



# QUICK RESPONSE REPORT

## THE EMERGENCY MANAGEMENT RESPONSE TO HURRICANE KATRINA: As Told by the First Responders— A Case Study of What Went Wrong and Recommendations for the Future

Henry W. Fischer, Kathryn Gregoire, John Scala,  
Lynn Letukas, Joseph Mellon, Scott Romine, and Danielle Turner  
Center for Disaster Research and Education  
Millersville University of Pennsylvania  
Millersville, Pennsylvania

*The views expressed in the report are those of the authors and not necessarily those of the Natural Hazards Center or the University of Colorado.*

The United States suffered an attack on September 11, 2001, that resulted in publications articulating (re)learned<sup>1</sup> lessons on how to better prepare to respond to such major disastrous events. During the ensuing years after 9/11, billions of dollars have been spent in the quest to address and redress these lessons (e.g., communication failure, pre-positioning supplies, intergovernment and agency cooperation enhancement). The Department of Homeland Security (DHS) was created, which rearranged the federal bureaucracy and included the repositioning, or demoting, of the Federal Emergency Management Agency (FEMA), again, pursuant to addressing the lessons of 9/11. On the state and local levels, new emergency training centers, training regimens, organizational structures, and a vast array of equipment have been built, developed, or acquired. The attack of 9/11 was also the basis for deploying the U.S. military to invade Afghanistan and Iraq. Given the post-9/11 reactions of the U.S. government, one would conclude it took the need for better disaster response seriously. On the other hand, the question often heard around the nation in the post-Katrina era is, what have we gained as a result of this investment to date? This paper shares one answer to this question based on interviews with first responders in the immediate aftermath of Hurricane Katrina.

On his first visit to the Katrina-impacted Gulf Coast, President George W. Bush appeared to summarize his view that the lessons had been learned when he said to FEMA Secretary Michael Brown on

national television, “Brownie, you’re doing a heck of a job.” Within days Secretary Brown resigned his position. The following news headlines are closer to the reality observed in the field:

- “When the cops turn into the bad guys—the New Orleans Police Department hits its nadir” (Mulrine 2005)
- “No evidence shots fired at helicopters—post-Katrina rumor delayed rescue actions in New Orleans” (Hill and Spangler 2005)
- “Exposed: Katrina urban legends—rumors of murder, mayhem debunked” (Gillin 2005)
- “Now the real looting begins: purging the poor” (Klein 2005)
- “Hurricanes come and go, but coastal (real estate) markets only go up—just look at Biloxi” (Max 2006)
- “On life support—New Orleans’s against-the-odds struggle to care for the infirm” (Shute 2006)
- “The social fabric is stretched thin, if not shredded altogether” (Mulrine 2006)
- “A post-Katrina public flaying: the first reviews are in on Washington’s response to the storm and they’re scathing” (Marek 2006)

**Stark Questions.** Thousands of illustrations could be provided; the above, however, provide an adequate summary. In short, lessons remain unlearned. The stark questions researchers and practitioners are left with at this juncture are: If we keep producing the same observations, yet the problems go unaddressed in subsequent disasters, does this mean research provides more historical record than

applied outcomes? And, are practitioners simply the janitors of disaster history—left to clean up afterwards as adequate resources and real authority (political power) continue to elude their grasp?

## **Katrina's March into the Gulf Coast**

**August 27.** After a long, slow progression across the Atlantic and into the Gulf of Mexico, on August 27, 2005, the National Weather Service issued an advisory at 7:00 a.m. that concluded with the statement that Katrina would make a “gradual turn toward the west-northwest . . . during the next 24 hours,” making New Orleans–Biloxi the target when the storm reached landfall (Duffy 2005:26). The warm water fed Katrina’s strength.

FEMA’s emergency watch center was already operating at Level 1, which is its highest alert status. The Louisiana State University’s Hurricane Center communicated to emergency planners that their data suggested “levee overtopping for west New Orleans and perhaps in New Orleans East as well and St. Bernard Parish” (Duffy 2005:26). At 9:00 p.m., Max Mayfield, director of the National Hurricane Center, called Louisiana Governor Kathleen Blanco. After briefing her on the path and severity of Katrina, he kept repeating “I’m sorry,” offering his sympathy even before impact as he knew what was coming.

**August 28.** At 4:00 a.m., Major Rich Henning was part of a weather reconnaissance team that had taken off from Mississippi’s Keesler Air Force Base to fly into the eye of the storm in order to determine its current strength. Henning’s eyes locked on the computers on the aircraft and he yelled, “Holy s - - ! The pressure is 915 millibars” (Duffy 2005:29). The storm had been at 935 earlier, a Category IV hurricane. Now, with a pressure of 915 millibars, it had continued to strengthen into a Category V storm. At 7:00 a.m., the National Weather Service issued a new bulletin: “Now a potentially catastrophic Category V Hurricane . . . headed for . . . New Orleans and Lake Pontchartrain . . . preparations to protect life and property should be rushed to completion.” At 10:00 a.m. on Sunday, August 28, New Orleans Mayor Ray Nagin ordered a mandatory evacuation. State officials ordered contraflow on all roads leading away from New Orleans and the coast. An estimated 1.4 million people did evacuate, which is an excellent outcome. Police and fire personnel used loudspeakers to plea for the remaining (up to) 150,000 people to leave. Many could not; some would not. The Superdome began to fill up with those who could not leave town but could move to the dome.

**August 29.** At 5:00 a.m., the Harrison County Emergency Management Coordinator, Joe Spraggins, was on Coastal Highway 90 examining the waves preceding the storm surge. They were cresting at 10 feet or so. Suddenly the waves and wind speed rapidly rose even further. When the waves began surging across the macadam, Spraggins and his colleagues headed back toward the county courthouse in Gulfport where the Emergency Operations Center (EOC) was located.

By 7:00 a.m., Katrina was making landfall along the coast—from Alabama to Texas. In one EOC, emergency personnel found themselves prisoners to Katrina. The generator did not work when the electricity went out. The doors and window coverings were controlled electrically. When the storm surge water began to flow under the doors, the emergency workers could not flee the EOC; they were locked in. The water rose rapidly in the one-story building. Soon the emergency personnel were using indelible ink to write their social security numbers on their bodies; they tied themselves together and prepared to drown. Fortunately, the water stopped rising.

At noon, FEMA Director Michael Brown reportedly sent a memo to Homeland Security Secretary Michael Chertoff requesting that 1,000 employee volunteers be dispatched to the impacted areas within the next two days. It was recommended that volunteers bring insect repellent and plenty of cash as “ATMs may not be working” (Duffy 2005:32). At the Superdome, the number of evacuees swelled to 20,000. By 2:00 p.m., the *Times-Picayune* reported in its online edition that at least one levee, the 17th Street Canal, had been breached. The levees had been built to withstand up to a Category III storm, not a Category IV-V hurricane.

**August 30.** President Bush, on vacation, was briefed on the situation and was reportedly assured that all appropriate steps were being taken. While television images showed a starkly different picture, the president rarely watches TV news and practices a management style delegating vast responsibilities.

Misery was widespread across the Gulf Coast, in both Mississippi and Louisiana. Survivors emerged from the rubble finding it difficult to recognize their community; they could not even be sure where the roads were, making it impossible to move around to help others. Electricity and communications were gone. It was very difficult for assistance from the state level to begin to move in since devastation was so widespread and severe. The federal response is designed to be the third line of response, and the scope and magnitude of this event was appearing

to be beyond any of the prior federal planning. In the view of those who survived and responded in those early days, it seemed to get worse before it got better.

## **Interviewed First Responders: What Worked, What Did Not, and Recommendations**

The research literature on preparedness clearly articulates what has been previously learned as necessary for disaster preparation. "The purpose of preparedness is to anticipate problems in disasters so that ways can be devised to address the problems effectively and so that the resources needed for an effective response are in place beforehand" (Mileti 1999:215). Activities to be included in planning and preparing for hurricanes such as Katrina include, but are not limited to, the following: "formulating, testing, and exercising disaster plans; providing training for disaster responders and the general public; and communicating with the public and others about disaster vulnerability and what to do to reduce it. . . Preparedness activities can be analyzed at various levels: households, organizations, communities, states, and nations" (Mileti 1999:215).

Beginning with the immediate post-impact period, anecdotal evidence indicated that disaster researchers, responders, the mass media, and the general public perceived the organizational response to Katrina as inadequate on a number of levels. This research project was designed to contribute to the assessment of what did and what did not succeed in the response to Katrina, from the perspective of those responding to the event (i.e., first responders). The research contribution envisioned was a testing of the efficacy of previous research findings reflected, for example, in the both first and second assessments (Mileti 1999). The specific focus was on determining the continued efficacy of the literature on preparedness and response (e.g., Mileti and Fitzpatrick 1993, Wenger et al. 1986, Wenger et al. 1989, Quarantelli 1982, Fischer 1998).

The Center for Disaster Research and Education (CDRE) monitored the progress of Hurricane Katrina and its aftermath. Contact information, logistical planning, and field preparations were ongoing in anticipation of conducting post-impact research. Three CDRE faculty members and three CDRE student research assistants flew to the Gulf Coast to begin field work in Mississippi and Louisiana. They worked as three, two-person interview teams (one faculty member and one student). These teams inter-

viewed emergency responders from the local, state, and national levels in Mississippi and Louisiana. The approach was to implement a detailed interview guide in which respondents were informed that the primary objective was to identify, from their perspective, 1) what worked, 2) what did not work as anticipated, 3) what they did differently (from what was planned or anticipated) to deal with the situation, and 4) what recommendations they have for their colleagues who may find themselves in a similar situation. The interviews ranged from one to three-and-a-half hours. The respondents were far more forthcoming than was expected. The interview experience was, in the view of the field team, a cathartic experience for the respondents, who appeared to just be waiting for someone to come along and ask our research question. While most of the interviews were completed face-to-face in the field, some were conducted as telephone interviews while the teams were in the field and after returning to the CDRE. Two additional field visits were completed in the first year after impact (funded from other sources). A total of 58 interviews were conducted.

## **The Observations and Recommendations of Those Responding to Katrina**

The actual words of those responding to Katrina will be interspersed as we identify the patterns that emerged from the interviews themselves. The field experience was sobering. It has left an indelible imprint upon those of us who spent those eight days in the field and hours on the telephone. Reviewing our own photographs, as well as those of others, served to reinforce the vivid images that have written themselves into our collective memories. The suffering of those who experienced the disaster is something this field team will long remember. Our hope in society's ability to learn from the experience has, admittedly, been shaken. We fear the current social structure guarantees repeated failure going forward.

## **Confusing Emergency Preparedness with Disaster Preparedness; then Viewing the Federal Government as Savior**

"We kept asking, 'where is the federal government?'" This was a common remark made by citizen and responder alike in the days after Katrina paid an unwanted visit to the Gulf Coast. One by one, many responders in key positions of responsibility confessed, "We thought we were prepared, but

early on we knew we were not prepared for something like this! We also thought that the feds would save us if something of this magnitude would befall us. We didn't realize they wouldn't be able to get to us."

After Hurricane Andrew, for example, FEMA received a great deal of criticism for not responding as quickly as Florida would have liked. While FEMA was less than perfect in its Andrew response, it was never designed to be the cavalry to arrive in the nick of time to save people from their lack of preparedness. FEMA has since made a point of trying to teach the nation that individuals and communities must prepare to be on their own for the first 72 hours, as it will take at least that long for help to even begin to arrive. And, in a catastrophic event, it may take weeks.

After Katrina, we kept hearing that the emergency organizations believed they were well prepared for everyday emergencies and even lower-grade disasters. Some indicated they believed a major event like Katrina would be a problem, but they felt, Hurricane Andrew aside, that FEMA and others from the federal level would "bail them out." They had not anticipated a disaster that destroyed the coast from the Alabama border to the Texas border, making convergence of assistance impossible. In the words of one local responder, "When we emerged after the storm passed, we could not see any roads . . . anywhere . . . that is when I knew we were really in for it. I then knew we would be on our own for a very long time."

**Exhausted Before Impact.** Many responders indicated they had plans in place, had practiced, and were ready for much of what occurs in emergencies and disasters, in their view. However, in an effort to help their comrades move forward, they were quite open about what they felt they overlooked or had not anticipated. For example, "To make matters worse, we were already exhausted before impact even occurred. When it became more and more obvious that this storm was going to hit us for real and that it was a monster, we went into full alert for several days before impact. Instead of creating shifts so we could get rest, we stayed up preparing 24/7. Then it hit, and after the terrifying event we emerged in the rubble and then had to begin search and rescue—but we were already exhausted. We were burned out within the next 48 hours, with no replacements in sight. We really screwed up. I would recommend that others in the future plan for down time no matter how bad things look or get; without some rest you are ultimately worthless."

**Emergencies vs. Disasters.** "We could handle anything . . . as long as we could drive to it." Katrina reminded the responders that being well rehearsed and well prepared for an emergency is not the same as be-

ing well prepared for a major disaster. "When we came out after the wind stopped, we had no vehicles to begin search and rescue—they were all destroyed. And, even if they weren't, there were no roads to drive on; the debris was everywhere. And, there was no electricity, so even if we had cars and roads, we would soon run out of gasoline since we couldn't pump any more." For many responders, generators failed as well. The responders were victims as much as the others in their communities. The only thing they did not know at the time was that it was not just their community that was in such a state of affairs. Why? Communication, of course, was out.



Hurricane Katrina's impact on the Mississippi coast was a catastrophic disaster.

## The Loss of Communication, Equipment, and Ability to Respond

One of the most common lessons learned in virtually every disaster is that communication is lost early in the impact stage. Perhaps the most frequent statement we heard during our post-Katrina interviews was that "communication was lost early on. Electricity, telephone, cell phone, everything was gone! It didn't come back in some cases for weeks." The lack of communication destroyed much of the interagency, interorganizational

coordination for an extended period of time in the early days and weeks. Ironic in a high-tech communications age, the most reliable and helpful communication equipment was reported to be the ham radio.

The most heartbreaking event reported to us involved a young responder who was home with his family (did not evacuate) during impact. When he called for assistance to save his family he indicated that he had “tied his family members to the roof of his house, begged us to come and get them, but we could not as the rescuers, at that point, because we would have perished trying to do so. The phone died as this strong man was crying. When we were able to find our way eventually through the debris, only the foundation pad of his house remained. Their bodies were never found. Between the wind and the storm surge, they never made it.”



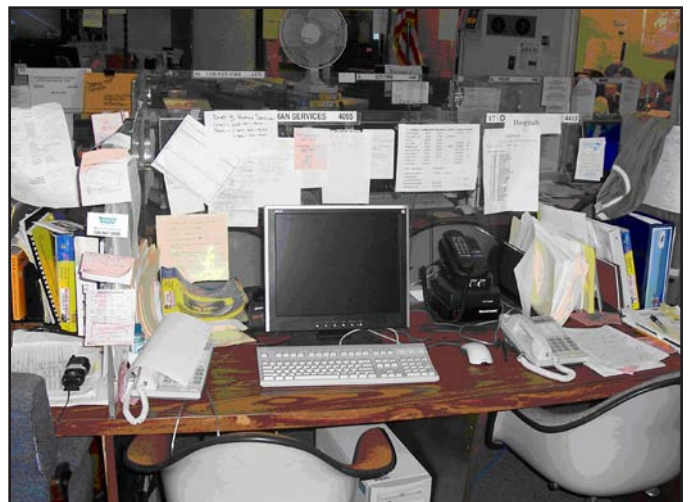
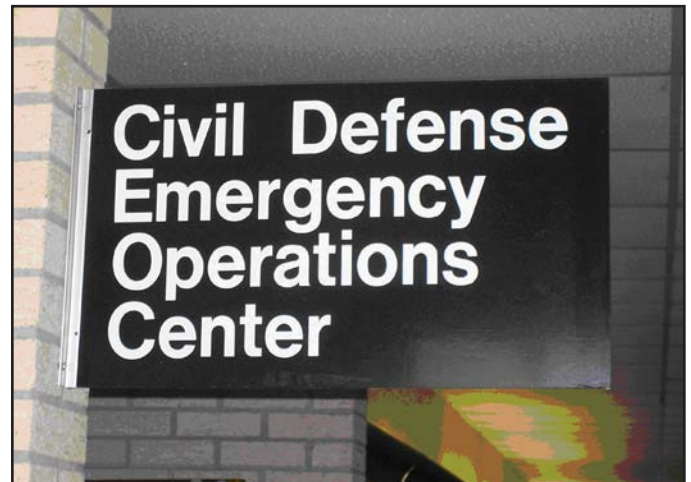
**Example of house foundation pad in Mississippi. Coastal homes were often swept away, leaving only the concrete pad.**

Exacerbating the situation, the loss of emergency equipment (e.g., police and fire cars, trucks, ambulances) made it impossible for search and rescue to begin in the immediate post-impact period in those areas affected by the hurricane winds and storm surge. With the loss of equipment, even when roads begin to be cleared, responders were reduced to “acquiring what was needed. If a private car was found usable, we appropriated it for the time being in order to help find and transport those needing care to an appropriate location; we siphoned gas from cars that were destroyed and unusable. Sometimes we appropriated gasoline being brought in; we even appropriated the vehicles of others converging to the site. We did what we had to do; we prioritized needs. Some people will think we were stealing or wrong, but we were trying to save lives here and this is what we were reduced to. It looked like a third world country around here, I’m afraid we had to act like it, too.”

## Interagency and Interorganization Cooperation

A pattern of responder perception was observed for local, state, and federal governmental cooperation. Local responders reported feeling that cooperation was very good, “all things considered,” among all of the locals. “The problem was between levels; it was impossible to get anything going with the state or the feds.” On the other hand, those working from the state perspective suggested “the problem was at both the local and the federal levels. We did fine working with each other, but getting the locals to act in concert with us was mission impossible—ditto for the feds.” Those working from the federal perspective conformed to this pattern: “We are fine, they are not.”

Disorganization and turf conflicts were evident at every level we interacted with. Conflicting reports were the norm among those working at EOCs. Some claim “fabulous coordination and cooperation among knowledgeable responders.” Others suggest a “disorganized mess among those who know nothing.”



**Inside one EOC.**

Medical workers and medical volunteers reported “breaking into a local closed pharmacy in order to acquire needed basic medical supplies since we had no other recourse. Even after we could communicate with officials, they still did not deliver what they promised. We had patients continually coming in and we needed the basics to help them. But no one will tell you the truth on this.”

**FEMA within Homeland Security Viewed as Problematic.** A common assessment was the “failure of the DHS to focus on an all-hazards approach before Katrina. While terrorism may occur again, we know hurricanes and other types of disasters will.” Furthermore, “the loss of FEMA personnel and budgetary support as a result of being swallowed up by the DHS” was noted to be a problem that was perceived as contributing to the “problematic response to Katrina, which was systemic and far more than just the incompetence of Director Brown.”

While an enhanced role for the U.S. military was frequently recommended “as long as it is in conjunction with and under civilian control and leadership,” not a single respondent was in favor of the U.S. military becoming the disaster manager of choice. The military was favored for the purpose of transporting personnel and supplies into a disaster zone, for transporting out evacuees who have no other means of leaving, for providing support (food, shelter, transportation, road clearance of debris) for other needed disaster personnel (e.g., medical, logistical, temporary housing), and for some types of construction and repair work to facilitate rapid restoration of basic services.

### **Reported Deviance and the Behavior of Survivors: Acquiring vs. Looting**

The usual research literature pattern was observed; conflicting reports were constant. “There was little or no looting.” “There was some looting, but mostly for survival needs that were not being met in any other way . . . so I guess I wouldn’t really call that looting.” “The crazies were out of control. Looting was everywhere, no excuse for it at a time like this. Just stealing cigarettes, booze, fishing rods, a TV . . . my god, there still isn’t electricity to watch the damn thing.”

The research team is convinced looting did occur in this event. It is also convinced that much of it was not looting as much as acquiring the means for survival. Notice that it is labeled acquiring when officials need supplies to support their survival and mission, but it is labeled looting when citizens need resources to support their own survival. However, there was also looting in



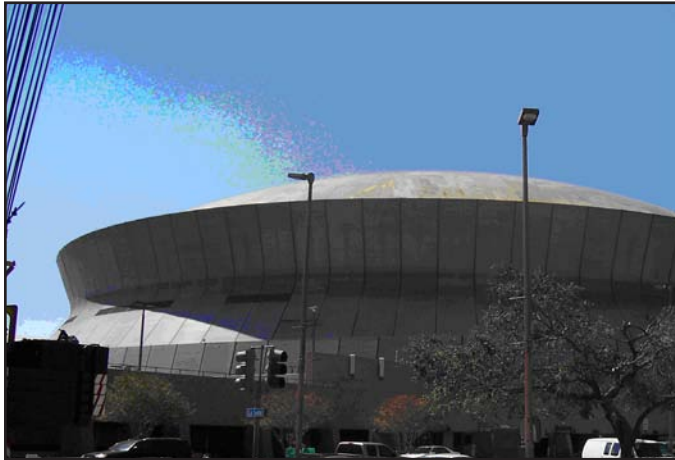
**One reported target of looting and/or acquiring.**

both Mississippi and in Louisiana. The question then arises, why does it occur and when will it occur? Prior research has repeatedly found that it is rare. Crime reports from New Orleans demonstrate that even in Katrina, the overall crime rate was much lower during non-disaster time. Nevertheless, looting occurred for non-survival reasons. Why? Is it media socialization (i.e., looting is normal, so follow the norm)? Is it akin to civil disturbances for disasters of the magnitude (in scale and scope) of a Katrina (i.e., the disenfranchised attacking the perceived oppressors)? Is it anomie loss of social control (i.e., police unable to fulfill social control function of normal time in a disaster of this magnitude)?

The prior research literature on this issue may be skewed, based on small western populations experiencing more limited disasters in scale and scope. We will return to this issue in the discussion section of this paper, taking up an application of Fischer’s disaster scale (2003). Hurricane Katrina demonstrates, it will be argued, that it is time to think in terms of a disaster scale for which all previous and future research findings will need to be qualified.

The issue of behavior is not merely something that inquiring minds want to know. In Katrina it had a major impact on the actions of responders and on the prolonged misery of victims. The continual media reports of looting, marauding street gangs, shooting at rescue helicopters, and so forth, had a paralyzing effect on many responders. For example, responders on their way to help those trapped at the Superdome ceased their advance on the other side of the bridge and decided not to proceed for fear of encountering bodily harm by those allegedly exhibiting deviant behavior. Those trapped at the Superdome without food, water, and other necessities continued to suffer until the entertainer Harry Connick, Jr. drove over the bridge and participated in a live *Today Show* interview on NBC wondering aloud “what the problem is.” Articulating that he could drive

over without incident and did not understand why the responders could not. Help eventually did venture forth. Unfortunately, the NBC program continued to fan the flames of exaggeration (i.e., disaster myths) even though their news people were present and should have known better. Myth was still reported as fact.



Superdome

**Conditions that Contribute to Acquiring and Looting Behavior.** “So, you are in the evacuation center you were told to go to, the food runs out as does everything else. People are frustrated, scared, becoming angry at their situation, which they view as being left to die. They look at the locked store next door where they see food through the windows going to waste as there is no electricity. Eventually they decide this is crazy, so they break the windows and go in to get the food, water, and diapers they need and don’t have. Meanwhile, no one seems to be able to get to these people to provide help, except the reporters manage to get there to cover the story of their misery. The stealing is shown on national TV. The tongues begin to wag and the fingers are pointed at these looters. What the hell does anyone expect to happen? We created the situation to guarantee looting would occur, and then we blame them (the victims) for their desire to survive. Is this nation nuts or simply incapable of overcoming racism and classism?”

Over time the altruism of survivors was seen in Katrina as being replaced by anger among those (victims and sometimes the first responders too) who felt abandoned and betrayed by a social system that was supposedly designed to help them. As the anger increased to rage, the conditions appeared to have increasing similarities to those in civil disturbances more than disasters. In time, the disaster victims felt “more victimized by ‘society’ than by Katrina; we were treated like animals, in fact many times pets received more help. Racism was responsible for our plight.”<sup>2</sup>

**Reducing the Likelihood.** Many responders we interviewed kept returning to the idea that while help was beyond slow, the media was always there first and showed what was not being accomplished. “How come emergency organizations could not get there but media organizations could? If nothing else, perhaps we should turn over meeting immediate needs via rapid response to the media.” While this idea was rather tongue-in-cheek, one that was not was, “Wal-Mart is good at tracking and moving supplies; perhaps the government should pre-contract with them to bring in the basics needed before, during, and after an event like this.”

Another idea articulated by first responders was “instead of owners locking their stores and evacuating, they should either leave them unlocked or give the keys to the police so that an orderly distribution of needed supplies can be easily organized after something like Katrina—that would be a lot better than starving people to the point of their having to break in and feel like thieves, be called thieves, and be shot at.”



CDRE research assistants observe local views on looting.

## Mass Media: Part of the Solution and Part of the Problem

**Media as Helper.** Without the television broadcast media calling attention to the plight of those stranded at the Superdome and the Convention Center, the misery of these evacuees would undoubtedly have been unnecessarily lengthened even further. The media were extremely helpful in calling attention to problems that needed to be redressed, in providing information to evacuees and survivors, and in providing information to responders as well—in some cases the media were the only source of information for an extended time (radio and then television for those who could obtain electricity via generator or service restoration). A responder comment indicated the dependency on the media in the absence of communications when he said, “I had a ten-gallon can I filled with gasoline before impact that

enabled me to run my home generator, and that gave me access to radio and some television I could capture off the antenna that was on one of my small televisions. This is all the communication I had for the first six or seven days. It was impossible to travel with all the debris. I could not do anything except help survivors in my own immediate area. For all I knew, the world ended. All I knew was from the mass media when I turned it on, which I did sparingly in order to preserve my gasoline as long as I could. That is how I eventually knew how big the event was and how long it was taking, and going to take, to get help to all of us.”

**Media as Part of the Problem.** There was also the usual problematic aspect to the mass media reporting, exhibited by the following responder’s experience. “I saw (on television) how people were really acting out in New Orleans—it scared me. I knew we were going to need police and military help to get control.” Another responder indicated “it was through television that we knew about the looting, raping, and killings in New Orleans; we had some of the looting here (Mississippi), but nothing like those crazies.”

A volunteer medical responder in New Orleans shared, “we drove over the infamous bridge one evening to go to see who may need some medical attention and we were immediately surrounded by scary people pounding on the ambulance. We locked our doors; they had a crazed look in their eyes. We didn’t get out, we just slowly backed up until they stopped, then we turned around and left. The next day we went in with some support (National Guard) and then helped them. We then realized what was going on. Those pounding on our vehicle the night before were going through drug withdrawals. They saw the ambulance and assumed we would have something they could shoot themselves up with to get high and stop the withdrawal symptoms. They weren’t intending to harm us; they were desperate for the drugs they could not now buy since they were cut off from their dealers. Everything here is just one hell of a mess. Reporters see some things, make assumptions, and come to the wrong conclusions about what is really going on, which only makes it worse.”

Rumor, as is noted in the research literature, was often reported as fact. “We kept hearing (from media reports) about the shootings at helicopters by marauders in the city; we were afraid to go in because we didn’t want to get shot trying to help these damn ungrateful people.” Later, it was determined that these alleged shootings never occurred; rumor reported as fact suppressed responder action, which prolonged misery. Others indicated they “were afraid to go in because we felt uncomfortable. I’m not prejudiced, but in this situation we were only a few whites surrounded by many

blacks. We had to be prudent.” Fear of what deviance may occur had a restraining effect on how quickly help was provided. The desire for police or National Guard protection was frequently articulated as a precondition for feeling comfortable to provide assistance to the victims. The nature of the mass media reporting was the primary source of perceptions of the dangers of advancing into large populated areas with minority populations.

**Media Convergence.** Responders indicated they “need more training in how to deal with the mass media when they converge in such large numbers, are pushy and rude. The media were in sooner than anyone else. We would have liked to have had some control on the media’s ability to move around in such large numbers. Perhaps a media pool would be less bothersome when we are trying to complete our mission. Prevent them from wandering around the city; instead, give them information periodically from press meetings.”

## The Convergence of Volunteers who are not Self-Sufficient

**The Problem.** “We were overwhelmed with our own needs—inadequate water, food, shelter, transportation, medical care, and so on—and the ‘doc-in-a-box’ (doctor living out of his car with his own supplies in the back of his car) arrives, then a group of fire fighters arrive, then . . . in each case they come up to me and say ‘we are here to serve.’ They have this angelic look on their face and want to be of help, but the first thing they ask is ‘where can we eat, sleep . . .’ and I say, ‘you know we are in the middle of a major disaster, right?’ I mean, I wanted to appreciate their offer, but they only added to my problems. I needed people and supplies, not people to take care of, as I already had that.”

**The Solution.** The governor of Mississippi telephoned his counterpart in Indiana, activating a prior reciprocal agreement that enabled the Indiana National



Researcher Henry Fischer with Self-Sufficient Indiana Unit.



Guard to transport the Indiana medical team to Mississippi and set up their encampment for the duration of their service in the Biloxi area. Self-sufficiency resulted in providing service to the victims without adding to the local burden.

One responder expressed appreciation for those who arrived self-sufficiently: "I could have kissed them. In they came one day and told me what they came prepared to do; I was expecting another housing and feeding burden, but they told me not to worry about that. They came prepared to take care of themselves, as well as care for those who were in need of medical treatment. I thought, 'finally something that works.' God bless them!"

### **Pre-Positioning of Personnel and Materials**

As one responder put it, "pre-positioning supplies in Atlanta and Houston is sure better than leaving them in D.C., but it still doesn't cut it. It is a long way to here (Mississippi and Louisiana) from Atlanta, even if the roads along the entire coast weren't impassable. I don't know what they are thinking." Another said, "we can't go without water for a few weeks, maybe a few days but not a few weeks. We're the only remaining super power and we can't even transport basic disaster needs for our own population, even position them close enough for use. I thought this country was supposedly better prepared after 9/11. My god, what are we going to do if we ever really have a terrorism attack?"

**Recommendation.** "We should build hardened buildings where pre-positioned materials can be safely warehoused, something like during the Cold War days when we had those air raid shelters and all that. Build them in Mississippi and in Louisiana in buildings that can withstand flood water and high wind. Then make sure the personnel and supplies are there before impact, ready to go immediately afterwards. This is pitiful." Another responder noted that "the logistics just weren't there. We didn't stockpile locally for something of this magnitude. The state was good, but not good enough for something like this, and the feds, oh man, they just weren't there. We all thought a disaster was like an emergency, except that you just raise the level a bit. You know, a disaster is like a big emergency, you just do what you normally do but do it on a bigger scale. We now know it ain't that way. You need real planning by those in the know; you can't run these things with just volunteers, part-timers, and those whose only experience is everyday emergencies. What is this country thinking? They way we do it now is like sending mom and pop to run a corporation!"

### **Corporate Citizenship**

**The Problem.** "Ok, we all believe in profit, the free market, and all that. But at the same time we are all in this together. Corporations are made up of people. Those people need to remember they make a living off of us and they are just like us. They need to have more of a service (ethic) . . . rather than leech off of victims. They offer a service we pay for and then do everything they can to avoid providing what they led us to believe we were buying." Insurance companies were highly criticized by responders and victims for not paying what was anticipated for rebuilding. Insurance claims were reportedly turned down by companies claiming the storm surge was a flood and therefore the victims needed FEMA flood insurance.

Responders were distraught over property insurance problems for several reasons. First, they were seeing their fellow citizens suffer through the disaster and now they were seeing them suffer economically. And second, some of the victims were also responders, which affected the responders' ability to do their job. "I have a man who is burying some of his family; his other family members evacuated out of state; and he lost his car, his part-time job (as a result of the disaster, the work does not exist now), and his house. And, his insurance company won't pay. He can't concentrate. He can't do his job. I fear he might even be a suicide risk."

**Recommendation.** One responder's words represent a viewpoint we frequently encountered: "There should be a fund created that is especially earmarked for responders. One that takes care of them so that they can do their job for the community . . . not help everyone else and then eventually go home and have no one to help them. Their house should be rebuilt, their car payment covered. Some of these people lost more than half their incomes due to the loss of their spouse's job and their own part-time work. How are these people expected to work as responders and survive?"

### **Failure of Emergency Personnel to Stay or Report for Work**

Confusion is the operative word on this issue. In some instances, emergency personnel evacuated with their families and were unable to return as Katrina's impacts made it impossible to travel. The city of New Orleans first reported that many police officers had not reported for work, though later reports suggested many of these alleged officers actually did not exist. Their positions were reported to be falsely created as part of a corruption scheme. In other cases, some workers did fail to stay on the job. In the instances the research team

was able to track, workers had left their post due to exhaustion after days of nonstop work. These individuals apparently had not left for selfish reasons. The number and percentage of workers who failed to report for work or stay on the job, as well as the reasons for their actions, is still unclear. However, it does appear that a higher percentage did not report to work than the research literature on this subject would have predicted.

**Police Protection.** Responders would have liked to have felt that they had police protection rather than feeling like everyone had left and they were on their own. Even if some deviance during a disaster is more illusion than reality, the responder's comfort level would have been enhanced, during an already highly stressful first few weeks, if protection had been more evident. A common recommendation by responders was the desire for police and perhaps a National Guard presence to assist them in their work, particularly in urban areas.

## The Lack of Planning for Pets

As with most disasters, plans for dealing with pets were described by responders as insufficient. Many animals were left on their own when their owners evacuated, as they were not allowed to bring pets to shelters. This resulted in the responders using limited human resources to rescue animals in the weeks after Katrina's impact. In some cases this provided additional risk to these responders who had encountered hungry, thirsty, fearful pets (e.g., dogs).

Some victims did not evacuate because they knew they were not permitted to bring their pet to a shelter. In some communities, animal shelter personnel engaged in heroic efforts to move their housed animals before and after impact. Responders frequently noted a plan would be needed to better serve the community, as human beings are often in greater risk when their pets, which are viewed as family members, are at risk.

## Summary of First Responder Recommendations

The following list of recommendations reflects a compilation of what the research team gathered through our interviews. This list summarizes what was presented above. The first responders we interviewed were, in our view, very forthcoming and spoke freely of their experiences so that others might benefit in the future. They were assured confidentiality, which we have protected, even though they almost unanimously indicated it was not necessary.

### Macro and Micro Issues Addressed:

- Create a National Disaster Plan that shares the economic impact of a community issuing an evacuation

order so that the community doesn't go bankrupt if an evacuation was not necessary. Also, the plan would help ensure effective interaction when various levels of government and various agencies become active in responding.

- Re-establish FEMA as a separate agency (remove from the DHS), and establish the director as cabinet-level position.
- Increase funding and number of full-time professionals in FEMA in order to meet the needs of the nation during disaster events. The agency continues to be understaffed.
- Provide direct assistance to first responders who are also victims—those who lose homes and cars yet still have mortgages and car payments and those who lose their job or their spouse's job.
- Establish one communication system for all that is workable despite disaster (e.g., satellite cellular communication).
- FEMA and the government should give contracts before impact, during normal time, so everything can be quickly activated. They should not wait to set contracts after impact; it moves too slow.
- Consider involving companies like Wal-Mart directly in a disaster response because they have and can move supplies quickly. Also, ask owners to leave stores "unlocked" in impacted areas so community can access needed items.
- Better interfacing is needed for local, state, and federal responders. There is a need identification and provisions allocation
- Develop disaster checklists for responders to use for their jobs.
- Develop standardized forms (e.g., DMORT forms) consistent across the nation, available electronically, and saved on jump drives for field use.
- Create ethics guidelines to help responders know difference between acquiring necessary supplies from impacted environment versus stealing.
- Need additional training on crisis management to differentiate between normal time habits that, if repeated in disaster, become counter productive and dangerous.
- Need for all-hazards approach to be taken seriously.
- Need for planning to be taken seriously.
- Need to prepare for disasters differently than how we prepare for everyday emergencies.
- Volunteers must be self-sufficient when they arrive in a disaster zone.
- Educate the nation on what is needed (self-sufficient help, financial donations) versus what is not needed (random convergence of volunteers who are not self-sufficient, material donations trucked in randomly).

- Educate the nation on disaster mythology versus disaster reality with respect to behavioral response patterns and organizational response challenges.
- Educate disaster planners and first responders that a disaster is not just a large emergency.
- Develop disaster planning in concert with different levels of disasters. Different scales and scopes of disasters require different responses (localized disaster requires response with local and state resources, perhaps with some federal support long-term; Katrina-sized disaster requires immediate federal involvement partnering with localities and states).
- Pre-locate supplies closer to potential impact areas, permanently located within or near communities in hardened buildings.
- Organizations need to develop plans for responders to have time on and time off, even during disaster. Otherwise, they burn out and become worthless.
- Organizations should institutionalize debriefing sessions between rotating shifts of workers in order to transfer information.
- Create a media pool and provide regular news conferences rather than allowing reporters to go wherever they want to go within the disaster area. Responders have a job to do, first and foremost.
- Change the insurance system so that victims really are fully covered. Too many policy holders were told the storm surge was not weather related, but flooding, and so they needed flood insurance to be covered for the loss of their home.
- Create procedures for organizing and implementing effective large scale evacuations (e.g., National Guard trucks to move evacuees who do not have personal means of transportation).
- Create plan for providing means of support into hands of evacuees (e.g., emergency money card held by every citizen, activated during disasters (\$2,000) which can be used for gasoline, lodging, food, and other relevant materials).
- Standardize protocols in the United States so that doctors, etc., can automatically practice in another state during a disaster.
- Develop evacuation plans that include family pets.

## Discussion

If we consider the events faced by both the victims of and the responders to Hurricane Katrina, we find at least one very clear message. That message, in conjunction with the ongoing discussion of what constitutes a disaster in the research literature (Perry and Quarantelli, 2005), is that it is time to consider that everything we think we know about the behavioral and organizational

response to disaster may vary by the severity, (i.e., scale and scope) of the disaster as it disrupts the everyday normal activities of human beings (Fritz 1961). In the current discussion, the argument is advanced that the knowledge base in the research literature should be examined and compared to a disaster scale. A testing of the research literature findings should then be initiated to assess the extent to which previous findings articulated in the second assessment (Mileti 1999), for example, may vary according to the scale and scope of a disaster. It is argued, therefore, that the research community needs a viable disaster scale in order to initiate the aforementioned. While the disaster scale advanced in *International Journal of Mass Emergencies and Disasters* (Fischer 2003), may or may not be the final version adopted, it serves as a model or illustration to help advance the argument and its potential synthesis.

**Disaster Scale.** We will borrow liberally from the article noted above (Fischer 2003) in order to explain the scale and apply it to Hurricane Katrina, as well as a few other contemporary disasters. Such a scale, when cross-referenced with the research findings of the past 50 or more years, will serve to instruct researchers and practitioners as to when, for example, looting is more or less likely to occur. Such applied outcomes will assist in better preparing to mitigate against challenges most likely to occur depending on the level of disaster encountered.

## Disruption and Social Structure Adjustment

The proposed disaster scale is based upon the degree of social disruption resulting from a possible or actual event. The greater the degree of disruption (in terms of scale, scope, and time), the more the social structure is impacted (i.e., the greater the extent of temporary or permanent social change in response to the perceived needs by a critical mass). For example, after impact, going to work, holding a birthday party, or going for a hike in the park would be viewed as undoable for those within or near the disrupted area. By definition, these routine activities would be viewed as unacceptable, perhaps immoral. Other norms and roles would emerge, replacing the routine with the “more appropriate” behavior (e.g., search and rescue, feeding survivors).

A disaster scale, therefore, should assess the degree or extent to which this everyday social activity is disrupted resulting in temporary or permanent changes in the social structure within a community, primarily, as well as for the larger society, by extension. As has been articulated with great clarity by others (Quarantelli, 1998), it would not be appropriate to measure disaster disruption in terms of death, injury, and damage—that would be neither sociological nor would it provide a

consistent standard (numbers of dead and injured do not function as a reliable indicator of social structure disruption). The proposed scale will link the scale and scope of disruption (tied to an actual or potential precipitating event or disaster agent) within a community(s), and by extension a society, with the scale and scope of social structure adjustment within that community(s) and society. Figure 1 provides a linear view of the process, but not the scope and scale.

**Figure 1. Linear view of disruption and adjustment**

Social Structure	Precipitating Event	Disruption	Adjusted Social Structure
The status-quo*	The big bang**	The big mess**	Collective response*

\* Focus of the sociology of disaster

\*\* The actual disaster event

## Scale, Scope, and Time

Three issues affect the extent of social structure disruption. These three issues are scale, scope, and time or duration. The first two actually affect the third within the community and, by extension, the society.

**Scale.** How severe is the destruction and distress? Are most community homes missing a few roofing tiles or are most community homes no longer in existence? The greater the scale of destruction, or actually disruption, the greater the collective distress and the greater the collective response (temporary or permanent social change). A disaster scale must take into account these differences.

**Scope.** How widespread is the disruption within the community? Is a significant portion of the community experiencing disruption to the extent that adherence to routine social structure is impossible? Are most community members still able to continue their routine without being perceived as acting immorally for doing so? Is the disruption so widespread that the entire community has replaced the routine with the moral imperative? Are numerous communities so affected? A disaster scale must take into account these differences.

**Time or Duration.** The greater the scope and scale of disruption, the more likely the time for recovery will be extended. Both community and societal social structures are likely to continue in a state of disruption as scope and scale increase. A disaster scale must take into account this issue.

Figure 2 provides a two-dimensional view of the intersection of disruption and adjustment with scale, scope, and duration.

**Figure 2. Two-dimensional generic construct**

	DISRUPTION*	ADJUSTMENT**
SCALE	Degree of disruption	Degree of adjustment
SCOPE	How widespread is disruption	How widespread is adjustment
TIME	Duration of the disruption	Duration of the adjustment

\* Precipitated by the disaster agent

\*\* Focus of the sociology of disaster

## Emergencies, Disasters, Catastrophe, and Annihilation

**Emergencies.** Historically, disaster sociologists have identified two types of emergencies, neither of which were considered disasters (for example, see Fischer 1998). Everyday emergencies have been those in which local authorities (e.g., a police or fire department) are trained to confront on a regular basis. Examples would include a building fire and an “everyday” traffic accident. Severe emergencies, on the other hand, would be those requiring response by several fire houses or companies. It has, perhaps, been a mistake to artificially draw a line between emergencies and disasters. Both experience disruption; it is the degree of disruption that varies. And, both experience social structure adjustment; again it is the degree that varies in terms of scale, scope, and time.

**Disasters.** Historically, disasters have been viewed as conceptually different from emergencies. While it is true that disastrous precipitating events (with the Fritz definition in mind) result in disruption beyond the everyday and may overwhelm local authorities, it is, however, scale, scope, and time that are the key issues. Both disasters and emergencies experience disruption and adjustment. It is the degree of disruption and adjustment that varies.

**Catastrophe and Annihilation.** Historically, it is difficult to discern what differentiates a disaster from a catastrophe. It seems a catastrophe is an extreme disaster. What is constant is that there is disruption and adjustment; again, what varies is the scale, scope, and recovery time. Annihilation occurs when a society is so severely and completely disrupted that it cannot continue to exist as a separate societal entity. It ceases to exist.

It would be prudent, and logically consistent, to view emergencies, disasters, catastrophe, and annihilation as all variations (in terms of scale, scope, and duration) along a continuum. This is the approach the proposed disaster scale employs.

## Disaster Scale

Why might this be a useful tool? Disaster researchers and practitioners would both benefit from the availability of a uniformly accepted disaster scale. Such a scale should enable researchers to differentiate between degrees of disasters. A disaster scale would be a tool that would aid researchers in delineating the applicability and limitations of their findings. The findings amassed in the disaster research literature may apply to any disaster, regardless of its severity. On the other hand, it very well may be that some findings may vary by disaster severity. The scale would also serve as a generator of research questions, as not all responses are equal. Practitioners would also benefit from such a tool. It could assist them in alerting their communities to the likelihood of an oncoming category 3 (less severe), category 5, or category 8 (very severe) disaster—thereby assisting in communicating appropriate preparatory and response actions. Such a tool would also assist government decision makers in their mitigation, preparation, and response efforts in much the same way the Richter scale provides a construct for envisioning the severity of an earthquake’s impact.

Working with the generic construct, a ten category disaster scale is proposed. It is based upon the degree of

**Figure 3. Scale Categories: Focus on Disruption and Adjustment**

Disaster Category 1 (DC-1)	Everyday Emergencies (EE)
Disaster Category 2 (DC-2)	Severe Emergencies (SE)
Disaster Category 3 (DC-3)	Partial Small Town (PST)
Disaster Category 4 (DC-4)	Massive Small Town (MST)
Disaster Category 5 (DC-5)	Partial Small City (PSC)
Disaster Category 6 (DC-6)	Massive Small City (MSC)
Disaster Category 7 (DC-7)	Partial Large City (PLC)
Disaster Category 8 (DC-8)	Massive Large City (MLC)
Disaster Category 9 (DC-9)	Catastrophe—Many Populated Areas (C)
Disaster Category 10 (DC-10)	Annihilation—Entire Society (A)

disruption and adjustment a community(s)/society experiences when we consider scale, scope, and duration or time. A detailed description of each disaster category is provided along with a summarized version in Figure 3.

## Disaster Category 1: Everyday Emergency (EE)

The everyday emergency or the first disaster category (DC-1) includes those events the first responders (e.g., police and fire) encounter on virtually a daily basis. Their training enables them to respond by applying the norms and roles to address the temporary situation. For example, a burning house results in the fire department extinguishing the fire and the local police directing traffic and assisting with any necessary evacuation. The precipitating event is defined by victims and responders as large in terms of scale (for those affected), but small in scope (in this case, one house is directly affected while potentially several more are threatened). Normal activities are severely disrupted for those living in the house and will remain disrupted for some duration of time. After the fire is extinguished, the responders return to their normal routine, as does the rest of the affected neighborhood. The key issue for disaster category 1 is that while scale may be large (or even small in other examples) and while duration may be lengthy for those affected, scope is extremely limited. Both the disruption and the social-structural adjustment are very limited in the impact to the community (unit of analysis) and, by extension, the society. DC-1 is reserved for those everyday emergencies that occur in any community, whether it is a township, borough, small city, or medium or large metropolitan area. The focus is on the limited adjustment occurring with respect to social change. A large city or a small town experiencing the same kind of limited scope (and potentially scale and time as well) is able to respond to an everyday emergency that, by definition, affects only a narrow part of the population and necessitates only a limited community adjustment. Alternately, a large city may experience a minor disruption (loss of an average of three roof shingles) for many people (200 homes for example). In this instance the scope would be broader, yet both scale and duration would be very limited, resulting in very limited adjustment. The homeowner’s insurance companies would be the primary responders.

DC-1 applies when social structure adjustments are necessitated in response to an actual or potential disruption that is either minor in scale, scope, and duration; or major in scale and duration, but minor in scope; or larger

in scope for part of the larger community (partial), but minor in scale and duration.

## **Disaster Category 2: Severe Emergency (SE)**

The second disaster category (DC-2) is operable when responders and victims are confronted with actual or potential disruption and adjustment more extensive than “everyday” emergencies. For example, an actual or forecast major snowstorm may result in widespread (scope: “massive”) disruption of normal activity and adjustments, bringing school closings, alternative child care arrangements, and perhaps even the use of the National Guard for transporting medical emergency personnel. The scale (destruction and/or distress) would be minor and the adjustment time period would usually be rather short in duration (the snow melts or is at least moved to facilitate the return to normal activity). Alternately, a fire that consumes a neighborhood or a factory would be major in terms of scale and time of disruption and adjustment, but would only partially affect the community (limited scope).

DC-2 is applied when social structure adjustments are necessitated in response to an actual or potential disruption that is either major or massive in scope, but minor in scale and duration; or is localized in scope, but massive in scale and duration.

## **Disaster Category 3: Partial Disruption and Adjustment in a Town, Township, or Rural Area (PST)**

The third disaster category (DC-3) is reserved for small populated areas (towns, townships, rural areas) that experience actual or potential disruptions with necessitated adjustments going beyond everyday or severe emergencies. The community is so affected in a DC-3 disaster that continued adherence to the normal routine is inconceivable from a significant portion of the community’s members, not only victims and official responders. Both the destruction and/or distress (scale) are severe enough that the resulting adjustment interferes with the normal routine for a portion of the community. An example would be the crash of an airplane in or very near a small town. A significant portion of the community may not only be totally or partially destroyed, but the distress experienced throughout the town would result in the total disruption of the normal routine for a large portion of the community population.

DC-3 is applied when the social structure adjustments are necessitated in response to an actual or potential disruption that is major or massive in scale and

duration for a significant portion of a town, township, or populated rural area.

## **Disaster Category 4: Massive Disruption and Adjustment in a Town, Township, or Rural Area (MST)**

The fourth disaster category (DC-4) is designated for small populated areas (towns, townships, rural areas) that experience actual or potential disruptions and necessary adjustments beyond everyday or even severe emergencies. The community is so impacted that continued adherence to the normal routine is inconceivable on the part of virtually the entire community’s members (all experience the adjustment). An example of this category would be a brush or forest fire that threatens to, or actually does, destroy virtually the entire community. Evacuations, fire fighting, and so forth involve adjustment by everyone in some level. Scale, duration, and scope all combine on a major level to massively affect a town, township, or populated rural area.

DC-4 is applied when the social structure adjustments are necessitated in response to an actual or potential disruption that is major or massive in scale and duration for virtually the entire town, township, or populated rural area.

Why the differentiation between partial and massive? To be more than an emergency, the disruption must be significant enough to render the continuation of normal time activities moot. Most of these disasters affect part of the community significantly enough to disrupt normal activities for a significant portion of the community. However, if the disruption resulting from threatened or actual disaster impact is massive, the normal activity disruption would be more significant, the necessitated response more all-encompassing, and, by definition, the event would be larger in sociological terms.

## **Disaster Category 5: Partial Disruption and Adjustment in a Small or Medium City (PSC)**

The fifth disaster category (DC-5) signifies actual or potential disruption and the resulting adjustment to a small or medium city. In this event, continued adherence to the normal routine is inconceivable on the part of a significant portion of the community’s members. Both the destruction and/or distress are severe enough that the resulting adjustment greatly interferes with the normal routine for a significant portion of the community. An example would be an airline crash in a small- or medium-sized city. A significant portion of the community may be severely damaged or destroyed. Most importantly, the distress would be experienced so broadly

in the community that a significant portion would be unable to continue the normal routine. They would instead engage in search and rescue activities, and so forth.

DC-5 is applied when the social structure adjustments are necessitated in response to an actual or potential disruption that is major or massive in scale and duration for a significant portion of a small or medium city.

### **Disaster Category 6: Massive Disruption and Adjustment in a Small or Medium City (MSC)**

The sixth disaster category (DC-6) is designed for small- or medium-sized cities. The actual or potential disruptions and necessitated adjustments make normal routines impossible for virtually the entire community. An example would be conflagration that consumes most of the city, an earthquake that severely affects most of the city, or a biological terrorism event that affects and threatens the entire city.

DC-6 is applied when social structure adjustments are necessitated in response to an actual or potential disruption that is major or massive in scale and duration for virtually the entire community the size of a small or medium city.

Why the differentiation between population size? The larger the affected population, the greater the disruption, adjustment, and response. Sociologically speaking, the disaster is of greater magnitude or scale.

### **Disaster Category 7: Partial Disruption and Adjustment in a Large City (PLC)**

The seventh disaster category (DC-7) signifies actual or potential disruption and the resulting adjustment in a large city. In a DC-7 event, continued adherence to the normal routine is inconceivable on the part of a significant portion of the community's members. Both the destruction and/or distress are severe enough that the resulting adjustment is experienced by a significant portion of the city. An example would be the crash of American Airlines flight 587 in Queens, New York City, on November 12, 2001. A major portion of a New York City borough was severely damaged and/or destroyed. A significant portion of the community was not capable of continuing a normal routine.

DC-7 is applied when social structure adjustments are necessitated in response to an actual or potential disruption that is major or massive in scale and duration for a significant portion of a large city.

### **Disaster Category 8: Massive Disruption and Adjustment in a Large City (MLC)**

Like a DC-7, disaster category eight (DC-8) signifies actual or potential disruption and the resulting adjustment to a large city. In a DC-8 event, however, the disruption and adjustments are experienced by virtually the entire community. An example would be a severe earthquake in San Francisco resulting in adjustments being implemented by virtually everyone in the city.

DC-8 is applied when the social structure adjustments are necessitated in response to an actual or potential disruption that is major or massive in scale and duration for virtually the entire community the size of a large city.

### **Disaster Category 9: Catastrophic and/or Simultaneous Massive Disruption and Adjustment in Several Communities (C)**

The ninth disaster category (DC-9) signifies actual or potential disruption and adjustment in more than one community, essentially simultaneously. This circumstance may be referred to as a catastrophe. The scale and duration, as well as the scope, are such that adherence to the normal routine is not possible in more than one community. One example would be the terrorist attack of September 11, 2001, which simultaneously involved the World Trade Center towers (New York City), the Pentagon (Washington, D.C.) and the airline crash outside of Shanksville, Pennsylvania. Another example would be the impact of Hurricane Katrina on the Gulf Coast in 2005—from Alabama to Texas. Many communities (i.e., small towns, small cities, and the large city of New Orleans) were massively affected simultaneously. In these examples, not only was the normal activity disrupted throughout the impacted cities, but the larger society also experienced severe adjustments.

DC-9 is applied when social structure adjustments are necessitated in response to an actual or potential disruption that is major or massive in scale, duration, and scope across several population centers simultaneously—affecting dramatically the larger society as well.

### **Disaster Category 10: Simultaneous Massive Disruption and Adjustment of a Society (A)**

Disaster category ten (DC-10) is reserved for the circumstance where actual or potential disruption and adjustment are so severe in terms of scale, duration, and scope that the society experiences annihilation—it is unlikely to continue to exist as a separate society. An example would be an event that might result from a

nuclear, biological, and/or chemical terrorist attack, with the delivery of weapons of mass destruction to enough population centers that the societal disruption and adjustment constitutes annihilation.

DC-10 is applied when social structure adjustments are necessitated in response to an actual or potential disruption that is major or massive in scale, duration, and scope, and is experienced across enough population centers to render a society annihilated.

In summary, the application of scale, scope, and duration (time) to disruption and adjustment provides us with a conceptual, sociological construct that differentiates the ten different disaster categories. This scale will facilitate testing of the prior findings and the generation of research questions. It will also assist practitioners in discerning between the types of mitigation, planning, and response that may be appropriate based upon each disaster category.

## The Efficacy of the Disaster Scale

In this disaster scale we find that emergencies experience a limitation of at least one of the three criteria—scale, scope, and/or duration, while disasters (six different categories) experience actual or potential major disruption and adjustments within all three elements (scale, scope, duration). There are two issues involved in determining whether a precipitating event results in disaster category three, four . . . or eight: the size of the population affected and the portion of the community's population affected. It is reasoned that the greater the size of the impacted population, the greater the degree to which adjustments are experienced, in terms of scope within the larger society (e.g., Hurricane Katrina or 9/11

versus the Andover, Kansas, tornado in 1991). And, hence, the greater the adjustment experienced indirectly throughout the larger society itself. Similarly, the determination of whether a given community is partially or wholly disrupted is used to differentiate between disaster categories within the variable of community population size.

## Concluding Comments

The funded research has resulted in two outcomes. 1) The observations and recommendations of the responders were captured within the first two months of Katrina's impact. They have been distilled and shared for the purpose of adding to the work of others to improve the planning and response of future Katrinas. Unfortunately, the misery of this catastrophic event is still being felt by the victims as this nation obviously lacks the social structure designed to "take care of its own after an event of this size and magnitude" (words of one responder-survivor). 2) The need for a disaster scale has become obvious and necessary—not merely for the esoteric exercise of a researcher's intellectual pursuits, but for the applied benefit of practitioners who need to be better able to anticipate what challenges to expect with the variety and plethora of disasters we can expect going forward.

**Word of Thanks.** We thank the Natural Hazards Center of the University of Colorado at Boulder for providing the opportunity to begin to do this work. It has been enriching for us, we believe it has been and will continue to be cathartic for the respondents, and we believe the final work will have a very positive impact on the nation's planners going forward. Thank you.

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## Notes

<sup>1</sup> We suggest (re)learned because a reading of the research literature on disaster response challenges suggests that the "lessons learned" that are inevitably published after virtually every disaster now, are not new lessons. They tend to read the same—we just need to learn them and implement accordingly. For a popular media example see "April 18, 1906: Lessons from the Earthquake that Shook the World," by J. Madeleine Nash in the April 10, 2006 issue of *Time* magazine, pages 57-63. For a research literature resource, one example is Henry Fischer's 1998 "Response to Disaster."

<sup>2</sup> We interviewed first responders, not citizen victims. However, a composite was created here to illustrate the sentiment we frequently observed in television and newspaper coverage and accounts.



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**Natural Hazards Center**

Institute of Behavioral Science  
University of Colorado at Boulder  
482 UCB  
Boulder, CO 80309-0482

phone 303.492.6818  
fax 303.492.2151

**[www.colorado.edu/hazards/](http://www.colorado.edu/hazards/)**