

“BUREAUCRACY, MEET CATASTROPHE”
KATRINA LESSONS LEAD TO EMERGENCY-MANAGEMENT INNOVATION
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Margaret B. Takeda, Ph.D., University of Tennessee at Chattanooga
Marilyn M. Helms, D.B.A., CFPIM, CIRM, Dalton State College

Abstract

This research highlights the severe shortcomings of the bureaucratic model as a paradigm for responding to situations in which the magnitude of the system's task is overwhelmingly complex and the timing process is bounded by urgency. Evidence of the findings for this research is driven by primary references, namely news reports and website information provided in the aftermath of the fall 2005 hurricane. Katrina highlights the key problems of bureaucratic management including slow decision-making, inability to absorb and process outside information, and escalation of commitment to failed courses of action. Examples of "outside the system" responses are suggested as a basis for more fluid, dynamic, and effective emergency management.

Key Words for Indexing: bureaucracy, escalation of commitment, stochastic events, hurricane Katrina, hurricane relief efforts, decision-making, emergency management, disaster relief organizations, complexity management, failed courses of action, autonomous decision-making, localization of authority, decentralization of resource allocation, community level preparedness.

Before hurricane Katrina, Americans assumed the nationwide disaster preparedness system (DPS) housed in the new Department of Homeland Security (which includes FEMA - the Federal Emergency Management Agency) and the Red Cross, in particular -- could deal with the hurricane aftermath in the gulf coast region. Yet on August 29, 2005, hurricane Katrina, struck the Mississippi Gulf Coast and broke the levee protecting New Orleans leaving an unofficial total of 1,383 people dead and some 85% of the affected areas homeless and 6,600 persons still missing as of mid-December 2005. The death toll and other records are unofficial because the "record-keeping on refugees is chaotic, scattered, haphazard, and utterly inadequate" according to journalist Robert Lindsay with losses estimated between \$40-\$55 billion, displacing the September 11, 2001 terrorist attack as the single-most expensive insured occurrence in the United States today (Guinn, 2005; <http://robertlindsay.blogspot.com/2005/12/katrina-death-toll-inches-up-to-1383.html>).

In post-hurricane analysis, it is apparent reliance on a bureaucratic approach to disaster preparedness may actually disadvantage efforts to respond in a timely and effective manner to any catastrophic event. This system, in which various public and private agencies provide disaster prevention and relief, is highly bureaucratic in both form and function. The purpose of this paper is to validate our contention that the bureaucratic model of emergency response management is wholly inadequate using hurricane Katrina as an example. Primary references, in the form of news reports and websites following the disaster, were used as a basis of analysis. By presenting assumptions of the bureaucratic management approach, as they relate to the nature of catastrophic disasters, this article raises awareness of the need for possible reform of current emergency management approaches in use by governments today.

Emergency Relief Systems – A Bureaucratic Model

In our prior analysis of the Tsunami disaster relief efforts (Takeda & Helms, 2006), we cited Sandra Schneider (2001), in her excellent critique of governmental responses to disasters, who agreed all emergency management response systems in place today are modeled on a bureaucratic approach to management. In the United States, the Federal Emergency Management Agency or FEMA is the governmental body dedicated to protecting and aiding

Americans in the case of natural and man-made disasters. Throughout its history FEMA has had two strategic missions – enhancing the federal government’s ability to survive a foreign attack and assisting state and local governments in responding to natural disasters.

The Homeland Security Act of 2002 changed FEMA’s structure by making it a component of homeland security and transferring most of FEMA’s resources to the Emergency Preparedness and Response Directorate of the Department of Homeland Security. An exception to this change was made for the Office of Domestic Preparedness responsible for responding to terrorist threats which was transferred to the new DHS Border and Transportation Security Directorate. This change was designed, in part, to allow FEMA to focus more specifically on natural disaster preparedness and response (Carafano & Weitz, 2005).

A host of other state and local relief organizations, governmental organizations and non-governmental organizations (NGOs) are typically involved in managing relief in a catastrophic event (see Table 1). All can be characterized as relying on highly codified, formal approaches to the diagnosis and response to human calamities based upon decades of hands-on experience and scientific study.

Communities, therefore, have come to rely on the experience and expertise of these organizations to facilitate appropriate responses to unforeseen events. But as we learned in the Tsunami disaster analysis, there are flaws in the bureaucratic design of these organizations in their relationship to catastrophic events that raise questions about their appropriateness for the role they are to play in emergency management.

-----**Insert Table 1 Table Approximately Here**-----

The very nature of the bureaucratic management model has been summarized as exhibiting four basic characteristics (Weber, 1958; Takeda & Helms, 2006). First, bureaucracies rely on (1) clearly defined objectives, (2) formal structures in place to coordinate all activities at various levels (local, regional, national, and international), (3) a clearly stratified division of labor so redundancy and confusion is avoided, and (4) policies and procedures designed, developed, and enacted by organization members to respond effectively in a highly chaotic environment.

Thus, the system is designed to facilitate “rational” reaction in a highly irrational and chaotic set of circumstances (Schneider, 2001). It is this underlying assumption that puts “bureaucratic emergency response system” as the answer to the question, “How do we best deal with chaotic events in complex environments?” But we know from the Tsunami disaster analysis this is not the right answer. As we are beginning to understand, the very nature of a catastrophe requires a very different management mindset.

Catastrophic events are seldom predicted with absolute certainty, even with the latest technologies and monitoring techniques. Catastrophic events typically occur without warning causing huge disruptions, stop functioning systems, are shocking in nature to the people involved in them, and are unexplainable to anyone’s complete satisfaction (Latane & Darley, 1968). Abstract and stochastic events are an ever-present phenomenon in catastrophes. Individuals reacting to abstract events in a catastrophe must maintain a large set of cognitive skills, even though they may only be used infrequently (Daft & Weick, 1984). Relief organizations and workers are kept on standby, and giving only special attention to start-up and anticipating problems that may occur.

When dealing with abstract events, the differentiation between stand-by and reaction is blurred, while the demand for monitoring and diagnostic skills becomes crucial (Davis & Taylor,

1976). In addition to abstract events, stochastic, or random, unpredictable events challenge the system and the way it has always worked. It requires people to rapidly change behavior, decision-making, priorities, structure and processes and is often a great challenge to the assumptions on which the system is based. These events test the system's ability to deal with uncertainty by providing incoming data that does not fit with current paradigms and by providing data the system has not addressed before.

A "crisis" creates conditions in which the system lacks "certainty," but relies on itself to handle change. This self-reliance can have deadly consequences because it is based on false assumptions the system can actually handle the stochastic event. Systems must be prepared to handle the chaos that often ensues when there is a rapidly occurring sequence of abstract and stochastic events. This mix of abstract and stochastic events presents a continuous challenge, since the stochastic nature of the sequence produces a great deal of uncertainty, while its abstract nature requires a great deal of attention to diagnostics and monitoring. In short, such a sequence produces a need for rapid change and adaptation.

Currently most catastrophe response organizations (disaster relief agencies) rely on command-and-control management following a structured approach (Neal & Phillips, 1995). To manage effectively in complex environments, systems must be "fluid" in nature, operating with the imperative the system is greater than the sum of its parts. Wheatley (1992) believes "we have begun to speak in earnest of more fluid, organic structures, even of boundary less organizations. We are beginning to recognize organizations as systems, and crediting them with some type of self-renewing capacity (Wheatley, 1992, p. 13)." Wheatley adds the only means of dealing with this unsteady state is to design a highly flexible and adaptive decision-making system, while remaining true to the overall mission or goal of the organization.

The model most often referred to as appropriate for managing complex environments in the holistic management model (Kilmann, 1989). The holistic management model is characterized by continuous learning, adaptation to change, long-term focus, a low rate of errors, a high capability to incorporate new information and learning. In contrast to the holistic management model, the bureaucratic model is designed to centralize responsibility, create specialized job roles and function, focus on the short-term, include no new learning. The key elements of a bureaucratic management system, then, are a focus on the formal rules and operations, with keen attention paid to process over outcome. Because the actions within the bureaucratic system are so well codified, they are ill designed to respond in the fluid structure necessary for effective disaster response.

The Failure of the Bureaucratic Approach

Three failures of the bureaucratic approach include decentralized knowledge and centralized decision making, ignoring outside information, and commitment to failing courses of action (Takeda & Helms, 2006).

Decentralized Knowledge and Centralized Decision Making. Bureaucratic management systems rely heavily on group decision making because roles are formalized and information is highly codified, creating a system in which people are "experts" in their limited role in the process. This creates a necessity for knowledge sharing via meetings and other communication tools. While this knowledge sharing helps to reduce uncertainty, it also requires large amounts of time and effort. The heavy reliance on knowledge sharing hinders the system's ability to take swift and decisive action. In addition to the heavy reliance on the knowledge sharing, the bureaucratic model is also based on the centralization of decision making.

While a large number of people have a role in the decision making process they do not have authority for action. This heavy reliance on the sharing of information and centralized decision-making makes responding to a rapid demand to incorporate “outside” information and resources difficult. The bureaucracy’s universal problem is decentralized knowledge but centralized decision-making. In short, the heavy reliance on centralized decision-making and the decentralization of the processes are barriers to swift analysis and implementation of “outside” information and resources making it difficult to respond quickly and efficiently in the aftermath of the hurricanes. To illustrate:

- In an evacuation order beginning at noon on August 28, 2005 and running for several hours, all city buses were redeployed to shuttle local residents to "refuges of last resort" designated in advance, including the Superdome. The state had prepositioned enough food and water to supply 15,000 citizens with supplies for three days, the anticipated waiting period before FEMA would arrive in force and provide supplies for those still in the city. ABBC documentary indicated FEMA had provided these supplies, but Brown was greatly surprised by the much larger numbers seeking refuge. Brown also held back supply vehicles from delivering food and water for two days before their arrival on Friday September 2 (MacCash and O’Byrne, 2005).
- On August, 31, President Bush observed damage from Hurricane Katrina flying over New Orleans as the media openly criticized the local and national government response. Reports in a helicopter continued to show hunger, deaths, and lack of aid. More than two and a half days after the hurricane struck, police, health care and other emergency workers voiced concerns in the media about the absence of National Guard troops in the city for search and rescue missions and to control looting (“Waiting for a Leader,” 2005).
- Slow approvals and paperwork seemed to be the blame for the late response, as Governors and other officials in several states expressed surprise they did not get formal requests for their National Guard troops until days after the hurricane struck. "We could have had people on the road Tuesday," said the commander of the Michigan Guard. Louisiana's Governor had accepted an offer of National Guard reinforcements from New Mexico on August 28, but this was not approved by the federal government until September 1. The number of National Guard in New Orleans from other was only 723 (Moran & Lezon, 2005).
- According to the *Hattiesburg American*, Vice President Dick Cheney, a former oil industry executive, personally called the manager of the Southern Pines Electric Power Association on the night of August 30 and again the next morning and ordered him to divert power crews to substations in nearby Collins that were essential to the operation of the Colonial Pipeline, which carries gasoline and diesel fuel from Texas to the Northeast. The power crews were reportedly upset when told what the purpose of the redirection was, since they were in the process of restoring power to two local hospitals, but followed his order anyway. Blogger Joshua Micah Marshall found the swiftness of this response an interesting contrast to the general disorganization of the relief effort (Marshall, 2005).
- "White House and homeland security officials wouldn't explain why [Michael] Chertoff [Director of Homeland Security] waited some 36 hours to declare Katrina an incident of national significance and why he didn't immediately begin to direct the federal response

from the moment on August 27 when the National Hurricane Center predicted that Katrina would strike the Gulf Coast with catastrophic force in 48 hours. Nor would they explain why Bush felt the need to appoint a separate task force. Chertoff's hesitation and Bush's creation of a task force both appear to contradict the National Response Plan and previous presidential directives that specify what the secretary of homeland security is assigned to do without further presidential orders. The goal of the National Response Plan is to provide a streamlined framework for swiftly delivering federal assistance when a disaster - caused by terrorists or Mother Nature - is too big for local officials to handle" (Landay, Young, & McCaffrey, 2005).

- On September 2, 2005 CNN's Soledad O'Brien asked Mike Brown [Under Secretary of Homeland Security for Emergency Preparedness and Response and head of the Federal Emergency Management Agency (FEMA)], "How is it possible that we're getting better information than you were getting...we were showing live pictures of the people outside the Convention Center...also we have been reporting that officials were telling people to go to the Convention Center...I don't understand how FEMA cannot have this information." When pressed, Brown reluctantly admitted he had only learned about the starving crowds at the Convention Center from media reports on September 1, 2005, a full three days after Katrina hit, even though 24-hour coverage of the event filled every television network. O'Brien said to Brown, "FEMA's been on the ground four days, going into the fifth day, with no massive air drop of food and water. In Banda Aceh, Indonesia, they got food drops two days after the Tsunami." ("The Big Disconnect 2005).
- In another example of decentralized and late decision-making, on the night of August 31st, the Governor of Louisiana, Kathleen Babineaux Blanco, was begging FEMA and other federal authorities for transportation, without success. The same day, Governor Blanco issued an executive order where "she has in consultation with school superintendents, utilized public school buses for transportation of Hurricane Katrina evacuees." On September 3 she ordered school superintendents to supply bus inventories (Lipton, Drew, Shane, & Rohde, 2005a).
- Testifying before a special House committee on the government response to Hurricane Katrina on October 19, DHS director Chertoff said that FEMA had been "overwhelmed" by the scope of the disaster, and estimated that "80 percent or more of the problem" could be attributed to poor planning by FEMA. Chertoff directly disagreed with Michael Brown's earlier testimony that state and local officials were responsible for the slow response to the hurricane, saying that he had experienced no problems in dealing with state and local officials and that Brown hadn't informed him of any problems (Hsu, 2005).

These examples illustrate how decentralized knowledge was ignored and trumped by centralized decision-making. The result was an inability to respond effectively or quickly to the Katrina disaster.

Ignoring "Outside of the System" Information. The second failure of the bureaucratic management model is ignoring "outside of the system" information. Bureaucratic management relies on the process of socialization which refers to a system in which individuals acquire positive, affective, and evaluative orientations toward aspects of a system, while acquiring the necessary knowledge and skills to operate effectively within the system.

In bureaucratic systems, socialization can lead to a high level of understanding of the system,

which in turn causes individuals to adhere to the system's "local" framework of norms, values, and assumptions (Scott, 1992). Because socialization facilitates a commitment to the system it can lead to an inability to properly consider relevant outside information when facing an unusual event. "Relevant outside information" is defined as any information, individual or activity which is not currently part of a system, but relevant to the task(s) faced by the system. This inability to properly consider relevant outside information consists not only of a reluctance to analyze outside information, but also includes a disdain for accepting assistance from actors outside of the system and an aversion to using activities which are not already part of the system. The response of the individuals in the Katrina disaster illustrated the deadly consequence of ignoring outside information. The small sample of the overwhelming number of examples below illustrates how the bureaucratic management model is unable to consider outside information, even when that information is critical to saving lives.

- Several foreign leaders expressed frustration that they couldn't get a go-ahead from the Bush Administration to administer help. President Bush said on the ABC News program Good Morning America that the United States could fend for itself; "I do expect a lot of sympathy and perhaps some will send cash dollars," Bush said of foreign governments. The immediate response from many nations was to ask to be allowed to send in self-sustaining search-and-rescue teams to assist in evacuating those remaining in the city. France had a range of aircraft, two naval ships and a hospital ship standing ready in the Caribbean. Russia offered four jets with rescuers, equipment, food and medicine, but their help was first declined before later being accepted. Germany offered airlifts, vaccinations, water purification, medical supplies including German air force hospital planes, and emergency electrical power and pumping services; their offer was noted and they received a formal request three days later. Similarly, Sweden had been waiting for a formal request to send a military cargo plane with three complete GSM systems, water sanitation equipment, and experts. The Netherlands offered help out of the island Aruba in the Caribbean Sea ("U.S. receives aid...", 2005).
- Authorities refused Australian consular officials access to the affected areas, citing dangerous conditions ("Australians Refused Access," 2005).
- The mandatory evacuation called on August 28 made no provisions to evacuate homeless or low-income and households without transportation, as well as large numbers of elderly and the infirm, yet officials knew many New Orleans were without privately-owned cars. A 2000 census revealed that 27% of New Orleans households, amounting to approximately 120,000 people, were without privately owned transportation. In a BBC documentary Walter Maestri, head of emergency preparedness for Jefferson Parish, stated that a year previously this issue had been fully discussed with FEMA officials who promised that within 48 hours of a hurricane emergency they would provide assistance with transporting evacuees from the city. Karen Tumulty of *Time* magazine stated, "New Orleans ...clearly did not have an adequate evacuation plan, even though the city was fully aware that over 100,000 people there don't have cars" (Davis, 2005).
- When Wal-Mart sent three trailer trucks loaded with water, FEMA officials turned them away Agency workers prevented the Coast Guard from delivering 1,000 gallons of diesel fuel, and on Saturday they cut the parish's emergency communications line, leaving the sheriff to restore it and post armed guards to protect it from FEMA (Arends, 2005 and

Shane, Lipton, & Drew, 2005).

- "Michael D. Brown, (FEMA), urged all fire and emergency services departments *not to* respond to counties and states affected by Hurricane Katrina without being requested and lawfully dispatched by state and local authorities under mutual aid agreements and the Emergency Management Assistance Compact" ("First Responders Urged Not To Respond...", 2005).
- "The general manager of the Astor Hotel at Astor Crowne Plaza said the hotels teamed to hire 10 buses to carry some 500 guests. But Peter Ambros said federal officials commandeered the buses, and told the guests to join thousands of other evacuees at the New Orleans convention center. One man says he and others had paid \$45 for seat the buses, and that they were "totally stunned" when the buses never arrived. Another woman said the crowd had waited 14 hours for the buses. She said the idea of walking to the convention center scared her because of reports of looting" ("Katrina: at a Glance", 2005).
- The U.S. Forest Service had water-tanker aircraft available to help douse the fires raging on the New Orleans riverfront, but FEMA refused aid. When Amtrak offered trains to evacuate significant numbers of victims -- far more efficiently than buses -- FEMA again drug its feet. Offers of medicine, communications equipment and other desperately needed items continued to flow in, only to be ignored by the agency (<http://landrieu.senate.gov/releases/05/2005903E12.html>).
- Chicago Mayor Richard Daley, announcing the creation of a city-sponsored "Chicago Helps Fund," said of the slow Federal response: "I was shocked...We are ready to provide considerably more help than they have requested...We are just waiting for the call...I don't want to sit here and all of a sudden we are all going to be political...Just get it done" ("Daley 'shocked'...", 2005).
- On Tuesday afternoon, August 30, Jefferson Parish Sheriff Harry Lee asked for all citizens with boats to come to the aid of Jefferson Parish. A short time later, Dwight Landreneau, the head of the Louisiana Department of Wildlife and Fisheries, remarked that his agency had things under control and citizen help was not needed. Apparently, Sheriff Lee did not agree with that assessment and had one of his deputies provide the Lafayette flotilla (approximately 1,000 citizens pulling 500 boats) with an escort into Jefferson Parish. Sheriff Lee and Senator Gautreaux – 1,000 of Louisiana's citizens responded to the public's pleas for help. They were prevented from helping by Dwight Landreneau's agency, the Department of Wildlife and Fisheries which had been taken over by FEMA"("Securing America, at www.dailykos.com, September 3, 2005). Wal-Mart agreed to provide bottled water, but FEMA officials turned the trucks back; the Coast Guard had agreed to provide fuel, but FEMA overruled the Coast Guard; and that a FEMA official had deactivated the Parish emergency communications teledata line (Gaouette, Miller, Mazzetti, McManus, Meyer, & Sack, 2005).
- More than 50 civilian aircraft responding to separate requests for evacuations from hospitals and other agencies swarmed to the area a day after Katrina hit, but FEMA blocked their efforts. Aircraft operators complained that FEMA waved off a number of evacuation attempts, saying the rescuers were not authorized. 'Many planes and

helicopters simply sat idle,' said Thomas Judge, president of the Association of Air Medical Services" (Gaouette, Miller, Mazzetti, McManus, Meyer, & Sack, 2005).

- The relief request form in the FEMA Web site turns people away if they are using any browser other than Microsoft Internet Explorer Version 6.0. This made it difficult for users of non-Windows operating systems to request aid. In some cases, Internet access stations set up for refugees and volunteers using Mac OS or Linux systems were incompatible with FEMA's site (Krakow, 2005).
- At FEMA's request for firefighters for "community service and outreach", some 2,000 showed up in a staging area in an Atlanta hotel. Many were highly trained and brought special equipment and were frustrated when they arrived, believing their skills would be used, or would better be used, for search and rescue operations. Newspaper reports say FEMA requested them to prepare for "austere conditions," and firefighters were quoted saying they had brought equipment according to FEMA's advice. These volunteers were disappointed when they found themselves watching training videos and attending seminars in a hotel, waiting, in some cases days, to be deployed in secretarial or public relations jobs. Some firefighters called it a misallocation of resources; others were simply frustrated at the delay (Rosetta, 2005).

Escalation of Commitment to Failing Courses of Action. In addition to the socialization of system rules and procedures engendering a powerful sense of loyalty to "the way things are done" and a dysfunctional response to information "outside" the system, the third failure of the bureaucratic approach to catastrophe results from escalation of commitment.

The bureaucratic knowledge and information sharing structure engenders a high degree of commitment by organization members whose identity is synonymous to their role in the organization (Ishikawa, 1988). The roles are bound together by a codified system of decision-making. These roles have the potential to hinder the system's ability to identify and to react appropriately when the system is following a failing course-of-action. Because people are so committed to their role ("role fixation"), even in a failing course of action, their commitment may escalate. This commitment may produce a loyalty that is considered "extreme", resulting in behaviors designed to perpetuate the role (thus, the system) and not necessarily rational or functional given the circumstances facing the individual. While this concept has been studied at the individual level, it was argued in the Tsunami disaster analysis (Takeda & Helms, 2006) the same phenomenon occurs at the organization level, when bureaucratic management systems face a demand for the rapid consideration and use of "outside" information and resources.

In the Katrina disaster analysis, individuals as well as organizations can become committed to failing courses of action. Negative consequences will actually cause decision-makers to increase their commitment of resources and undergo the risk of further negative consequences. Escalation of commitment, therefore, is a naturally occurring phenomenon when bureaucratic management systems must rapidly consider and use information and resources which have not traditionally been considered as "part of the system," as seen in the following examples.

- William D. Vines, a former mayor of Fort Smith, Arkansas, helped deliver food and water to areas hit by the hurricane. But he said FEMA halted two trailer trucks carrying thousands of bottles of water to Camp Beauregard, near Alexandria, LA's staging area for the distribution of supplies. FEMA would not let the trucks unload. The drivers were

stuck for several days on the side of the road, ten miles from Camp Beauregard. FEMA maintained the drivers needed a 'tasker number' to unload, yet no one understood what a tasker number was or the process for acquiring it (Lipton, Drew, Shane, & Rohde, 2005).

- It has been widely reported that no one wants to deliver bad news to President Bush, who appears warm in public but is reported to be snappish in private. The bad news on Tuesday, August 30, (again 24 hours after Hurricane Katrina had ripped through New Orleans), was that the President would have to cut short his five-week vacation by a couple of days and return to Washington. The president's chief of staff, Andrew Card; his deputy chief of staff, Joe Hagin; his counselor, Dan Bartlett, and his spokesman, Scott McClellan, held a conference call to discuss the delicate task of telling him. President Bush didn't quite realize how bad the hurricane had been. According to several aids, the reality of the severity of the storm did not really sink in with the President until Thursday night. How this could be—how the president of the United States could have even less "situational awareness," as they say in the military, than the average American about the worst natural disaster in a century—is one of the more perplexing and troubling chapters in a story that, despite moments of heroism and acts of great generosity, ranks as a national disgrace. Bush can be petulant about dissent; he equates disagreement with disloyalty. After five years in office, he is surrounded largely by people who agree with him. When Katrina struck, it appears there was no one to tell President Bush the truth -- that the state and local governments had been overwhelmed, that the Federal Emergency Management Agency (FEMA) was not up to the job and that the military, the only institution with the resources to cope, couldn't act without a declaration from the president overriding all other authority (<http://www.msnbc.msn.com/id/9287434/>).
- Even as the hurricane did its damage, President Bush did not alter his schedule. As an example, early on the morning of August 30 (the day after the hurricane made landfall), President Bush attended a V-J Day commemoration ceremony at Coronado, California. Some twenty-four hours before the ceremony, storm surges began overwhelming levees and floodwalls protecting the city of New Orleans (Moran & Lezon, 2005 and MacCash & O'Byrne, 2005).
- Commitment to legal jurisdiction also hindered relief efforts. Whenever active duty federal troops are deployed, there is reference to the Posse Comitatus Act, 18 U.S.C. §1385, which prevents ordinary use of the federal military force in support of local and federal law enforcement or in quelling riots or civil disorder. The National Guard remains under the control of the governor during ordinary times. The president can waive the requirement and assume control of the military in an emergency. However, in practice the President will not assume control of a state's National Guard or move federal troops into a state on a law and order mission until requested by the state's Governor. In addition, the Stafford Act states that the president cannot declare that a disaster exists in a state unless requested to do so by the state's governor, who must furnish information on the disaster and the steps the state has taken to resist or recover from it as part of the request. The Louisiana Governor took the required steps before the storm hit. Some Bush administration supporters contend that Louisiana Governor Blanco did not request military assistance for several days after the hurricane hit. However, Lieutenant General Russel Honoré, the head of the Department of Defense's Joint Task Force Katrina, indicated in a briefing on September 1, the governor of Louisiana and other Gulf Coast

states requested that the Pentagon establish local defense coordinating offices on Friday, August 26, and that the Army began operating in those states that day and the following weekend in preparation for the hurricane. In addition, Gov. Blanco formally requested that the president declare a state of emergency in Louisiana on August 27, in a letter complying with the terms of the Stafford Act (“Tracking Katrina...,” 2005b).

The system’s slow response time and failure to take swift and decisive actions lead to mass death and destruction in the aftermath of the hurricanes. The natural disaster preparedness system’s response to the hurricane relief efforts, in which the system faced numerous demands to consider and use “outside” information and resources, shows how and when bureaucratic management systems have difficulty managing in complex environments. The system’s refusal to accept help from any source “outside” of the system caused the people to forgo the use of a vast amount of supplies and services which could have been a tremendous and timely help.

Finally, the system’s refusal to admit the failure of the disaster management effort and make changes led to the unnecessary loss of lives and homes. Quite simply, the bureaucratic natural disaster preparedness system was ill-equipped to handle this demand to rapidly acknowledge and use “outside” information. While the hurricane relief efforts, like the Tsunami relief efforts before it, have been emphasized, the theory behind the failure can be generalized to predict and explain how bureaucratic management models produce inadequate and/or inappropriate responses when facing these situations.

Innovations for Effective Emergency Response

It is impossible to regulate relief efforts in a catastrophe because it is impossible to fully plan for its occurrence. If the bureaucratic models led to the problematic responses and disadvantages previously discussed disadvantages, what lessons can lead to emergency management innovation. Clearly structural impediments to effective and timely relief efforts included centralized decision-making, overly formalized roles, rules, and regulations, inadequate to non-existent communication, very poor coordination, overlapping jurisdictions, and confusion over legal jurisdiction.

The lessons we drew from this analysis to the degree possible given current insurance industry and other cost-containment issues, emergency management relief systems need to include the following: (1) decentralized decision-making, (2) autonomous authority to act, (3) and (3) community level preparedness. In the next section, we refer to thwarted relief efforts mentioned earlier and propose scenarios in which a more rational relief effort would occur. Our hope is that we present the possible so the actions and decisions can no longer be thought of as impossible.

Decentralized Decision-Making

The key problem with the emergency response system is that it relies on centralized decision making from decentralized knowledge experts. This heavy reliance on continuous imposition of rules and roles reduces the ability of experts to respond in a timely fashion at the local level. The only way to free experts prepared to assist citizens in a disaster of the magnitude of Katrina is to decentralize decision making structures and allow the experts to do what they do best.

For example, prepositioned supplies of food and water for New Orleans (MacCash and O’Byrne, 2005) would have been released for use immediately, even before the final citizen count was known. Similarly Governor Blanco (Lipton, Drew, Shane, & Rohde, 2005a) should have had full authority to order the use of public school buses for evacuation transportation.

Wal-Mart trailers carrying water and supplies (Gaouette, Miller, Mazzetti, McManus, Meyer, & Sack, 2005) and Chicago Mayor Richard Daley's offers for help (Arends, 2005 and Shane, Lipton, & Drew, 2005) would have never been rejected or turned away. Counties would not have to formally request aid from centralized FEMA ("First Responders Urged Not To Respond...", 2005). The slow involvement of the National Guard troops (Moran & Lezon, 2005) would not be hindered by centralized approvals required by the federal government. Finally, the offers of boats from citizens ("Securing America, at www.dailykos.com, September 3, 2005) would not be thwarted by FEMA's co-opting of the Department of Wildlife and Fisheries.

Compliance with paperwork also slowed the deployment of supplies and aids. Confusion over whether paperwork formally declaring a state of emergency in Louisiana, evoking the Stafford Act, and requests to establish local defense coordinating offices added unnecessary red tape ("Tracking Katrina...", 2005b). In another example, the need for a special number to unloading water and supplies halted distribution by two days (Lipton, Drew, Shane, & Rohde, 2005).

Decentralized decision making is needed for a fast, efficient response of resources. The bureaucratic model of centralization thrives on detailed information of the situation and assessment before action. Disasters require fast response. They also vary in the degree of need by area. Requiring assessment, reporting, permissions, and compliance with paperwork delay and often retard the responses of help and aid. FEMA's large complex organization adds additional steps and communication channels which slow response.

The essence of responding to a disaster is timely, appropriate relief. Requesting permission from a federal agency, thousands of miles away, is neither timely nor appropriate. Requests for aid were rejected from Mac OS or Linux systems users because FEMA, the central authority during the crises relied only on Microsoft Internet Explorer Version 6.0 (Krakow, 2005). In addition, loss of communication (telephone, Internet, fax, etc.) is typically a given in a disaster, making communication virtually impossible.

Autonomous Authority to Act

The second failure of the bureaucratic management model, ignoring outside the system information, is a result of rigid adherence to roles within disaster relief organizations and interdependency among organizations. This rigid formalization results in a state of expert delusion. Thus there is a community of experts relying on their own expertise which over time can evolve into a false belief that outside information is irrelevant. Therefore there is no relevant outside information.

We propose that a structural answer to this dilemma is to break down the interdependency and build autonomous authority to act as a fundamental right of all emergency management organizations. The Katrina disaster provides ample illustration of the deadly consequences when interdependencies and rigid formal roles result in the ignoring of outside information.

Southern Pine Electric Power Association services, manpower, and equipment were being diverted to the gas pipeline by the order of Vice President Cheney instead of restoring power to two gulf coast hospitals (Marshall, 2005). A more appropriate action would have been for the power company to autonomously act in the best interest of the local population's need.

Bureaucratic bickering among the various organizations was evident in the ongoing battle between Michael Chertoff's Department of Homeland Security and the National Hurricane Center and FEMA (Landay, Young, & McCaffrey, 2005). True streamlining of the National Response Plan would eliminate lines of authority issues and focuses on autonomous decision

making.

FEMA's slow response (five days) to the convention center crisis ("The Big Disconnect 2005) could have been avoided with a simple instruction for local agencies on the ground to have the authority to act – and not wait on instructions or permission. Similarly it is hard to imagine that local officials would refuse any offers of help, particularly generous offers of help from civilian aircraft and helicopters (Gaouette, Miller, Mazzetti, McManus, Meyer, & Sack, 2005), U.S. Forest Service's water-tanker aircraft, Amtrak's offers of trains (<http://landrieu.senate.gov/releases/05/2005903E12.html>), and international assistance from Sweden, Germany, Russia, Australia ("Australians Refused Access," 2005) and the Caribbean (for example a cruise ship, medical supplies, emergency electrical power) ("U.S. receives aid...", 2005) if they had felt empowered to do so.

Community Level Preparedness

Community level preparedness can overcome the failure of escalation of commitment. Bureaucratic systems fail when they cannot rapidly consider and use information and resources which have not traditionally been considered as "part of the system." These codified roles result in escalation of commitment to the role and those outside the system, or without formal roles, are not allowed to function within the system.

In the Katrina disaster, the formal roles result in a closed system. Individuals as well as organizations became committed to failed courses of action and even increased their commitment to the system rather than undergo the risk of consequences. The highlight of this extreme dysfunction is the example of the mandatory evacuation that did not include provisions for homeless or low-income households without transportation, elderly and the infirm. FEMA overlooked the fact that over 100,000 people there don't have cars" (Davis, 2005). The community of New Orleans, however, was well aware of population demographics and the need to many of its residence to have evacuation transportation provided. It had even been included in local-level emergency preparedness plans.

In the case of an emergency or disaster where large federal systems are designed to take care of everyone, it is easier for the local population to default being taken care of by the system than to take responsibility to react and implement decisions on their own. In another example, 2,000 highly trained firefighters with special equipment were disappointed when their skills were not deployed simply because they were not credentialed emergency management responders. Some firefighters called it a misallocation of resources; others were simply frustrated at the delay (Rosetta, 2005). The strict commitment and belief in the efficacy of the system (FEMA in this case) can lead to high opportunity costs when prepared local responders are not included in the solution. Chertoff himself agreed FEMA had been "overwhelmed" by the scope of the disaster, and estimated that "80 percent or more of the problem" could be attributed to poor planning by FEMA (Hsu, 2005).

In a decentralized independently structured emergency management system, local experts train in appropriate response, skills, and techniques are free to act with interference in effective and ultimately life-saving ways.

Lessons from the Hurricane Relief Efforts

Today's organizations face many difficult and complex issues. Their goals are to reduce uncertainty, change and adapt rapidly and increase an organization's ability to compete globally. To survive in such a diverse environment, organizations must be equipped with a management system to support learning and facilitate continuous growth and development, as well as

flexibility when managing diversity.

Wheatley (1992, 2005) and Senge (1990) among other researchers have called for the increased diffusion of information and participation in contemporary organizations, so the effects of the complex environment can be efficiently and effectively managed in a manner which leads to competitive advantage. The aftermath of the hurricanes revealed the bureaucratic model completely incapable of producing rapid response and adaptation to a catastrophic event.

Clearly, this bureaucratic management model was not only unable to absorb the initial shock, but also ill-designed to function effectively in its aftermath. Like a truly responsive business organization that considers all outside knowledge necessary for strategic growth and operations, an ideal system for managing emergencies may be unattainable; however, contingencies and addendums to the current approach are possible. These would include alternatives to the fundamental elements of a bureaucratic model (Schenider, 1992). Examples include (1) clearly identified *outcomes* versus objectives, (2) informal structures underlying decision-making processes, (3) decentralized knowledge and authority, and (4) informal policies and procedures guiding activities. Further study into such events is needed, particularly into situations of intense crisis when stochastic and abstract events bombard a system. Katrina was such an event.

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Table 1
Disaster Relief Organizations

Action by Churches Together	CARE	Feed the Children USA	International Relief Friendship Foundation (IRFF)	PAHO	Seventh Day Adventist	United Methodist-Relief
ACTION AID	Carter Centre at Emory University	FEMA	Japanese Red Cross Society	PeaceNet	Society of St. Vincent De Paul	US Small Business Administration
Adventist Community Services	Catholic Charities USA	Foundation Hironnelle	MAP Intl. Relief and Development	Phoenix Society for Burn Survivor	Southern Baptist Disaster Relief	United States Service Command
Adventist Development/Relief Agency	Children's Aid Direct	UN Food and Agriculture Organization	Lutheran Disaster Response	Points of Light Foundation	Samaritan's Purse	UN World Food Programme
African Medical and Research Foundation	Christian Aid	Food for the Hungry	Mennonite Disaster Service	Presbyterian Disaster Assistance	Swiss Disaster Relief Unit	USAID
AmeriCares	Christian Children's Fund	Food for the Poor	National Emergency Response Team	Project HOPE	Tear Fund	Volunteers in Technical Assistance
American Rescue Team International	Church World Service	HelpAge International	National Voluntary Organizations	REACT International	Trocaire	Volunteers of America
Amnesty International	Christian Disaster Response Intl.	Friends-Quaker Organizations	National Organization for Victim Assistance	Red Cross/ Red Crescent	UJA Federations of North America	World Food Programme
AMURT	Christian Reformed World Relief Committee	Human Rights Organizations	Nazarene Disaster Response	Red Cross	UN Development Programme	World Health Organization
The American Radio Relay League, Inc.	Church of the Brethren Disaster Response	InterAction	Northwest Medical Teams International	ReliefWeb	UN Refworld	World Relief
Australian Aid	ConflictNet	International Association of Jewish Vocational Services	Nippon Volunteer Network Active in Disaster	Salvation Army	U.N. Reliefweb	World Vision
Baptist World Aid	Episcopal Relief and Development	International Rescue Committee	One World Organization	Save the Children Alliance	UNHC Refugee's	World Vision USA
CAFOD	European Community Humanitarian Office	International Orthodox Christian Charities	Oxfam	Second Harvest	UNICEF	

See <http://www.disastercenter.com/agnecy.htm> for a complete description of each organization