What Makes Hierarchical Networks Succeed?
Evidence from Hurricane Katrina

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Paper presented at the annual meeting of the Association of Public Policy and Management, November 2-4, 2006, Madison, Wisconsin.

Abstract

This paper examines response problems to Hurricane Katrina from a network perspective, identifying how network task, capacity and coordination factors weakened the response. The impact of Katrina called for a response network of such size and diversity that it was inherently difficult to coordinate. The hurricane also eliminated network communication. At the same time, the task was so urgent that it gave responders little time to adapt. The network response was diminished by capacity problems of key members, whose resource problems led to inadequate numbers of personnel who were poorly prepared for their tasks. These capacity problems also weakened coordination, as did a lack of understanding about new crisis management policies that provided the rules by which networks response were to be guided. These policies called for hierarchical controls over the network of crisis responders, but were unfamiliar to many responders, and never properly implemented during Katrina. As different network members struggled to complete their tasks, trust between network members also declined, weakening another key network coordination mechanism.

Introduction: Network Task, Capacity and Coordination

Two factors central to governance success are: 1) the nature of the task (Wilson, 1989), and 2) the capacity of responders (Ingraham, Joyce and Donahue 2003). A manageable task, consistent with the capacity of responders is likely to results in a positive outcome. Networks have to consider an additional factor – 3) how to coordinate responders.

Coordination implies the combination of mutually relevant skills to solve a shared task. With networks, the response depends not just on the nature of the task, but also the ability to coordinate the capacity available. In traditional network literature, these coordination mechanisms depend primarily on trust and previous relationships that foster norms of reciprocity (Powell, 1990). The study of public networks has shown that networks may employ central governance structures and stability to encourage such coordination (Provan and Milward, 1995).

Recent work on crisis management has noted a combination of networks and an extreme version of central governance that relies on hierarchical lines of authority (Moynihan 2005). Writers on crisis management have long discussed the importance of inter-organizational coordination (e.g., Dynes 1970; Drabek 1990), but rarely in terms of network theory (an exception is Hillyard, 2000). However, in practical terms, crisis responders have been experimenting with a combination of networks and hierarchies. Forest fire fighters in California in the 1970s tried to solve the problems of coordinating different organizations of responders by centralizing authority into incident commanders. The Incident Command System (ICS) that emerged from this practice became a matter of national policy in 2004, when the Department of Homeland Security (DHS) released the National Response Plan (NRP) and the National Incident Management System (NIMS). The new documents were intended to update crisis management policy for a post 9-11 environment.

This paper is part of an ongoing research project to understand the use of ICS, and the possibility of combining hierarchical and network forms of governance in crisis environments. Previous work in this project examined the use of the ICS in animal disease outbreaks, where a hierarchical network response proved successful (Moynihan, 2005). The perceived benefit of this approach is that crises demand a variety of capacities that only a network can provide, but also require a rapid and consistent response, which hierarchies can foster. There is weak empirical evidence on the validity of these claims, but the DHS has promoted the ICS approach as applicable to all types of crises. This is a contestable proposition, and even a cursory examination of different types of crises suggests contingencies that will affect the efficacy of hierarchical networks.

Hurricane Katrina was the first major disaster that took place after the introduction of new crisis management policies, and represents their first critical test. The results could be summarized by the titles of the two major public reports on Katrina. A Select House Committee (2006) identified "A Failure of Initiative" while the Senate Committee on Homeland Security and Governmental Affairs (2006) judged the United States "A Nation Still Unprepared." The crisis management problems that took place during Katrina prompts the research question that animates this paper: why did the Hurricane Katrina response network fail in Louisiana?

The next section describes the methods used for this analysis. The remainder of the paper is divided into three main sections, the first of which examines the nature of the task that Katrina posed. The following section examines the capacity of key network members. The final section focuses on coordination problems the network encountered.

Method

Case data comes from the previously mentioned House and Senate reports on Katrina, analyzing the text of these reports using software called QSR N6. The software allows the analyst to allocate content to specially created thematic codes. The analyst then reviews the content of each code. The approach allows a mixture of inductive and deductive analysis – new codes can be added, and the interpretation of the code can be modified in accompanying memos. When the analyst breaks each line of content as a unit of analysis, the approach is time consuming, especially for longer documents. For example the Senate Report (749 pages) has 16,449 text units while House Report (349 pages) has 11,741 text units, and each unit must be individually assigned to one or more of dozens of possible codes.

There are some drawbacks to this approach. First, the generalizbility of Katrina is an issue, since all hurricanes do not have the same catastrophic affects. Two points are worth mentioning. First, much of the crisis management literature is based on single or low number of case studies. As I mentioned, this paper is part of a broader comparative project that considers a variety of catastrophes. It is also worth noting that the concept of hierarchical networks represented by the operational approach of the ICS is relatively novel. To the extent that there is published work, it is largely descriptive, or ignores the network element (Bigley and Roberts 2001). Though my results may be inexact, the research does what a first run at a new concept should do – identifies key variables and hypotheses, and establishes a preliminary empirical test for others to rebut or confirm. Second, I describe and categorize the cases in terms of key variables – e.g., time, scope, paucity of experience, network diversity, trust – that provide a more specific categorization of the crisis than crisis types such as hurricane, or animal disease outbreak. Finally, the research draws on content analysis of public documentation, in the form of after action reports or public inquiries. These types of analyses provide the most detailed descriptive accounts of what happened, and draw on resources – including hundreds of interviews and access to otherwise unavailable documents – that few research teams could match. These documents are descriptively very rich, and provide a good deal of data. The data, however, is secondary and my interpretations rely on the information presented and excluded from these analyses.

The next section considers how the nature of the network task impacted the ability of responders to be successful.

Nature of Network Task: Time Constraints

The consideration of the nature of the network task is divided into two categories: time constraints and task size and scope. Crises are defined, in part, by decisional urgency (Rosenthal, t'Hart and Charles 1989, 18), and a little time can make a big difference in response effectiveness (Comfort 1988, 9).

The ability to coordinate the network of Katrina responders was most critical in the days prior to and following the disaster. Responders were warned for a number of days that a disaster might occur, 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. During the course of the day National Weather Service forecasts changed predictions, first saying that the hurricane was heading to New Orleans at 11 a.m. By 4 p.m. the storm was predicted to hit the Mississippi Coast. By 4 a.m. New Orleans was again expected to be hit. On Saturday voluntary evacuations began in Louisiana, President Bush declared a state of emergency and the Federal Emergency Management Agency (FEMA) and state emergency responders began 24 hour operations. By 7 p.m. on Saturday, the National Weather Service warns 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, leading to catastrophic flooding, although the Department of Homeland Security (DHS) and White House would not learn of this until early Tuesday morning. Search and rescue operations began by Monday afternoon, but communications also began to fail around this time. Michael Brown, Director of FEMA promised Louisiana Governor Kathleen Blanco 500 buses for additional evacuation within hours. On Tuesday, Mayor Nagin opened the Morial Convention Center as a shelter of last resort, although federal officials did not become aware of this until later in the week. Joint Task Force Katrina, which applied Department of Defense (DOD) resources, was formed on Tuesday, and DHS Secretary Michael Chertoff declared an Incident of National Significance (INS). On Thursday, buses finally arrived to begin evacuations from the Superdome, although evacuations from both the Superdome and Convention Center were not completed until Saturday, and some remained stranded on highways until Monday.

The critical period of preparation and response lasts just over a week, from the point where it becomes clear that Katrina might not be just another hurricane, to the point where almost all the evacuees are accounted for. Given limited time, any delay in making the correct decision had dramatic consequences. Examples include Mayor Nagin and Governor Blanco waiting until Sunday to issue a mandatory evacuation order, delays by federal officials in gaining situational awareness about levee breaches and flooding, the dire situation of the shelters of last resorts, and delays in providing buses to evacuate these shelters.

There is not a direct link between time and crisis response success. Forest fires and other hurricanes require urgent response, but do not result in the type types of failures seen during Katrina. The role of time, therefore, is indirect, interacting with other factors, most obviously task size and scope. A response already stretched thin will be less able to respond quickly, and will be unable to focus on all of the relevant tasks that need to be done. For example, the days immediately following landfall were focused on saving lives through search and rescue efforts, which "while necessary under the circumstances, distracted emergency managers and diverted key assets from other critical missions" (House Report, 2006, 117).

Time allows responders to diagnose and correct weaknesses in preplanning and early response, overcome a paucity of experience, develop a suitable communications system and formalize standard operational procedures. Time allows responders to recover from initial disorganization, improve capacity and resolve coordination problems. Time aids the building of trust also, since trust generally increases over multiple interactions, communication of intentions and ideas, and the establishment of norms and reputations (Gulati 1995).

With limited time, the Katrina network largely failed to coordinate itself, or improve response until after terrible suffering occurred. Time is an essential ingredient in learning. Learning occurred during Katrina, e.g. the replacement of Brown, and the more active federal response to Hurricane Rita which followed shortly after Katrina (House Report, 2006, 12). However, even this relatively rapid learning did not occur rapidly enough to dramatically impact the Katrina response.

Nature of Network Task: Size and Scope

As Katrina unfolded, images of disaster were accompanied by images and reports of governmental failure, and in some cases incompetence. Certainly, there were areas where improved capacity and coordination could have saved lives and reduced suffering. But any consideration of Katrina must begin with the realization that 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. Katrina affected 92,000 square miles and destroyed much of a major city. It was the largest disaster in the United States in living memory. A catastrophe so large requires more of everything, especially resources and responders. Even as responders worked with degraded capacities, the size of Katrina also increased the number of requests for support to unprecedented levels, beyond what was immediately available.

The size of Katrina had a number of effects:

- Unprecedented demand for actions and services, such as food, water, evacuation, search and rescue, shelters.
- A dramatic reduction of response capacity: local responders lost resources and many became victims or evacuated; federal responders were often located too far away to be effective; transportation was mostly not useable.
- A dramatic reduction of coordination: communication loss limited the ability of network members to establish situational awareness, share information and coordinate action.
- A paucity of experience problem: Responders had little experience in dealing with a Katrina-size disaster.
- Network size and diversity: the size of the task demanded a response that could only be provided by a very large and diverse network, which made coordination more difficult.

Demand for 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 extraordinary, perhaps even unprecedented. But they were not comprehensive or rapid enough given the scope of the Katrina crisis. The evacuation of New Orleans may have been the largest evacuation of a U.S. city in such a short period. Over one million people, 90 per cent of the affected parishes, were estimated to have evacuated in a 40 hour 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 (House Report, 2006, 312).

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 (House Report, 2006, 322). FEMA also orchestrated the largest mobilization of temporary housing units in history, with 62,000 trailers housing victims by January of 2006, again about three times the number used for the previous year's hurricanes (House Report, 2006, 314). The DOD produced the largest domestic military deployment since the civil war, and the National Guard deployment of 50,000 troops was the largest in U.S. 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 (House Report, 2006, 315). But these efforts fell short of needs, often dramatically. The House Report commented (House Report, 2006, 151): "(I)n some respects, FEMA's response was greater than it has ever been, suggesting the truly catastrophic nature of Hurricane Katrina overwhelmed a federal response capability that under less catastrophic circumstances would have succeeded."

The Senate and House reports note differences in the quality of response in each state. Alabama appeared to perform best, Louisiana worse and Mississippi somewhere in between. To give a relatively specific example, consider the comparison made by the House Report (2006, 186): "Unlike Louisiana…where the parishes and EOC [Emergency Operation Center] lost use of their emergency management software, Alabama used its software effectively." The comparison is not apt - if Alabama's software was also rendered inoperable by the storm, it is hard to imagine it would have been any more effective than Louisiana's. While it might be tempting to seek for explanations that rest in political culture and administrative capacity to explain variation between states, the primary difference between how well states responded was the degree to which they were affected by Katrina.

Impact on Response Capacity and Coordination

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 especially affected local responders, who provide the most immediate post-disaster response. In the case of Katrina, many of these responders were themselves victims.

The size of the disaster also eliminated much of the response capacity. Communication systems were destroyed, limiting the ability of responders to gain situational awareness, or to communicate operational plans. Over three million telephone land-lines were lost in the three affected states, including many 911 call centers. 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 EOCs 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. "Thus, in New Orleans, for at least some period of time, emergency managers, the police, and the military lost command and control over their own personnel and lost unity of command with the other local, state, and federal agencies that needed to be involved in the relief efforts" (House Report, 2006, 185). What operational sites that remained were insufficient. The Louisiana EOC 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 EOC had organized 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.

While Brown was heavily critical of state and localities, other FEMA officials who were actually working with these officials were more understanding. Bill Lokey, the Federal Coordinating Officer (FCO) at the Louisiana EOC, attributed command and control failures to the catastrophic nature of the event. Deputy FCO Phil Parr noted that disasters bring chaos, and the behavior of the state EOC was consistent with the circumstances. Both officials noted that not only state responders were overwhelmed by the size of Katrina, so too were federal officials (House Report, 2006, 187). The disaster also affected the federal response in different ways. Response operations were located far from New Orleans to avoid the impact of the storm, and then had trouble reaching those in need in the aftermath of Katrina.

Paucity of Experience

A paucity of experience creates a lack of knowledge about what actions to take (Levitt and March, 1988). The infrequency of crises limits the ability to accumulate useful experience and techniques to apply to the next crisis (Wamsley and Schroeder, 1996). This problem is exacerbated in crises where organizations need to both learn new tasks while coordinating the achievement of those tasks with other organizations Quarantelli (1988, 382). Some crises create a less severe paucity of experience problem. For example, forest-fire responders deal with crises which are relatively similar to one another, and occur on a frequent basis. As a result, responders have been able to build up a reliable set of techniques that can be usefully applied from one crisis to the next, rather than engaging in speculative improvisation to solve unanticipated problems (Bigley and Roberts, 2001).

In the Katrina case, the paucity of experience problem was clear. While public officials deal with hurricanes on a regular basis, they are not used to the type of results that emerged from Katrina – massive flooding of a major city, evacuating thousands of citizens without cars, delivering enormous amounts of materials to flooded areas, rescuing stranded citizens. Responders were confused about their role under new federal crisis policies (House Report, 2006, 143; see also section on coordination). At the state and local level, responders were also often unfamiliar with the responsibilities allocated by these policies, particularly how to operate an ICS.

Learned techniques were used, but were often inadequate or too slow to deal with the scope of the disaster. Responders simply did not have a reference point for how to respond under such conditions. The one partial exception was the Hurricane Pam exercise that took place in the summer of 2004. There were problems with the Pam exercise, discussed in the next section, but simulations such as Pam can provide virtual forms of experience and build relationships among responders. Pam did prove useful, as FEMA distributed copies of a plan that emerged from the exercise in the hours prior to landfall which helped to identify specific federal tasks. While the plan was not a full operational guide, responders regarded it as "fightable", i.e. specific enough to guide implementation (Senate Report, 2006, 8-7).

Network Size and Diversity

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 larger the crisis, the larger and more diverse the network required. The Katrina network was so diverse that there was a failure to fully comprehend what actors were actually part of the network (partly because of a large voluntary component), the skills they offered, and how to use these capacities (House Report, 2006, 302). A huge number of agencies 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; 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.

Network theory and crisis management literature both suggest that large diverse networks have a difficult time resolving basic issues of coordination than smaller and more 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). Bigley and Roberts (2001, 1290) note the difficulty of building shared mental models among members from different geographic and social locations in a single organization who experience “different stimuli, learning idiosyncratic "facts" as they construct situational meanings and mental models" As the response becomes more diverse, the basic issue of network governance – how to coordinate – reemerges. 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.”

Network Capacity

The overall capacity of a network depends upon the capacity of its individual members. If a network lacks the collective capacity to solve a task, they can expand to include new members who can provide surge capacity and skills not available in the original network. This is certainly consistent with longstanding crisis management policy, where the network of responders involved becomes larger as local and state resources become exhausted. From this perspective, network members with inadequate capacity can be supplemented or replaced by new network members. However, there are two limitations. First, once a crisis begins, learning about member weaknesses, and identifying and integrating new network members involves mission failures and a loss of time that can have dramatic consequences. Constructing an appropriate network during a crisis is costly. Second, some network members are more important than others, and cannot be replaced easily because of statutory responsibilities. If these network hubs demonstrate inadequate capacity, this will dramatically weaken the overall network response.

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. This section identifies the following network capacity problems among critical hubs:

- FEMA had become critically weak under the Bush administration;
- the DHS struggled to implement new policies it had devised;
- state and local capacity in Louisiana and New Orleans was weak; and,
- the post 9/11 focus on terror corroded sensemaking at the DHS, cooperation between federal and state/local officials, and state and local capacity for natural disasters.

The Decline of FEMA

Why is FEMA so important? FEMA is the hub of any natural disaster response network that involves a federal response, and was the lead federal agency in Katrina. Secretary Chertoff described Brown as his “battlefield commander” and made him Principal Federal Officer (PFO), while another FEMA official was FCO in Louisiana (House Report, 2006, 135). A glance at a list of examples of coordination failures (Appendix A) illustrates that for most of them, FEMA was involved. The Senate report (2006, 12-14) charged that FEMA was responsible for numerous failures: “(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 and a stronger interest in national security issues. The exception comes under the Clinton presidency, when in the aftermath of FEMA’s dismal response to Hurricane Andrew, Clinton appointed James Lee Witt to head the agency. Lee 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 the FEMA that responded to Katrina looked a good deal like the one that mishandled Hurricane Andrew. 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. Lee 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). Allbaugh's comments suggest a conservative view of emergency management consistent with criticisms of Clinton's over-willingness to declare an emergency and send in FEMA.

After 9/11, FEMA found itself swallowed up by the new Department of Homeland Security, 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 consolidate emergency response plans into a single coordinated plan, but this role was assigned to the newly created Transportation Security Administration, who then outsourced this function to a private contractor. Complaints by first responders led to the task being moved to Secretary Chertoff's office. This role was crucial, since the resulting NRP, outlined new crisis management concepts and structures such as INS, PFO, Catastrophic Incident Annex (CIA), that were marked departures from previous policy and "which ultimately proved problematic or experienced difficulties achieving their intended purposes during the response to Hurricane Katrina" (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, 2005). Preparedness grants became the responsibility of Office of Domestic Preparedness, housed in the Office of State and Local Government Coordination and Preparedness, described as "a law enforcement, terrorism prevention-focused organization formally part of DOJ [Department of Justice]" (Senate Report, 2006, 14-13). This Office has limited experience or interest in natural disasters. It has required that state and local grants for new equipment, training and exercises had to demonstrate relevance to terrorist attacks and WMD. While local responders objected, DHS staff responded that such equipment could have dual uses for natural disaster purposes also. The implication, however, was that if the spending had to show how a terrorist-related use. For example, requests by New Orleans to purchase flat-bottomed, aluminum boats for fire and police departments to aid during flooding were denied (White House Report, 2006, 153).

The creation of the DHS also saw the loss of financial resources for FEMA. DHS officials and Brown disagree about the exact number, but FEMA lost somewhere between $25 million and $78 million in discretionary spending between FY03 and FY05. FEMA responded with an old administrative trick to budget shortfalls - they failed to fill vacancies. The result was a an agency-wide vacancy rate of 15-20 per cent, and more in some areas. Some of the consequences of this approach were as follows:

- In the area of procurement FEMA was authorized 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 (Senate Report, 2006, 14-11). Lack of procurement capacity was one of the reasons that there were not more standing contracts with private providers prior to Katrina, and why in the aftermath of Katrina FEMA relied on large and non-competitive contracts with a handful of companies.
- FEMA relied increasingly on temporary employees. The authority to hire such employees was to provide surge capacity during disasters, but such employees 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 (Senate Report, 2006, 14-7). Actual surge hires that took place for Katrina were too few, and lacked the right training and experience to effective (Senate Report, 2006, 14-8).
- The readiness and strength of FEMA's National Emergency Response Teams

"declined dramatically since 9/11 and at the time of Katrina were inadequately trained, exercised, and equipped" (Senate Report, 2006, 14-9). After 2004 there was not money for training the two teams (the NRP actually called for four teams). The size of the teams declined from 125-175 post-9/11 to about 25 at the time of Katrina. One FEMA official referred to response team capacity as "theoretical". FEMA sought $80m for improving national response teams in 2005, but was denied by the DHS.

- FEMA's other emergency response teams declined in number, quality and training. FEMA is, according to the NRP, supposed to have a First Incident Response Team to deploy to incidents of national significance, but such a team did not exist at the time of Katrina. Disaster Medical Assistance Teams are supposed to deploy to provide medical services in an emergency. FEMA judged 27 of the 52 teams to be operational at the time of Katrina, and lacked resources or plans to train or equip these teams. In the area of search and rescue FEMA's Urban Search and Rescue Teams "lacked the plans, funds, personnel, and equipment to respond to a catastrophe. According to Eric Tolbert, FEMA Director of Response until February of 2005, funding for search and rescue is "grossly inadequate and the teams are held together on a shoestring budget" (Senate Report, 2006, 14-11).
- 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. At a more specific level, FEMA struggled to fund the Hurricane Pam exercise for five years. Even then, the exercise was not funded sufficiently to cover such issues as pre-landfall evacuation, and a follow-on workshop was delayed until shortly before Katrina because FEMA could not find $15,000 to pay travel expenses (Senate Report, 2006, 8-6).

As FEMA prospered under Lee Witt's leadership, the political dangers of hiring inexperienced senior managers appeared to recede from memory. The Senate Report (2006, 14-4) notes that "Brown and most of his front office staff had little or no emergency-management experience prior to joining FEMA." Instead, many FEMA leaders had significant campaign experience, leading long-term FEMA staff to perceive that political appointees were excessively concerned about the politics of emergency management at the expense of agency capacity. Eric Tolbert, with FEMA until early 2005, said: "The impact of having political in the high ranks of FEMA . . . that's what killed us, was that 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). Other senior executives made similar criticisms of the political nature of leadership to a consulting firm brought in to analyze FEMA's problems in early 2005 (Senate Report, 2006, 14-5).

As FEMA declined, senior managers left, taking with them years of experience and long-term relationships with state responders. Since 2005, the Directors of preparedness, response and recovery divisions have all left. The operational impact of the decline in leadership was exemplified by Brown during Katrina. While much more space could be given to Brown's failures, the Senate Report (2006, 14-4) summarizes some key failings: "…the leadership at the time of Katrina also lacked basic management experience and the leadership ability required to coordinate the entire federal government's response to a catastrophic event. Brown advocated to DHS and the White House to address FEMA's needs, but he was generally unsuccessful. He presided over the agency as morale plummeted. He refused to operate within the chain of command in which FEMA resided. He failed to work collaboratively with state officials in Louisiana during Hurricane Katrina, the most significant disaster during his tenure."

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. Problems were identified by experienced FEMA staff; the first responder community; reports by FEMA, the DHS or third parties; FEMA budget requests to the OMB and the DHS; and even by Brown himself. Had they been rectified, the central hub of the Katrina response network would have been more effective.

DHS and Federal Capacity

The creation of the DHS and new federal crisis management policies reflected the increased political salience of terrorism. The focus on terror was clearly central to the thinking of DHS leadership. This had consequences in Katrina. It contributed not only to the decline of FEMA and the relegation of natural disasters in federal grants, but it also saw the DHS fail to give Katrina the level of response it would have given to a terrorist action.

The standard approach to disasters is to rely on a bottom-up “pull” approach, where local responders turn to the state when they need help, and with states turning to the federal level when their resources are exhausted. However, disasters such as Katrina immediately overwhelm state and local resources, limiting their ability to provide their own resources, or define what support they need. In such a situation a more proactive “push” approach on the part of the federal government is needed. This basic policy logic was in place prior to the 9/11, but took new prominence in the NRP and NIMS, which provided detailed plans for a “push” response, and created additional mechanisms for triggering such a response.

The post-9/11 focus on the “push” approach would seem to set the stage for a 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. Instead, DHS leadership provided a sluggish response because Katrina, as a natural disaster, did not match their image of the type of incident these new policies were designed for, i.e., a terrorist incident. During crises, responders need to be able to engage in sensemaking, adapting their knowledge to the circumstances they face (Weick, 1995). However, responders also tend to look to the past to guide their decisions, and for this reason are often unable to adapt their thinking to unexpected circumstances (Brändström, Bynander and ‘t Hart, 2004). DHS leaders had designed new policies because of 9/11, and expected that the full activation of these policies would involve another terrorist incident. This mindset limited their ability to make sense of Katrina as an incident of national significance.

What evidence do we have of DHS inertia and confusion?

- In most respects, the DHS failed to move to a "push" mode until Tuesday, when DHS officials learned of the extent of flooding, and Secretary Chertoff declared an Incident of National Significance. This statement was actually redundant, since the Saturday Presidential declaration of emergency under the Stafford Act automatically made Katrina an INS. DHS leadership appeared to be unaware of this, indicating a certain confusion about their powers and the use of an INS.
- Given the warnings of the National Weather Service as early as Friday, and more definitively on Saturday, the House Report argues that the DHS could reasonably been expected to have moved into "push" mode on Saturday.
- Chertoff never utilized the NRP Catastrophic Incident Annex. DHS officials would explain that this was because the CIA was relevant only for "no-notice events" (i.e. terror attacks). However, the Catastrophic Incident Supplement says that the CIA is also for "short notice" events, and explicitly identifies hurricanes.
- Chertoff depended primarily on Brown as his field commander, rather than becoming directly engaged in the response. Chertoff appointed Brown as PFO, despite the fact that Brown lacked the specific training required for the job. Brown saw the position as a nuisance, and instead of communicating directly with Chertoff and the DHS, tried to communicate directly with the White House and bypass his superiors.

The perceived association between new response policies and terrorism also slowed the response of others. WMD Civil Support Teams made up of National Guard were a great help during Katrina. These teams had all hazards response skills in medical support, logistics, administration, communication, air liaison and security (House Report, 2006, 229). However, some states delayed sending these because they believed that such teams, by law, could only be used in WMD situations.

State and Local Capacity Problems

Louisiana and New Orleans also suffered from capacity problems, although the relevance of these problems is less pressing when we consider that any state and locality would have been overwhelmed by Katrina. For example, the New Orleans Police Department has a reputation for being underpaid and less professional that other police forces, and was heavily criticized 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 (House Report, 2006, 246). However, many officers were trapped by floodwaters, and those that stayed often had no weapons or ammunition, uniforms or even food.

In Louisiana, the capacity problems of state and local level emergency organizations mirror the problems of FEMA. Clearly inadequate resources and numbers of personnel hampered planning, training and actual operations during the response. The Louisiana Office of Homeland Security and Emergency Preparedness (LOSHEP), had a staff of between 43-45 people, which an internal staff study found was only about 60 per cent of the staffing capacity of peer organizations in other states. Only about 15 had emergency management experience. However, proposals for staff increases were not funded by the state legislature (Senate Report, 2006, 6-5). As with FEMA, lack of resources staff shortages had direct consequences:

- Low pay stymied recruitment and encouraged turnover
- The New Orleans medical director tried to establish a pre-evacuation agreement with Amtrak in the months before Katrina, but LOSHEP lacked the staff necessary to finalize the plan (Senate Report, 2006 6-5).
- The agency failed to update state emergency plans (Senate Report, 2006, 14).
- Once landfall actually occurred, LOSHEP had primary responsibility for establishing an EOC to channel the state/federal response. However, LOSHEP could provide the EOC only 40 full-time trained staff, or 20 per 12-hour shift. To supplement this staff, LOSHEP relied on National Guard staff to man the EOC, many of whom were inadequately trained for the task (House Report, 2006, 192).

Local parishes also shortchanged 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 had a staff of three, and chronic turnover problems, with five different directors since 1993 (Senate Report, 2006 6-10). Its fire and police departments had a combined total of five boats and requests for additional boats were refused by the city in 2004 (Senate Report, 2006, 14). Given the widely known threat to the city from flooding (emergency responders widely referred to it as the “New Orleans scenario”), the lack of administrative attention to emergency planning is all the more striking. Nearby Jefferson Parish, by contrast, has had the same director in place for almost a decade and had 11 permanent staff. However, Jefferson is the exception. Parishes around New Orleans typically have no more than two to three emergency staff (Senate Report, 2006, 6-12-13).

Network Coordination

House and Senate reports give credit to a number of successful actions during the disaster, particularly the warnings of the National Weather Service and the National Hurricane Center, the search and rescue efforts of the Coast Guard, the evacuation of the Superdome by the DOD. What is common between these instances is that they are the actions of individual hierarchies, not the coordinated action of a network. In fact, a basic theme of Katrina is the failure of coordination. Appendix A provides examples of specific coordination failures.

The Failure of Hierarchical Networks

National crisis policy accepts that major disasters will require a coordinated response involving all levels of government, non-profits and the private sector, but argues that such coordination can be facilitated by a central command and control that direct network members (DHS 2004a; 2004b). In effect, national crisis policy now directs responders to construct and operate hierarchical networks. In Katrina, the network element of the response is very clear, but unity of command of a hierarchy was largely absent.

In the Katrina case, there was no single individual who took charge in the early stages of the disaster, as neither the Mayor of New Orleans, the head of FEMA or the DHS, or the Governor of Louisiana exerted anything other than partial control of the response. Efforts to foster unity of command faltered because much of the state and local emergency infrastructure was destroyed, and because “overwhelmed organizations cannot achieve unity of command" (U.S. House of Representatives 2006, 184-185, 189). This failure to establish a unified command led to multiple, duplicative and uncoordinated efforts (U.S. House of Representatives 2006, 194-195).

Unity of command was also prevented by ambiguity about who was in charge. Many state, federal and local officials "were 'freelancing,' or just showing up without coordinating with the appropriate authorities at FEMA or the state. They would bypass the command structure" (House Report, 2006 189). There were at least three major operational commands in the field during Katrina (House Report, 2006, 189):

- The Joint Field Office and Federal Coordinating Officer: The NRP makes the FCO (William Lokey, from FEMA) 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: The role of the PFO is, according to the NRP, to act as the eyes and ears of the DHS on the ground, but not to make operational decisions. In the Katrina case, the PFO that succeeded Brown, Admiral Thad Allen, established a separate command made operational decisions without working through the Joint Field Office. In practical terms, this tension was finally resolved when Allen also replaced all three state FCOs.
- Joint Task Force Katrina: This command directed DOD active duty forces. General Honoré, who led the Joint Task Force, took local government requests and pursued actions without coordinating with the Joint Field Office.

The failure to establish unified command was also partly due to confusion with new policies outlined in the NRP and NIMS, and failure to train responders on these new policies, especially the principles of an ICS. New policies laid out the rules for how responders were supposed to coordinate. Not surprisingly then, confusion about these rules led to coordination failures.

Louisiana officials brought in consultants after Katrina made landfall to train them how to run an ICS. In testimony before the Senate, Deputy Louisiana FCO Scott Wells expressed his frustration: "There was no unified command under the National Response

Plan. They didn't understand it. They had no idea. . . . The states agreed to use NIMS. They agreed to ICS. What does it tell you when two days into a catastrophic disaster a state gets somebody in to explain ICS to them?" (Senate Report, 2006, 27-15). He also said: "If people don't understand ICS, we can't do ICS. And if we can't do ICS, we cannot manage disasters" (House Report, 2006, 193).

Confusion about new policies was not limited to state and local responders. The one large-scale exercise of the new policies that took place before Katrina, TOPOFF 3, found "a fundamental lack of understanding for the principles and protocols set forth in the NRP and NIMS" at all levels of government (Senate Report, 2006, 12-10), and specifically identified confusion about the respective roles of the PFO and FCO.

Katrina was the first major disaster under the new policies, and responders lacked the experience and training with new policies to render them an effective mechanism for coordination. At the time of Katrina, the new policies had not been translated into effective operational guides. For the predecessor to the NRP, the Federal Response Plan, FEMA had developed response plans for specific regions, which included a hurricane plan for Louisiana. The Senate report found no evidence of an equivalent planning mechanism under the NRP, or that the old plans had been updated. The CIA was supposed to have been accompanied by a Catastrophic Index Supplement that provided more specific hour-by-hour operational guidance for federal responders. The supplement was largely completed in late 2004, but was not released because of objections raised by the DOD about reimbursement of medical services (Senate Report, 2006, 27-5).

The Political Nature of Crisis Network Trust

With hierarchical modes of control offering limited efficacy, a more traditional network coordination mechanisms – trust – might have been expected to be prominent. Trust is facilitated by past experiences that build personal relationships and norms of reciprocity (Gulati 1995; Powell 1990). Since actual crises are rare, emergency responders tend to build relationships in virtual experiences, such as preplanning and simulations. The decline of FEMA, and the limited attention given to disaster planning and preparation weakened the capacity to build such relationships. As the House Report noted (2006, 158): "Numerous officials and operators, from state and FEMA directors to local emergency managers told the same story: if members of the state and federal emergency response teams are meeting one another for the first time at the operations center, then you should not expect a well-coordinated response."

During a crisis response itself, it is possible for responders to build trust with one another (Moynihan, 2005). As responders come to appreciate the skills of other network members, and observe these members fulfilling their commitments, they come to trust them. Virtuous circles foster norms of reciprocity and coordination. But the opposite is also true. Vicious circles can form, and as network members perceive other members as incompetent or failing to live up to their responsibilities, they are less likely to rely on them, and more likely to favor unilateral action rather than coordinate their resources.

Crises are highly politically salient events, and the political nature of crises exacerbates vicious circles. Politicians and senior managers are acutely attuned to the need to minimize political blame, and so have a strong incentive to a) shift blame to other network members, and b) disengage from another network member if they believe they can be more effective through solo actions. Further, confusion about who is in charge, which is always present in intergovernmental operations but was particularly apparent during Katrina, creates ambiguity that enables network members to opportunistically frame crises to portray themselves positively (Stern, 1997, 78).

It is instructive to look at perhaps the only example of positive coordination portrayed in the House and Senate Reports, which is the massive support (almost 50,000 national guards, and almost 20,000 civilians) given by other states to Louisiana, Mississippi and Alabama from other states. This support was given through a pre-established reciprocity agreement, called the Emergency Management Action Compact. States provide support in the expectation that the receiving state will cover the costs of this support, and that similar help will be provided to the giving state if it faces its own emergency. The support is therefore governed by norms of reciprocity. The state sending the support makes no effort to direct them in the field, giving operational responsibility to the Governor of the affected state. There is therefore, no risk of political failure in providing the support.

By contrast, the intergovernmental relationship in crisis response does not involve reciprocity – the federal level helps states and localities because it is a political responsibility, rather than out of expectation that they will gain something in return. The same logic applies to coordination between federal agencies, most of whom have little to gain in helping FEMA and the DHS, but must do so by law. Rather than reciprocity, coordination, at least at the political level, is governed by a logic of minimizing political blame.

Political leaders and agency heads may sometimes judge that political blame will be minimized by blameshifting and solo actions rather than engaging in coordinated action. There are numerous examples of what appear to be calculated acts of solo actions and blameshifting emerging from Katrina, distinct from coordination failures due to overwhelmed communications or lack of experience.

- Michael Brown referred to the response of the state of Louisiana as dysfunctional.
- The Department of Health and Human Services (HHS) and FEMA disagreed about their respective roles in allocating medical services.
- General Honoré made little effort to coordinate with the Joint Field Office.
- Senior Coast Guard Officers "refused to meet and conduct joint search and rescue operations with FEMA and state agencies' (House Report, 2006, 190).
- Governor Blanco, other state officials and local parishes often bypassed the joint field office by directing requests directly to General Honoré and Joint Task Force Katrina.
- The DOD took over victim identification and mortuary services when they perceived the HHS as not fulfilling their role of coordinating this task.
- Governor Blanco blamed FEMA for delays in body recovery and the provision of buses for evacuation. The state later signed a contract with a private operator to collect bodies, and had started to commandeer buses at about the time FEMA buses started to arrive.

Political blameshifting and solo actions may serve the needs of individual network members to avoid political blame, while still having a deleterious effect on the overall network goal, and the long-term sense of trust between different levels of government. For instance, in the aftermath of Katrina, federal efforts to establish authority during Hurricane Wilma in Florida were rebuffed by state officials concerned by the federal performance in Katrina. Florida officials named their Governor as incident commander, and refused to agree to the appointment of a PFO (Block and Schatz, 2005).

Conclusion

This paper has described some of the primary reasons for response failures during Katrina. It is tempting to identify a single factor or theory that solves why Katrina failed. For example, was the decline of FEMA, the failure to establish command structures, the failure of sensemaking, and the political context of crisis networks are all topics worthy of paper-length treatment.

While these would be worthy intellectual exercises, there is no single factor or theory that can comprehensively explain this failure – the failure was too large, involving multiple factors that afflicted a variety of actors. This makes any attempt to provide an overview necessarily fragmented. Rather than middle-range theories of human behavior, I offer instead a meta-theory that describes network effectiveness as dependent upon the nature of the network task, network capacity and network coordination. The theory is relatively straightforward and serves as a framing device to identify multiple factors that caused the network to falter. The problems highlighted help us understand the failures of Katrina, but also something of crisis networks:

- The capacity of the overall network and depends a great deal on the capacity of hub members.
- The political context of crisis networks can encourage blameshifting and solo action between federal agencies and across different levels of government.
- Basic confusion about coordination roles and policies can prevent a unity of command from forming.

The paper also points to interaction across the three categories identified:

- Highly urgent tasks limit the ability of the network to improve network capacity and coordination as the crisis progresses.
- Catastrophes weaken network capacity by virtue of eliminating physical staging locations, response resources and access to the disaster area.
- Catastrophes weaken coordination by eliminating communications capacity, and by

creating the need for a large and unwieldy network of responders.
- Capacity weaknesses among hub members result in failure of effective coordination for specific tasks.

These basic insights suggest the benefit of a network approach to understanding crisis response, and the need for additional empirical research to test such propositions in a comparative context.

Appendix A: Example of Coordination Failures

Situational awareness: Coast Guard responders were the first federal officials in a position to fly over the city and identify levee failures and severe flooding on Monday, August 29, but these resources were not used by the DHS.

Search and Rescue: DOD forces and the National Guard overlapped in the areas they patrolled (House Report, 149). The Coast Guard and the National Guard also ran separate search operations. “The lack of a coordination mechanism and standardized processes led to duplication of effort in some locations and a lack of response in others” (House Report, 2006, 230-231). The Coast Guard did not track who was rescued or where they were deposited, leading to many being stranded without food, water and shelter (House Report, 2006, 215).

Medical Services: The HHS is responsible for leading the provision of emergency medical services, but most emergency medical resources have been moved to the control of FEMA. FEMA and HHS officials would disagree about the level of control the HHS had over the medical response teams, but there was strong evidence of weak coordination in the timing and positioning of medical resources (House Report, 2006, 255).

Body Recovery and Mortuary Services: State officials and FEMA disagreed about who was in charge of body recovery. FEMA pushed for the state to take charge, but state and local officials were overwhelmed, and Governor Blanco blamed FEMA for the delays in body recovery. The state would eventually sign a contract with a private organization (House Report, 2006, 275). HHS is supposed to take the lead in victim identification and provide mortuary services, in coordination with DOD, but was slow in doing so (House Report, 2006, 269). Eventually, the DOD took the lead in this area. The lack of coordination further delayed body recovery.

Use of DOD Resources: FEMA was slow in asking the DOD to become involved. (Senate, 2006, 12-22), to the point that the DOD started to position resources. FEMA did not ask the DOD to take over the logistics mission until the Thursday after landfall, and this transfer was not approved until Saturday. After this, the DOD proposed seven additional missions, which were approved by FEMA (House Report, 2006, 146).

Superdome Security: Both the local police and the National Guard had a presence at the Superdome, but both sides claimed that the other should have taken lead responsibility. As a result of failing to work together, the declining security situation led many responders, including almost all FEMA officials, to leave the Superdome. FEMA could have requested security for the Superdome and other tasks from the Federal Protective Service. FEMA did not request these services until Tuesday, August 30th. When 14 security staff arrived near the Superdome next day, they could not access the building.

Superdome Evacuation: FEMA had developed a plan to evacuate the Superdome, and planned to do so on Wednesday morning. General Honoré told National Guard at the Superdome to cancel these plans and that he would take charge, but did not inform FEMA. Evacuation of the Superdome did not begin until Thursday.

Security and Supplies at the Convention Center: Mayor Nagin declared the Morial Convention Center as a refuge on Tuesday. The Center was not supplied with food and water or medical services, and Nagin did little to communicate the designation. FEMA and DHS officials still appeared to not know about the Center until later in the week, when approximately 19,000 people were stranded there. On Friday, the National Guard delivered FEMA-provided supplies, and established security, and shortly after evacuated the Center.

Logistics: As crises escalate, state and localities are supposed to communicate resource needs to FEMA. After Katrina, such requests were consistently reduced by FEMA in a way that suggested a standard procedure. FEMA often failed to deliver promised supplies, or delivered inadequate amounts too slowly. As a result, states started to purchase supplies on the market or from other states (House Report, 2006, 321-322). The Red Cross also relied on FEMA for commodities, and also had logistics problems. “Many of the food orders processed through FEMA were either inexplicably canceled or never satisfied. On follow-up, it was discovered that many of the orders placed by the Red Cross with FEMA were not reflected in FEMA’s systems” (House Report, 2006, 347). For example, the Red Cross requested 300,000 meals ready to eat for Louisiana on September 1. The order was canceled by FEMA, then uncanceled, and finally delivered – on October 8. FEMA admitted that it had serious problems in procuring and tracking commodities, and the DOD essentially took over this function during Katrina.

Transportation: As with logistics, the state turned to FEMA to provide buses for evacuation. Brown told Blanco that 500 buses would arrive within hours on Monday, but FEMA dialed to ask the U.S. DOT to send buses until Wednesday, and significant numbers of buses only began to arrive on Thursday. By Wednesday, Blanco had lost faith in Brown’s promise and ordered staff to commandeer school buses. Many evacuations were not complete until Saturday.

Post-evacuation Shelter: The Red Cross was tasked with housing and sheltering evacuees and relied on FEMA for information on the number and timing of evacuees. “But there appeared to be no correlation between the information communicated by FEMA and what actually happened” (House Report, 2006, 349). Scheduled arrivals were canceled at the last minute, negating the preparations that took place, while in other instances large numbers of evacuees would arrive without advance notice to places where no preparation had occurred.

Materials Distribution Security: The Red Cross distributed materials without little consideration of security implications. The National Guard and State EOCs complained that the Red Cross did not coordinate with them on materials distribution. In part, this was because of the inexperience of Red Cross volunteers, and their unfamiliarity with the NIMS requirements to establish operations sections that would process tasks through the EOC. Distribution efforts were frequently overwhelmed, leading to volunteers belatedly called on the National Guard for security. The Mississippi head of the National Guard said: “Consequently, the National Guard stayed in a reactive mode concerning security of distribution sites and shelters and hundreds of man hours were wasted.” (House Report, 2006, 348).

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