. It took FEMA five years to find funding for a simulation that modelled the effects of a hurricane hitting New Orleans.

The Hurricane Pam exercise took place in the summer of 2004. The simulation proved useful, as FEMA distributed copies of a plan that emerged from the exercise in the hours prior to the Katrina landfall. While the plan was not a full operational guide, responders regarded it as “fightable”, i.e., specific enough to identify federal tasks and guide implementation. But the Pam simulation was not fully exploited, as it was not funded sufficiently to cover such issues as evacuation, and a follow-up workshop was delayed until shortly before Katrina because FEMA could not find \$15,000 to pay travel expenses. Had the simulation taken place earlier and been more comprehensive, it would have facilitated organisational learning and network-building in ways that would have improved coordination among responders.

In the short-run, responders also had adequate warning. As Katrina developed, the National Weather Service issued grave warnings, convincing the Governors of Mississippi and Louisiana to declare states of emergencies on Friday, three days before landfall. Despite this warning, it was not until Sunday morning that the Mayor of New Orleans, Ray Nagin, ordered a mandatory evacuation. The evacuation was largely successful, with 90% of the city residents departing.

However, many decided to stay, some because they lacked transport, some because they had weathered previous storms (and false alarms) and felt they could do so again.

The failure to respond to early warnings also characterised the federal response. Federal responders lacked urgency, treating Katrina as if it was a normal storm. Senior White House staff had not reconvened in Washington when the disaster appeared imminent, and seemed out of touch with what was happening. Even after landfall, the response was marked by inertia. Levee breaches were reported the day of landfall, but officials at the DHS initially treated such reports sceptically, and did not utilise Coast Guard resources in New Orleans to verify the extent of the flooding. It was not until the day after landfall that DHS and White House officials, along with the rest of the world, would learn the extent of the damage. The knowledge and response of federal officials seemed to lag behind the media reports of the disaster. For example, neither the FEMA Administrator Michael Brown nor DHS Secretary Michael Chertoff were aware that a convention centre was sheltering thousand of victims until informed of the fact by reporters.

A7 Understanding complex systems

Initially, the failure of the federal government to fully understand the systemic nature of the risk, the complex systems affected, and thus the huge scope of the disaster contributed to a delay in providing an appropriate response. But even as the needs created by Katrina became clear, the sheer scope of the disaster challenged an all-out response effort. A catastrophe so large requires more of everything, especially resources and responders. The size of Katrina had a number of effects, detailed below.

Unprecedented demand for actions and services: The size of the disaster made even extraordinary efforts insufficient. Again and again, for evacuation, medical response, search and rescue, and temporary shelters, government efforts were unprecedented. But they were not comprehensive or rapid enough given the scope of the crisis.

The evacuation of New Orleans was the largest evacuation of a US city in such a short period. Efforts to shelter the homeless were also extraordinary – in the days after Katrina, 563 American Red Cross or state emergency shelters in Louisiana housed 146,292 people who lacked adequate food, water, medical services, and toilet facilities. FEMA undertook a logistics response that moved 11,000 trucks of water, ice and meals into the region after Katrina, more than three times as many truckloads as were used during all of the hurricanes that occurred in 2004. The Department of Defense produced the largest domestic military deployment since the civil war, and the National Guard deployment of 50,000 troops was the largest in US history. The Red Cross led a \$2 billion 220,000 person operation, 20 times larger than any previous mission, providing services to 3.7 million survivors. But these efforts fell short of needs, often dramatically.

Reduction of response and communication capacities: The scope of the disaster dramatically reduced the capacity to use transportation to deliver food, water and medical supplies, allow responders to reach affected areas, or evacuate people. In New Orleans, for example, city buses were flooded, even though they were staged in areas that had not seen flooding during previous storms. In any case, most potential drivers had already evacuated. Many police vehicles were flooded and rendered unusable, and parish sheriffs in New Orleans lost jails and booking offices to flooding, thereby limiting the ability of police to curtail lawlessness. The size and scope of the disaster converted many local responders to victims.

The size of the disaster also eliminated much of the communications systems, limiting the ability of responders to gain situational awareness, or to communicate operational plans. Over three million telephone land-lines were lost in the affected states, including many 911 call centres. Wireless phones were also affected, with approximately 2,000 cell sites out of service, and few places to charge the phones because of widespread power loss. The physical locations of Emergency Operation Centers were rendered unusable due to flooding or other damage,

eliminating a base for command operations and resulting in poor coordination and wasted time as responders looked for new locations. What operational sites that remained were insufficient. The Louisiana Emergency Operation Center was vastly overcrowded, with hundreds of people trying to cram into a meeting room with an official capacity of 50.

The impact of Katrina on coordination is illustrated by the fact that prior to landfall the Louisiana Emergency Operation Center had organised conference calls with local parishes, federal officials and the Red Cross to the point that “it appeared that pre-landfall decisions and issues were fully vetted among the participants” [House Report, 2006: 188]. However, in the aftermath of Katrina, such communications became impossible for many local parishes.

B10 Dealing with dispersed responsibilities

The intergovernmental nature of crisis response in the US assumes a gradual expansion of government involvement as local and then state responders need help. But this “pull” approach struggles when state and local capacity is seriously damaged and immediately overwhelmed. In Katrina, federal responders waited too long for specific requests for aid from state and local authorities rather than taking a more aggressive “push” approach.

The dispersed responsibility also complicated efforts to foster a central command. Confusion about responsibilities was increased by the existence of three major federal operational commands in the field during Katrina: the Joint Field Office and Federal Coordinating Officer; the Principal Federal Official; and Joint Task Force Katrina.

- The Joint Field Office and Federal Coordinating Officer (FCO): The National Response Plan makes the FCO the federal response commander. The FCO forms a unified command with the state coordinating officer, who is responsible for coordinating state and local needs and actions with federal actions.
- The Principal Federal Official (PFO): The role of the PFO is, according to the National Response Plan, to act as the eyes and ears of the DHS on the ground, but not to make operational decisions. Michael Brown was PFO, but largely rejected this role. He sought to bypass DHS Secretary Chertoff and work directly with the White House. The PFO that succeeded Brown, Admiral Thad Allen, established a separate command and made operational decisions without working through the Joint Field Office. In practical terms, this tension was finally resolved when Allen was appointed as both PFO and FCO.
- Joint Task Force Katrina: This command directed Department of Defense active duty forces. The Task Force commander, General Russel L. Honoré, often responded to state and local government requests and took action without coordinating with the Joint Field Office.

The lack of a clear directing authority encouraged responders to “freelance” without seeking to coordinate with appropriate authorities. For example, in the area of search and rescue, the heroic efforts of the Coast Guard have been rightly praised. But their quick response was also characterised by little effort to coordinate with FEMA, state agencies, the National Guard or the Department of Defense, who were also running search operations. As a result, there was duplication of effort in some neighbourhoods, and a lack of attention to others. The Coast Guard did not track who was rescued or where they were deposited, leading to many being stranded without food, water, and shelter.

The failure to establish unified command was partly due to confusion with new policies outlined in the National Response Plan. These policies laid out the rules for how responders were supposed to coordinate, and lack of knowledge about these rules led to coordination failures. Louisiana

officials had to bring in consultants after Katrina made landfall to train them how to run an incident command system, which was effectively mandated by the DHS for all state responders in 2004. Confusion about new policies also extended to the federal level. The one large-scale exercise of these policies before Katrina revealed “a fundamental lack of understanding for the principles and protocols” [Senate Report, 2006: 12-10], and a particular confusion about the respective roles of the PFO and FCO that would reoccur during Katrina.

When considering the dispersion of institutional responsibilities, it is natural to focus primarily on governmental actors. But the network of responders also includes non-governmental organisations, and it is important to recognise the additional challenge of coordinating their activities in the broader crisis response network [Moynihan, 2008].

In Katrina, once such organisation, the Red Cross, worked closely with FEMA, but still had difficulties in coordination. The Red Cross communicated logistic needs to FEMA, but found that FEMA often failed to deliver promised supplies, or delivered inadequate amounts too slowly. For example, the Red Cross requested 300,000 meals-ready-to-eat for Louisiana on September 1. The order was cancelled by FEMA, then reordered, and finally delivered – on October 8. The Red Cross was tasked with housing and shelter and depended on FEMA for information on the number and timing of evacuees. But FEMA did not supply reliable information. Scheduled arrivals were cancelled at the last minute, negating the preparations that took place, while in other instances large numbers of evacuees would arrive without advance notice to locations where no preparation had occurred.

The problems between the Red Cross and FEMA are indicative of more serious challenge in incorporating non-governmental organisations into the response network. The Red Cross enjoys a relatively privileged position, with official responsibilities identified by the National Response Plan. Even so, it struggled to coordinate with FEMA. More emergent aspects of the response network face an even more difficult task in coordinating with governmental responders, lacking the access, communication, or specialised training that Red Cross responders enjoyed. But such actors were important players in providing resources to the Katrina response. Understanding the dispersion of responsibilities in crisis response therefore requires an ability to look beyond governmental actors, and to incorporate the roles of emergent non-governmental responders.

B9 Organisational capacity

The size of Katrina made it impossible for any network, no matter how diligent, to prevent a disaster. But capacity problems did make the response less effective than it could have been, and such failures were most obvious and most critical among key members.

FEMA had become critically weak under the Bush administration: FEMA is the hub of any natural disaster response network that involves a federal response, and was the lead federal agency in Katrina. The Senate report [2006: 12-14] charged that FEMA was responsible for “(1) multiple failures involving deployment of personnel; (2) not taking sufficient measures to deploy communications assets; (3) insufficient planning to be prepared to respond to catastrophic events, (4) not pre-staging enough commodities; (5) failures associated with deployment of disaster medical assistance teams and search and rescue teams; (6) failures involving evacuation; (7) failure to establish a joint field office quickly enough; and (8) failure to take measures prior to landfall to ensure proper security for emergency response teams.”

While FEMA was created to facilitate disaster response, for most of its history it has been run by political appointees with limited experience in natural disasters. But this changed when President Clinton appointed James Lee Witt to head the agency. Witt, who worked in emergency management at the state level, is widely credited with a remarkable bureaucratic turnaround. Under his management, FEMA built strong working relationships with state responders, improved

mitigation and preparation tactics, became proactive in propositioning resources, and staved off a threat to eliminate the agency.

But under the Bush administration, FEMA lost political influence, resources, and key functions. It was led by political appointees who had little discernible emergency experience. Experienced staff left, and specific functions were understaffed. All of this had a direct relationship with FEMA's failures during Katrina.

Why did this happen? One obvious reason is the post-9/11 shift to terrorism and neglect of natural disasters. But even before then, the Bush administration had begun to redefine FEMA in a way that left it a weaker agency. Witt's successor, Joe Allbaugh, took the perspective that FEMA had become an "oversized entitlement program" that created unrealistic expectations about federal support [Senate Report, 2006: 14-2].

After 9/11, FEMA was swallowed up by the new DHS, whose most pressing concern was dealing with terrorist activities. FEMA lost direct access to the White House and some key responsibilities. The Homeland Security Act gave FEMA responsibility to develop a single national response framework, but this role was reassigned to Secretary Chertoff's office. This role was crucial, since the resulting National Response Plan outlined new crisis management concepts and structures that did not work effectively during the response [House Report, 2006: 156].

FEMA also lost a key function – preparedness. The basic design of crisis management system – mitigation, preparedness, response and recovery – assumes a consistent, integrated approach across these functions. The loss of the preparedness function limited FEMA's ability to influence state preparation and weakened relationships with state responders. Such pre-established working relationships are essential in crisis situations [Moynihan, 2007]. Preparedness grants became the responsibility of Office of Domestic Preparedness, formerly part of the Department of Justice and with limited experience or interest in natural disasters. This office required that state and local grants for new equipment, training and exercises had to demonstrate relevance to terrorist attacks. For example, requests by New Orleans to purchase flat-bottomed, aluminium boats for fire and police departments to aid during flooding were denied [White House, 2006: 153].

The creation of the DHS also saw the loss of financial resources for FEMA. As a result FEMA failed to fill vacancies. The result was an agency-wide vacancy rate of 15-20%, and more in some areas. Critical functions were understaffed. For example:

- In the area of procurement FEMA was authorised to have 55 full time employees, but had only 36 at the time of Katrina, while a DHS study argued that 95-125 employees were required. Lack of procurement capacity was one of the reasons why FEMA depended on large, uncompetitive and frequently wasteful contracts with a handful of companies.
- FEMA relied increasingly on temporary employees. The authority to hire such employees was intended to provide surge capacity during disasters, but they became de facto permanent staff. Since these employees lacked benefits and job security, this created a workforce with reduced morale and little sense of shared culture. Actual surge hires that took place for Katrina were too few, and lacked the right training and experience to be effective.
- The readiness and strength of FEMA's emergency response teams was undermined. FEMA was expected to have a variety of specialised teams that could quickly deploy to a disaster. These included National Emergency Response Teams, Disaster Medical Assistance Teams, and Urban Search and Rescue Teams. But there were far fewer of

these teams than there was supposed to be at the time of Katrina, and they lacked adequate staff, training, and equipment. Some teams, such as the First Incident Response Team, simply did not exist.

- FEMA did not have enough personnel for operational tasks during Katrina. Scott Wells, Deputy FCO for Louisiana, said, “We had enough staff for our advance team to do maybe half of what we needed to do for a day shift....We did not have the people. We did not have the expertise. We did not have the operational training folks that we needed to do our mission” [House Report, 2006: 157].

Reduced resources also directly impacted FEMA’s planning efforts. FEMA sought \$100 million for catastrophic planning in FY04, and asked for \$20 million for a catastrophic housing plan in 2005. Both requests were denied by the DHS. Lack of resources restricted simulations such as the Hurricane Pam exercise described above.

As FEMA prospered under Witt’s leadership, the political dangers of hiring inexperienced senior managers appeared to recede from memory. Most of the political appointees under President Bush were characterised by significant political campaign experience and negligible crisis management experience, leading long-term FEMA staff to perceive that their leaders were more concerned with politics rather than agency capacity. Eric Tolbert, a career FEMA employee, said: “...in the senior ranks of FEMA there was nobody that even knew FEMA’s history, much less understood the profession and the dynamics and the roles and responsibilities of the states and local governments” [Senate Report, 2006: 14-5].

As FEMA declined, senior managers left, taking with them years of experience and long-term relationships with state responders. What is perhaps most tragic about the decline of FEMA is that it was both predictable given the history of the agency, and predicted by those who understood that history. Had these problems been rectified, the central hub of the Katrina response network would have been more effective.

State and local capacity problems: Almost any state and locality would have been overwhelmed by Katrina. Even so, there were real state and local capacity limitations, which in some ways mirror the problems of FEMA. Clearly inadequate resources and numbers of personnel hampered planning, training and actual operations during the response.

Local parishes had short-changed emergency planning. Once the federal government stopped funding satellite phones for localities, many such parishes declined to retain what might have offered their only means of communication during the disaster. The New Orleans Office of Emergency Preparedness was typical of local capacity, with a staff of three, and chronic turnover problems, with five different directors since 1993.

Another local example is the New Orleans Police Department. The Department had a reputation for being underpaid and less professional than other police forces, and was heavily criticised for its failure to maintain law and order. In the aftermath of Katrina 133 police officers were dismissed or resigned amid accusations of dereliction of duty. However, many officers were trapped by floodwaters, and those that stayed often had no weapons or ammunition, uniforms or even food.

At the state level, the Louisiana Office of Homeland Security and Emergency Preparedness (LOSHEP), had a staff of between 43-45 people, which was about 60% of the staffing capacity of peer organisations in other states. Only about 15 employees had emergency management experience. However, proposals for staff increases were not funded by the state legislature. Low pay stymied recruitment and encouraged turnover.

Poor state capacity had direct consequences during Katrina. The New Orleans medical director tried to establish a pre-evacuation agreement using trains in the months before Katrina, but LOSHEP lacked the staff necessary to finalise the plan. The agency failed to update state emergency plans. Once landfall actually occurred, LOSHEP had primary responsibility for establishing an Emergency Operation Center to channel the state/federal response. But there was not enough staff to man the centre, and LOSHEP had to draft National Guard personnel to help, many of whom were inadequately trained for the task.

A failure of sensemaking

(Related to A10, Assessing potential surprises and B13, Acting in the face of the unexpected)

Lagadec notes that crises like Katrina are distinct from routine emergencies, and require unorthodox leadership skills. In non-crisis contexts we judge leadership by the successful application of best practices to predictable phenomena. But crisis leaders need to be “mentally prepared to take an approach to intelligence and action that is more creative than procedural...With very little information available and even less of it verified, the leader must have the conviction and the vision to lead the community out of its initial disorientation, and to avoid the two pitfalls that are always present in extreme crises: bureaucratic inertia (where each organisation waits till the crisis fits its codes and rules), and the general loss of nerve (not only within the public, but along the entire chain of command)” [Lagadec, 2008: 12]. Leadership will be aided by teams who can engage in rapid reflection, making sense of a fundamentally reordered landscape, and seeking new approaches rather than learned responses that do not fit [Lagadec, 2008].

In many respects, such leadership requires the capacity to engage in sensemaking [Weick, 2001]. Sensemaking requires organisational actors to recognise and find appropriate responses to new challenges. A first step of sensemaking is developing an accepted interpretation of external events. “Once an interpretation is stabilized, then people can design for decision making...people have to encode events into a common set of values and implications. Once that commonality is achieved, then they can begin to act like professionals” [Weick, 2001: 72-73]. Sensemaking and collective improvisation is very difficult for large numbers of people to do, and so organisational leaders play a crucial role: “(S)trategic-level managers formulate the organization’s interpretation. When one speaks of organizational interpretation one really means interpretation by a relatively small group at the top of the organizational hierarchy” [Weick, 2001, 243].

In the case of Katrina, there were some examples of innovation at the ground level, as an emergent response developed that was improvised, ad-hoc and often uncoordinated. But this emergent response could not make up for a failure of sensemaking among federal responders, and a subsequent inability to exert authority over the crisis. The 2004 National Response Plan suggests that federal responders will aggressively pursue a “push” approach for incidents of national significance. This seemed to set the stage for rapid response to Katrina, where the federal government had adequate warning and could predict that state and local responders would be overwhelmed. This was not the case, however.

Individuals frame current problems by events from the past, limiting their ability to make sense of new events until it is too late [Brändström, Bynander and Hart, 2004]. The terrorist attack of 9/11 was clearly central to the thinking of DHS leadership, and framed their view of Katrina. As a natural disaster, Katrina did not match their image of an incident of national significance. DHS leaders had designed post-9/11 crisis response policies, and expected that their full activation would be reserved for another terrorist attack. This mindset limited their ability to recognise the seriousness of Katrina, and led to a sluggish federal response.

What evidence do we have of DHS inertia? The DHS did not pursue a “push” approach until Tuesday evening, when Secretary Chertoff formally declared an incident of national significance. Given the early warnings, the DHS could reasonably been expected to have moved into “push” mode three days earlier [House Report 2006]. Chertoff also never utilised the Catastrophic Incident Annex of the National Response Plan. DHS officials would explain that this was because the Annex was relevant only for “no-notice events” (i.e., terrorist attacks). However, the Catastrophic Incident Supplement says that the Annex is also for “short notice” events, and explicitly identifies hurricanes. This inertia delayed the application of the full force of federal government capacities until after New Orleans was submerged by water.

Conclusion

Any consideration of Katrina must acknowledge that the impact of Katrina was great not primarily because of human failures, but because of the size and scope of the task. Good management might modify disasters, but cannot eliminate them. Nevertheless, it is clear that better coordination among the network of responders, a greater sense of urgency, and more successful management of related risk factors would have minimised some of the losses caused by Katrina. The type of risk deficits identified by this paper are relatively broad, and are likely to be relevant to many of the type of complex crises that Lagarde [2008] identifies as increasingly common.

Many of the lessons that emerge from the case draw directly from the deficits identified. But there are some additional lessons. Katrina also occurred in the policy aftermath of 9/11, and illustrated how new policies and structures of crisis response that occurred after that event not only failed, but may have made the response to Katrina worse, causing confusion about roles and responsibilities, and limiting the ability of leaders to make sense of non-terrorist events.

The paper also suggests the benefits of considering the collective set of crisis responders as a network, with varying degrees of connectivity [Moynihan, 2007; 2008]. Two additional observations arise from this perspective. The capacity of the overall network depends a great deal on the capacity of hub members. Since hubs such as FEMA have mandated responsibilities, they cannot be easily removed from the network if their performance falters. This implies that attention should be given to maintaining the capacity of hubs consistent with their disproportionate influence on the overall network. A network perspective also underlines how more emergent actors, typically voluntary actors from the private or non-profit sectors, are largely disconnected from network hubs, and therefore struggle to coordinate with other responders. But these players provide vital support and cannot be ignored. Crisis managers need to do more to incorporate these actors into the network before the disaster occurs.

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