

THE SITUATIONAL SMALL WORLD OF A POST-DISASTER COMMUNITY: INSIGHTS  
INTO INFORMATION BEHAVIORS AFTER THE DEVASTATION OF  
HURRICANE KATRINA IN SLIDELL, LOUISIANA

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Dissertation Prepared for the Degree of  
DOCTOR OF PHILOSOPHY

UNIVERSITY OF NORTH TEXAS

December 2010

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Slagle, Tisha Anne. The Situational Small World of a Post-disaster Community: Insights into Information Behaviors after the Devastation of Hurricane Katrina in Slidell, Louisiana.

Doctor of Philosophy (Information Science), December 2010, 165 pp., 17 tables, 48 illustrations, references, 156 titles.

Catastrophes like Katrina destroy a community's critical infrastructure—a situation that instigates several dilemmas. Immediately, the community experiences information disruption within the community, as well as between the community and the outside world. The inability to communicate because of physical or virtual barriers to information instigates instant isolation. Prolonged, this scarcity of information becomes an information poverty spell, placing hardship on a community accustomed to easily accessible and applicable information. Physical devastation causes the scarcity of what Abraham Maslow calls basic survival needs—physiological, security, and social—a needs regression from the need to self-actualize, to meet intellectual and aesthetic needs. Because needs regress, the type of information required to meet the needs, also changes—regresses to information regarding survival needs. Regressed information needs requires altered information behaviors—altered methods and means to meet the information needs of the post-disaster situation. Situational information behavior follows new mores—altered norms—norms constructed for the post-disaster situation. To justify the unconventional, situational social norms, residents must adjust their beliefs about appropriate behavior. Situational beliefs support situational social norms—and situational information behaviors prevail. Residents find they must trust strangers, create makeshift messaging systems, and in some cases, disregard the law to meet their post-disaster survival needs.

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By

Tisha Anne Slagle

## ACKNOWLEDGEMENTS

My committee chair, Brian O'Connor listened to my ideas, allowed me to create while encouraging, advising, and providing me the benefits of his knowledge, depth, and creativity. Herman L. Totten groomed me for success in academia and life with his confidence in me and his dependability and optimism. David McEntire patiently taught me and directed me to the appropriate resources to provide me with a foundation in emergency management and disaster research. Jarrod, Carmen, and Haley Knudson introduced me to Slidell and Louisiana—the culture of its people, the lay of its land, and the depth of its suffering. Jarrod, as well as my other children Ryan Knudson, Neil Slagle, and Lindsey Collings, along with Diane Green, Valerie Luetkemeyer, and Charles and Paula Slagle—all excellent writers in their own right, read and reviewed my document, making suggestions for improved clarity, flow, and syntax. John Pipes alleviated my everyday life responsibilities and provided me with encouragement and support throughout my doctoral studies. Valerie Luetkemeyer and Theresa Jackson graciously donated their personal time to help me transcribe hundreds of pages of notes and interviews.

Special thanks is also extended to all the helpful individuals and organizations in Slidell, Louisiana, who graciously gave of their time and shared their stories. Thanks are also extended to the National Science Foundation and the Natural Hazards Center at the University of Colorado at Boulder for a Quick Response Grant that funded my travel to Slidell.

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## CHAPTER 1

### INTRODUCTION

#### Hurricane Katrina Storms Slidell, Louisiana

DALLAS, Tex., ... an awful calamity rests behind the lack of information from the Gulf coast. It is said that the bridges ... have been swept away by the terrible force of the wind and the rolling up of the water in the bay. Not a wire is working ..., either telegraph or telephone... (*New York Times*, 1900).

Hurricanes are not new to the Gulf Coast. For centuries, deadly hurricanes have threatened and isolated communities along the coasts of the United States (U.S.), yet long-time coastal residents have remained unwilling to leave the area, and newcomers have continued to arrive (Mcquaid & Schleifstein, 2002). The Storm of 1900,<sup>1</sup> the deadliest hurricane in U.S. history, devastated Galveston, Texas and isolated its survivors from the rest of the world. One-hundred-five years later, Hurricane Katrina, the costliest and third deadliest storm in U.S. history,<sup>2</sup> devastated the Gulf Coast and isolated its survivors from the rest of the world (National Weather Service, 2010). Major hurricanes inflict isolation<sup>3</sup> by damaging instruments of information and communications technology (ICT)<sup>4</sup> that are commonplace at the time. For instance, in 1900, Galveston could not be reached by telegraph or telephone; in 2005, southern Louisiana could not be reached by telephone, cell phone, or email. Isolation from information is an inevitable by-product of hurricanes—and scientists have yet to find ways to prevent or paralyze these massive storms. (Rodriguez, Trainor, & Quarantelli, 2006).

#### Hurricanes as Catalysts of Disaster<sup>5</sup>

After three major hurricanes struck the U.S. coast during the 1954<sup>6</sup> hurricane season, the National Weather Bureau, now the National Weather Service (NWS),<sup>7</sup> made plans to initiate

the National Hurricane Research Project (NHRP). Launched in 1956, the NHRP, which became the National Hurricane Research Laboratory in 1964, led Project STORMFURY,<sup>8</sup> an inconclusive attempt to decrease the intensity of hurricanes. Research continues, yet nothing has been discovered to harness hurricanes, “either by sapping their strength or by driving the storms back out to sea” (Norlander, 2005).

### *What Drives These Destructive Storms?*

Hurricanes are products of the tropical ocean and atmosphere. Powered by heat from the sea, they are steered by the easterly trade winds and the temperate westerlies as well as by their own ferocious energy. Around their core, winds grow with great velocity, generating violent seas. Moving ashore, they sweep the ocean inward while spawning tornadoes and producing torrential rains and floods (National Oceanic and Atmospheric Administration, 1999).

For a hurricane to form there are three major conditions that must be met: warm ocean waters (at least 80 degrees Fahrenheit), cool atmosphere, and minimum distance of 300 miles from the equator. The major parts of the hurricane are the eye, the eye wall, and the spiraling bands. The origin of the eye is controversial, but the eye is the calmest area of the hurricane and can be 20 to 50 kilometers (about 12 to 31 miles) in diameter. Gray & Shea (1973) hypothesize that the air in the eye is dynamic although its atmospheric pressure (force against the eye wall), is low, its sinking air centrifuges (separates with centrifugal force) air against the eye wall—where the wind speed and pressure both increase rapidly causing the most violent winds and intense rainfall of the hurricane.

The eye wall is surrounded by layers of spiraling bands of cumulonimbus clouds: tall, thick clouds that bring thunder, heavy rains, and strong winds that can cause tornadoes, storm surges, and heavy flooding. The spiral bands usually have gaps, much more narrow than the eye. However, they are also, comprised of sinking air that rapidly exits with increases in wind speed and pressure, moves to the east or west or right, then re-energizes the bands toward the center and the eye wall (National Weather Service, 2010).

### *Huracán, God of Wind and Destruction*

Although they did not know the composition of the storm they feared most, seafarers have recorded their experiences with hurricanes for many centuries. (Auld/Powhatan, 2007). The Taínos (pronounced tah-EE-nohs)—an indigenous tribe of Indians (Spanish explorers) who arrived 1700 years ago in the Caribbean Islands, believed hurricanes to be the work of an evil Trinity, a deity they called Huracán (Figure 1).



*Figure 1.* An image of the Taínos' Huracán superimposed over a satellite image of Hurricane Katrina as it left the Caribbean and moved toward New Orleans on August 29, 2005. From [www.powhatanmuseum.com/Hurricane.html](http://www.powhatanmuseum.com/Hurricane.html).

The Taínos believed the destructive god was comprised of an angry wind goddess and two enabling gods: the god of Thunder who heralded the coming of the storm, and the god of Floods. Taíno ceramicists sculpted images of Huracán and although there are many variations, all “likenesses consist of a head of indeterminate gender with no torso and two distinctive arms spiraling out from its sides. Most of these images exhibit cyclonic (counterclockwise) <sup>9</sup> spirals” (Emanuel, 2005, p. 18).

It is unexplained how the Taínos sculpted such similar likenesses to the actual hurricanes because the Taínos would have been unable to see the spiral rain bands from the ground in the 4<sup>th</sup> century without 20<sup>th</sup> century technology. Radar did not detect the bands until World War II, satellites photographed them in the 1960s, and aircrafts can now fly close enough to report the status of the storms. However, the Taínos understood the cyclonic nature of the storm 1500 years before William Redfield determined in 1831 that rotating winds caused the damage to a tree because of the direction the trees fell (p. 7).

Whatever its source, the image of *Huracán* remains an enigmatic premonition of what would be seen in radar and satellite imagery many hundreds of years later, and what would form the basis of the internationally recognized symbol of a tropical cyclone (p. 19) (Figure 2).



*Figure 2.* Likeness of Huracán on a Cuban vase beside the internationally recognized symbol of a tropical cyclone (Emanuel, 2005, p. 19).

When descendants of the Taínos, who eventually settled in Puerto Rico (Calderón, 2010), warned Columbus of the Huracán, Columbus had only experienced the balmy climate in the winter and spring months in the New World. However, on his voyage to the New World in 1495, he encountered the Huracán first-hand and lost three of his four ships to what appeared to him to be a waterspout. After the loss, he learned from the Taíno descendants the signs of and the times when—between June and November—the Huracán appeared. So, Columbus cautiously set sail on May 11, 1502 from the port of Catiz. When he neared Santa Domingo on June 29, he

noticed a brewing storm. He immediately wrote a message to the region's governor, Don Nicholas de Orvando, requesting shelter in the Santa Domingo harbor. He also warned the governor to postpone a scheduled voyage for a fleet of 30 treasure ships that Columbus saw in the Santa Domingo Harbor preparing to sail to Spain. The governor read Columbus's note "aloud to his minions who roared with laughter at the forecast from the amateur meteorologist" (p. 30). The governor disregarded Columbus's request for shelter and his warning about the fleet. Columbus found refuge in a nearby harbor on the south side of Hispaniola while the treasure fleet sailed directly into the Huracán in the strait between Hispaniola and Puerto Rico. Only one of the treasure fleet made it safely to Spain. The timeframe between June and November that the Taíno descendants discouraged sailing is what modern scientists call hurricane season,<sup>10</sup> in the Atlantic, Caribbean, and the Gulf of Mexico (National Weather Service, 2010).

#### Before Katrina Hit New Orleans

Throughout history, there have been many weather-conscious people—from storm-observers and storm-chasers to oceanographers and meteorologists—who warned of the dangers of hurricane season. The NWS issued a warning on August 26, 2005 that Hurricane Katrina, a storm that had already ravaged Alabama and Mississippi, was moving toward New Orleans. At that time, my oldest son, Jarrod, his wife, Carmen, and six-year-old daughter, Haley (Figure 3), lived in Slidell, Louisiana in St. Tammany Parish (Figure 4), on the North Shore,<sup>11</sup> of Lake Pontchartrain,<sup>12</sup> 23 miles northeast of New Orleans where I had visited them 8 times from 2003 to May 2005. They evacuated to my home in Denton, Texas on August 27, 2005.



Figure 3. Haley, Jarrod, and Carmen at Jarrod's 2005 graduation from Louisiana State University.



Figure 4. St. Tammany Parish and its relationship to Louisiana. From (<http://www.waterproof-paper.com/printable-maps/louisiana.shtml>).

On August 28, Katrina intensified to a Category 5 (Table 1) storm. The president of St. Tammany Parish, Kevin Davis (2005),<sup>13</sup> as well as the mayor of Slidell,<sup>14</sup> issued evacuation mandates to the residents. Many residents, however, would not evacuate and would witness firsthand the costliest, and the third deadliest disaster in the history of the U.S. (National

Weather Service, 2010). Those who evacuated from and returned to Slidell would find their beautiful city in ruins.

Table 1  
*Saffir-Simpson Damage-Potential Scale for Hurricanes*

Category	Winds (1 min sustained winds in mph)	Summary of damage <sup>15</sup>
1	74 to 95	Very dangerous winds will produce some damage
2	96 to 110	Extremely dangerous winds will cause extensive damage
3	111 to 130	Devastating damage will occur
4	131 to 155	Catastrophic damage will occur
5	greater than 155	Catastrophic damage will occur

#### Katrina Makes Landfall

New Orleans, predicted to take the brunt of Katrina, would miss a direct hit. However, surrounded by water,<sup>16</sup> six feet below sea level, and levees prepared to withstand no more than a Category 3 storm, the bowl-shaped city's 350 mile levee system could not withstand the rising waters from Katrina's entry into the Gulf with Category 5 winds (Handwerk, 2005).

So, while the weakening levees of New Orleans monopolized the news, Katrina's surge<sup>17</sup> pushed Lake Pontchartrain more than six miles inland across a 57 mile stretch of St. Tammany Parish's coastline. Swamp and sewer waters filled the streets (Figure 5) of Slidell as far inland as Gause Boulevard (Figure 6), flooding homes and businesses, while cars and trucks disappeared beneath the flow (Figure 7). The Gulf surge picked up Lake Pontchartrain and shoved it into Slidell, crumbling the Twin Spans<sup>18</sup> in its path (Figure 8) and stripping lake homes down to the stilts that supported them along the North Shore (Figure 9:). It swept up other homes, masticated them into mulch and shards, and spewed them back into piles along the shore (Figure 10).



Figure 5. Rising water on Highway 11, Slidell, August 29, 2005. Photo by Jojamela <http://jojamela.wordpress.com> who writes, “the agonizingly slow drip of news from Slidell is excruciating.”



Figure 6. Flooded area of Slidell in light blue, enhanced to show location of Gause Blvd in Slidell. Map adapted from Google Maps.





Figure 7. Cars disappearing beneath rising waters in an apartment parking lot on Highway 11. Photos by Jojamela <http://iojamela.wordpress.com/2005/08/>.



Figure 8. The Interstate 10 Twin Span bridges Slidell and New Orleans. Concrete segments of the bridge were twisted and many other segments washed away entirely by Katrina. Map from Google maps; photo from [www.nola.com](http://www.nola.com).



*Figure 9:* Remains of lakehome swept away by surge in southern Slidell. Photo taken by Tisha Slagle, September 17, 2005.



*Figure 10.* Debris from homes in south Slidell. Photo taken by Tisha Slagle, September 17, 2005.

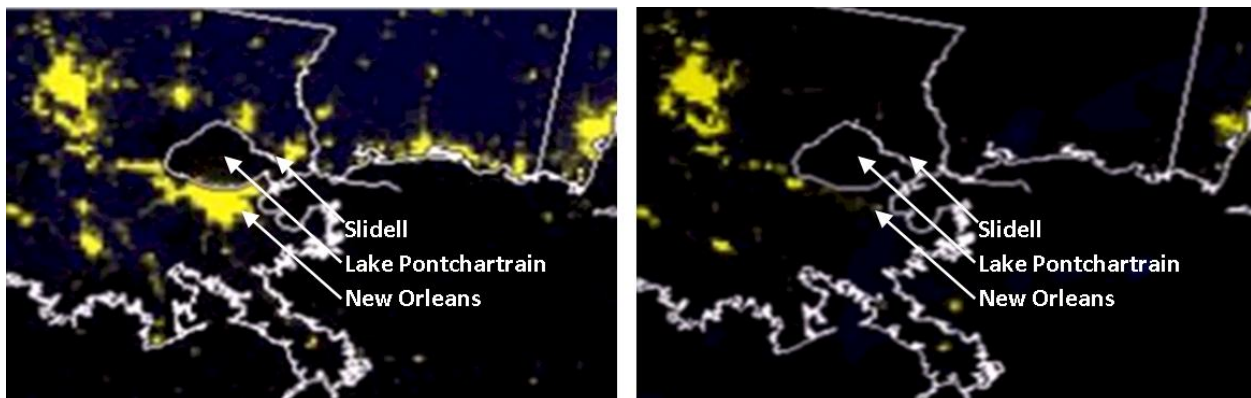
Katrina's violent winds, still raging at Category 2 intensity (approximated at 110 mph), snapped power lines and left them dangling throughout the city. Structures left standing had no power to support phone lines or cable. Collapsed cell towers and radio antennas had crippled all communications.<sup>19</sup> The voices of Slidell would not be heard across and/or outside their

community.<sup>20</sup> Katrina killed more than 1800 people and left hundreds of thousands of people unemployed and homeless. As is typical after a catastrophe of Katrina's magnitude and intensity, unscathed areas were inundated with the news of the hurricane, while devastated areas remained isolated, unable to send or receive information<sup>21</sup> (Gordon, 2002).

### Isolation from the Outside World

Behavior in the aftermath [of disaster] initially involves seeking information, contacting loved ones and community members. However, information is often incorrect or unavailable, continuing the isolation ...(Gordon, 2002).

The waters receded, leaving residents in darkness (Figure 11). They were isolated by barriers of silence and debris (Figure 12),<sup>22</sup> buried in "a virtual black hole—with no way to communicate with the rest of the world. For approximately seven days we [the residents of Slidell] didn't exist as far as the rest of the world was concerned" (Ben Morris, personal communication, October 28, 2005).



*Figure 11.* Comparative satellite imagery of power outages caused across the Gulf Coast region pre- (left) and post- (right) Hurricane Katrina power grids. U.S. Air Force image with location overlays.



*Figure 12.* Telephone poles and tangled trees covered streets, driveways, yards, and entryways into neighborhoods in central Slidell. Photo taken by Jarrod Knudson, September 5, 2005.

An evacuator watching the Weather Channel lamented, “you had reporters in Gulf Port and Biloxi, you had reporters in Covington, but nobody in between.” Most residents had battery-powered radios, but local radio stations were under water. On Thursday after the storm, for nearly a week, the only radio-transmitted information they could receive was from other areas. Another resident said:

Tuesday night [August 30, one day after Katrina hit Slidell] the radio stations were begging for people from the North Shore to call in and let them know what is going on, but I didn’t, we didn’t have phone service, none of us did, so we couldn’t call them and they were [reporting that] Slidell was no longer there.

So,

as a disaster, Katrina was more than the winds, rain, storm surge, and flooding that caused untold physical damage. Katrina was a disaster because of the [destruction to]...the social fabric of the region—how people and communities experienced it, its effect on peoples’ lives, [and the] resulting loss of resources (Gill, 2007),

as well as the information to help them locate and use the resources (Brito & Rothschild, 2009).

For instance, when I asked one Slidell resident what was difficult about the loss or undependability of ICT in her daily routine she said:

Not being able to talk to anyone when I needed to, or if I could, not being able to ever finish a conversation. Sometimes I'd get through to my husband on the cell then get disconnected before finding out when he was coming home or if he could pick up our daughter [1<sup>st</sup> grader] from school or if I would have to leave work to get her. Then I might not hear from my husband for 48 hours depending on the cell service from Baton Rouge [where he was transferred [Monday through Friday each week for 3 months after Katrina]. It was miserable not knowing if he was safe. The crime rate was high [in Baton Rouge] and the traffic was horrific.

“Disasters have a community wide significance. In addition to personal danger and fear, they destroy and disrupt the arrangements of everyday life” (Gordon, 2010). The isolation of a community from the mainstream world—with norms and behaviors unlike the world outside—brings to mind Elfreda Chatman’s small world concepts in her studies of isolated communities on the periphery of society. Chatman’s theory of normative behavior offers explanations of how small world communities socially construct—that is how the members learn from each other through interacting to adopt social norms (behavior that members determine to be appropriate) and worldviews (beliefs that members determine to be appropriate). Insiders—members of the small world, as well as some outsiders—those outside the small world—who are deemed acceptable by insiders, determine what information is needed and what information sources are legitimate. Acceptability in the small world is governed by the small world’s norms and worldviews. Some outsiders—perhaps family, friends, experts and/or others who have gained insiders’ trust, may be deemed acceptable by members of the small world. Chatman calls these outsiders who are deemed acceptable, legitimized others. The insiders, then, as well as the legitimized others, filter information from the outside world through the

established norms and worldviews. Information behavior, then, is restricted or facilitated by the established norms and worldviews.

#### Research Question

It is possible, then that Chatman's revelations may also provide insight into the information needs<sup>23</sup> and behaviors of the residents in Slidell as they faced isolation in the post-disaster situation.<sup>24</sup> So, the question guiding this study is:

How may Elfreda Chatman's small world concepts of isolated communities provide insights into the post-disaster information behaviors<sup>25</sup> of the middle-income residents in post-Katrina Slidell, Louisiana?

#### Post-Katrina Slidell as a Case Study

According to Yin (2003), a case study is the appropriate method to use to approach this question. Yin believes that a case study is advantageous in at least three situations, including when research questions ask how and why questions, when no control is required over behavioral events, and finally, when the study focuses on contemporary events. As is evident, this study falls into all three scenarios. The research question that evolved through the research and analysis is a "how" question. No control could possibly be required over behavioral events—the study begins after an unplanned event. Disasters are part of human existence, so they are always a current issue. As such, the meeting of post-disaster information needs where ICT is inaccessible in an ordinarily ICT-rich community is current and perpetual. The nature of disasters—events that cause upheaval, change, and lasting trauma—will remain "contemporary" issues that must be addressed until they no longer exist or until humans become immune to their effects.

## Why Study Post-Katrina?

Given projections that recovery may take ten years or more, Katrina is destined to become the most studied disaster in the U.S.

*Duane A. Gill*

Natural disasters<sup>26</sup> like hurricanes,<sup>27</sup>—unlike civil or technological disasters that are often contained within a small area, such as a city or an industrial plant—can cause massive and widespread destruction across geographical regions like counties and states. “In some respects, Hurricane Katrina was the equivalent of a weapons of mass destruction attack on the Gulf Coast. The hurricane caused catastrophic damage over an area roughly the size of Great Britain” (Miller, 2007), approximately 93,000 square miles (GPO, 2006).

### *Frequency of Gulf Coast Hurricanes Does Not Deter Residency*

Major hurricanes have long threatened the residents along the Gulf Coast (Texas, Louisiana, Mississippi, Alabama, and Florida). From 1900 to 2005, 102 major hurricanes struck the states along the Gulf Coast ("Historical hurricane tracks," 2010), an average of every 1.03 years (Table 2)—and 8 of the 10 deadliest hurricanes to hit the United States, struck the Gulf Coast (Table 3). As of 2007, more than 50% of the U.S. population lives along the coast, and in spite of the number of major hurricanes to strike Gulf Coast counties, the population increased an average of 32% per decade from 1900-2005 (Figure 13). In 1900, there were no more than 20 persons per square mile in these counties. By 2005, there were as many as 2100 persons per square mile (Figure 14), yet the population is projected to increase another 7% by 2015 (*Weathering the Storm: The Need for a National Hurricane Initiative: Hearing Before the Committee On Commerce, Science, and Transportation of the United States Senate*, 2009).

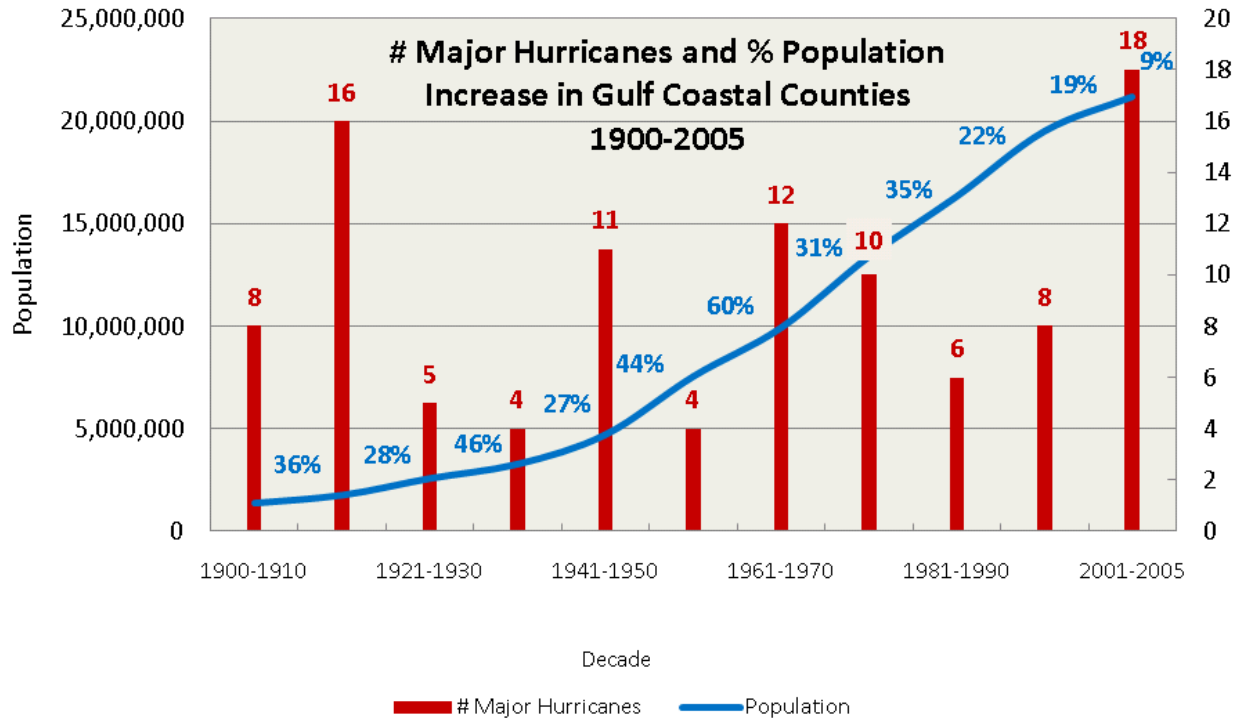


Figure 13. Number of major hurricanes and percent of population increases from 1900-2005. Chart data derived from the United States Census and the National Hurricane Center.

Table 2

*Increases in Gulf Coast's Major Hurricane Frequency 1900-2005*

State	Hurricanes	
	Total	Average per Decade
Alabama	13	1.24
Florida	27	2.57
Louisiana	27	2.57
Mississippi	15	1.43
Texas	20	1.90
Gulf Coast	102	1.03

From <http://www.nhc.noaa.gov/>.



Table 3

*Ten Deadliest Hurricanes to Strike U.S.*

Location	Year	Category	Deaths
1 Galveston, Texas*	1900	4	8,000+
2 Lake Okeechobee, Florida*	1928	4	2,500
3 Katrina (Louisiana, Mississippi)*	2005	3	1,800
4 Florida Keys, South Texas*	1919	4	600
5 New England	1938	3	600
6 Florida Keys*	1935	5	408
7 Audrey (Louisiana, Texas)*	1957	4	390
8 Northeast United States	1944	3	390
9 Grand Isle, Louisiana*	1909	4	350
10 New Orleans, Louisiana and Galveston, Texas*	1915	4	275

From <http://www.nhc.noaa.gov/>. \* Indicates Gulf Coast.



Figure 14. Population density increase from the Storm of 1900 to Hurricane Katrina in 2005. From 2006 US Census, displayed at <http://ngom.usgs.gov/overview/images/popden2.gif>.

### *History of Troubled Waters: Katrina Validates Predictions*

“It's only a matter of time before south Louisiana takes a direct hit from a major hurricane. Billions have been spent to protect us, but we grow more vulnerable every day” (Schleifstein & Mcquaid, 2002). Southern Louisiana is not only vulnerable to flooding because of damaged and aging floodgates, but also because of its being below sea level—a geographical flaw that causes the coast line to shrink. Windell Curole, general manager of the South Lafourche Levee District, explains that the Gulf of Mexico is approximately 20 miles closer than it was in 1965 (Schleifstein & Mcquaid, 2002). Hurricane experts agree that “every four miles of wetlands can absorb about a foot of storm surge, but Louisiana is losing an acre of wetlands – the equivalent of three football fields – every 24 minutes” (National Hurricane Center, Army Corps of Engineers, & National Oceanic and Atmospheric Administration, 2002).

### *Losing Ground In Louisiana*

U.S. Climate Change Science Program(CCSP) released a report in 2008 that stated:

Climate changes anticipated during the next 50 to 100 years for the central Gulf Coast include warming temperatures, changes in precipitation patterns, and increased storm intensity. The warming of the oceans and decline of polar ice sheets is expected to accelerate the rate of sea level rise globally. The effects of sea level rise in most central Gulf Coast counties will be exacerbated by the sinking of the land surface. (CCSP, 2008)

Hurricanes also contribute to the loss of the coastal wetlands. The nature of a hurricane is similar. The National Biological Information Infrastructure (NBII)<sup>28</sup> reports that after Katrina and Hurricane Rita,<sup>29</sup> Louisiana lost 217 square miles of coastal land to open water. That's an area roughly the size of Chicago or a little larger than New Orleans. By the end of 2006, only an estimated 19 square miles of land had been recovered ("Losing Louisiana," 2008).

## Why Study Slidell?

So, the certainty of there being less land on which to live, the certainty of the recurrence of hurricanes to these communities, and the certainty of people continuing to live in these communities threatens the survival of life, property, and land. Unless science and technology find a way to reduce the shrinking land, control the weather, or safeguard the vulnerable areas, the threat will become a certainty. Knowing the problems, how survivors approach them, and how their behaviors fit into Chatman's concept of a small world may enhance the foundations of information and disaster research and practice. Information behavior research gains another view of information poverty<sup>30</sup> by learning coping skills of a culture<sup>31</sup> who does not avoid information—as do some of Chatman's information poor. Instead, the post-disaster culture often improvises to access applicable information to survive disaster. Information providers may gain a better understanding of post-disaster problems from survivors' viewpoints and consequently find ways to provide physical, or face-to-face alternatives for inaccessible ICT services. Selecting an ordinarily information-rich community that is paralyzed by disaster destruction may invite new prevention and protection methods for professionals who help uphold the nation's critical infrastructure.<sup>32</sup>

Studying Slidell following Hurricane Katrina is apt for three major reasons. Slidell was more-or-less ignored by post-Katrina media and researchers who focused instead on larger cities, communities like Slidell represent the understudied in disaster and information studies, and Slidell's close location and personal connections provided me the opportunity of personal observation in the field.

### *Slidell Overlooked in the Immediate Aftermath of Katrina*

Gill (2007) mentions the lack of study of Slidell in his article about Katrina when he

footnotes that:

Throughout the remainder of this manuscript I will focus on distinctions between the Mississippi Gulf Coast and New Orleans. This is not intended to negate or minimize disaster experiences of Louisiana communities such as Slidell and Venice, or Alabama communities such as Mobile and Gulf Shores, but to date less is known about these communities from a social science research perspective.

Katrina's diameter was over 500 miles when it struck Slidell, 25% larger than the 404.9 mile diameter of the average hurricane. Yet, in spite of the level of devastation in Slidell, a review of the news media archives indicates that the majority of the Katrina news focused on New Orleans and Biloxi, Mississippi rather than on "Katrina's Forgotten" (Grow, 2005; O'brien, 2006), a tag picked up by the media to refer to the smaller Gulf coast communities like Slidell that were devastated by Katrina.

September 6, 2005—Katrina-battered residents of the Gulf Coast are engaged in a wrestling match between heartbreak and hope. Much of the focus, understandably, has been on the plight of desperate New Orleanians. But in the counties and parishes of southern Mississippi and Louisiana, the damage and desperation are also heart-wrenching. *The lack of information is making matters worse* [italics mine]. Some people are driving 80 miles to Baton Rouge for gas—wasting precious fuel—unaware that cities closer by have stations open. That's why some in this region of hardscrabble towns, saw mills, and scrub brush are calling themselves 'the forgotten' (Grow, 2005).

Across Lake Pontchartrain, in Slidell, Louisiana, Mayor Ben Morris was among thousands of homeless residents who have been unable to communicate with anyone outside Slidell. Morris estimated 90 percent of the city's residences were destroyed or damaged and that half of its 30,000 residents will be left homeless (CNN, 2005).

Morris lamented that

Of all the cities caught in the eye of Katrina, especially on the north shore, we're the most devastated. ... most people don't have a clue what happened here. And I keep trying to explain, I keep yelling and screaming at them, don't forget us, for God's sakes.

You know, quit showing the 9th Ward in New Orleans. I understand how devastated that is, but don't forget us. We have our own 9th Ward.

The mayor's plea was not unwarranted. The major media did focus on New Orleans and the 9<sup>th</sup> Ward where lost homes, death, disease, and unspeakable fears and traumas lingered for those who stayed and those who left (Ethel Madden personal communication, June 29, 2010). Recovery was impossible for many lower income survivors in New Orleans, but also painfully extended, if not impossible for many higher income survivors in Slidell (Figure 15.).



Figure 15. 9th Ward and southern Slidell where Katrina rendered homes uninhabitable. Aerial photos of the Lower 9<sup>th</sup> Ward (left) and southern Slidell (right) from [www.slidell.la.us](http://www.slidell.la.us) .

It is possible that the media did not intentionally ignore Slidell. The media may have felt that New Orleans was more newsworthy. Slidell's own major newspaper source, *The Times Picayune* mentioned Katrina in New Orleans 211 times during the first week after Katrina (August 29-September 6, 2005) with the first article published on August 29. *The Times Picayune* only mentioned Katrina in Slidell 32 times during the first week with the first article published on August 30, and 11 of those articles included the 9<sup>th</sup> Ward. New Orleans monopolized 98.2% of national news stories from the most widely circulated newspapers (ABCe, 2010)<sup>33</sup> and most

frequently watched cable<sup>34</sup> and broadcast<sup>35</sup> networks (Nielsen Ratings Company, 2010)<sup>36</sup> in the U.S. during the first week after Katrina (Table 4).

Table 4

*National News Mentions of Katrina In Slidell in the August 29-September 6, 2005*

Medium	Source		# Articles	Date of first article	# Days after	
Newspapers	Wall Street Journal	New Orleans	29	08/29/2005	0	
		Slidell	0	-	-	
	USA Today	New Orleans	42	08/29/2005	0	
		Slidell	0	-	-	
	New York Times	New Orleans	67	08/29/2005	0	
		Slidell	1	09/06/2005	7	
Cable News	Fox News Network	New Orleans	115	08/29/2005	0	
		Slidell	2	08/30/2005	1	
	MSNBC	New Orleans	46	08/29/2005	0	
		Slidell	11	08/29/2005	0	
	CNN	New Orleans	222	08/29/2005	0	
		Slidell	1	08/31/2005	3	
	Broadcast News	ABC	New Orleans	231	08/29/2005	0
			Slidell	1	09/06/2005	7
CBS		New Orleans	239	08/29/2005	0	
		Slidell	2	09/02/2005	4	
NBC		New Orleans	116	08/29/2005	0	
		Slidell	2	09/01/2005	3	

*Communities Like Slidell Are Understudied*

A study based on a community's infrastructure's failures, although telling to public administrators, is not necessarily interesting enough to be prevalent in sociological studies. Also, Slidell is a prosperous community—and prosperous communities, monetarily and informationally, are not generally the focus of disaster or information studies.

Anselm Strauss had a favorite aphorism, "study the unstudied."...The ecological effect of studying boring things (infrastructure, in this case) is in some ways similar. The ecology of the distributed high-tech workplace, home, or school is profoundly impacted by the relatively unstudied infrastructure that permeates all its functions (Star, 1999).

## Slidell is a Prosperous Community

Disaster research often focuses on the effects of infrastructure collapse in the lower socio-economic communities—primarily because lower socio-economic communities do not have the recuperative ability to withstand the losses. However, Slidell’s residents have the highest incomes in the state of Louisiana<sup>37</sup> and their incomes are higher than the U.S. national average (Table 5).<sup>38</sup>

Table 5

### *1999 Comparison of Incomes Nation/State/Slidell*

Geographic Area	Median Household Income (\$)
United States	41,994
Louisiana	32,566
Slidell	42,856

(Demographic Profile Highlights: Slidell, 2000)

Research specific to Katrina, for instance, focuses on devastation experienced by the welfare communities of areas like Orleans Parish (Table 6), New Orleans, especially the 9th Ward,<sup>39</sup> where the low median household income may limit access to ICT or transportation to evacuate.

Table 6

### *1999 Comparison of Parish Incomes: Orleans/St. Tammany*

Geographic area	Median house-holds income (\$)
St. Tammany Parish	47,883
Orleans Parish	27,133

(Infoplease.Com, 2000; U.S. Census Bureau, 2000)

The residents of wealthier communities like Slidell are professionals<sup>40</sup> or retired professionals, many who work in New Orleans and have jobs that include infrastructure support. So, in this case, those whose primary role may have been to help rebuild the infrastructure in

some way, were forced instead to address their roles as disaster victims first. The concept of professionals of middle- or higher-income means being victims, is not a primary focus in disaster study literature (David McEntire, personal communication, June 15, 2006).

#### Scant Disaster Research on Information Concepts

Disaster researchers, although they have studied entire communities devastated by disaster, have not rigorously studied the concept of the small world, or Moore's (1964) similar phenomenon he called a disaster subculture—where new norms alter information behavior in a frequently disaster-struck community. Other researchers, mentioned in Chapter 2, lightly develop the theory of a disaster subculture that surfaces after disasters, then disappears during good weather. However, none approach the idea of a transient culture from the information behavior<sup>41</sup> perspective.

Also, although the lack of information is a concern that is mentioned in disaster research, it has not been studied when the social fabric of a community is ripped apart—when its infrastructure collapses. The collapse of the critical infrastructure thwarts residents' abilities to function normally. The collapse of each system affects the information behaviors of residents who are not only isolated from others in the community, but who are also isolated from those in the outside world.

#### Scant Information Research on Disaster Concepts

Information-rich communities that temporarily experience information poverty are virtually ignored by information poverty researchers, except for Chatman at the end of her life, and her successors who studied information poverty in online communities and feminist book



sellers (Burnett, Besant, & Chatman, 2001). However, it appears that there are no studies that focus on the temporarily information-poor in a bedroom community like Slidell.

### *The Convenience of Slidell*

Slidell was also selected because it was convenient for two reasons. Slidell is a day's travel from my home in North Texas (Figure 16) and although there were no open rooms in hotels within 300 miles of New Orleans, I was welcome to stay in my son's home in Slidell.

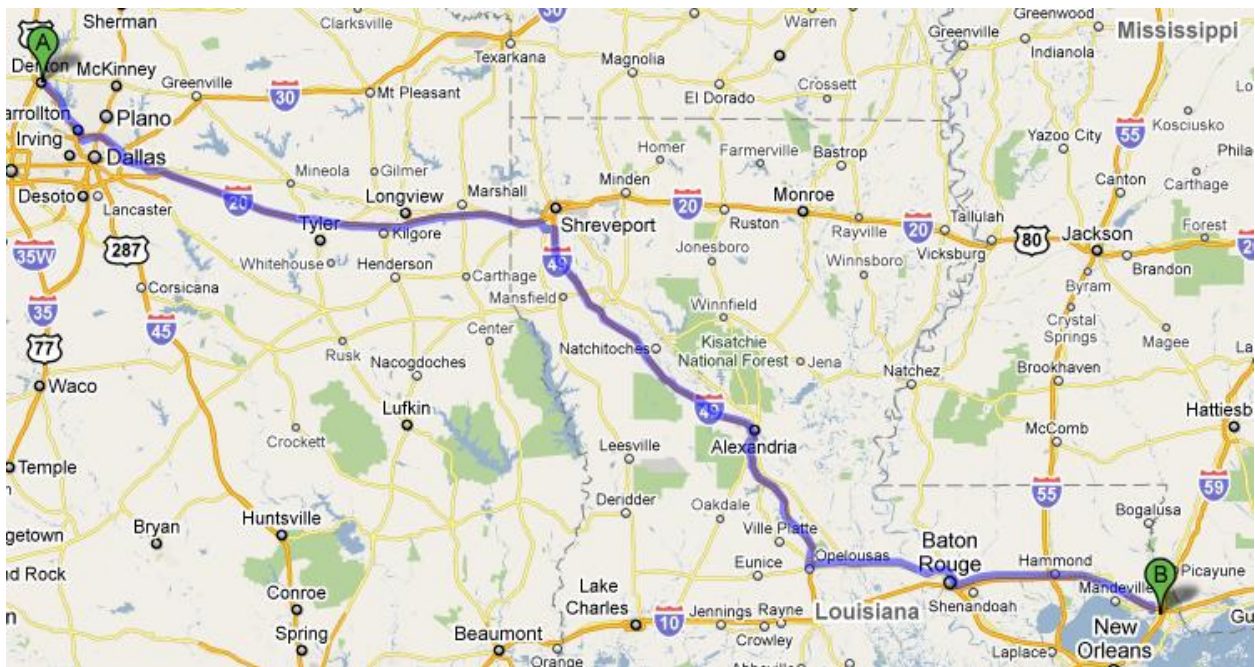


Figure 16. Map of route from Denton, Texas to Slidell, Louisiana. From Google Maps; Denton Texas (A); Slidell, Louisiana (B).

### My Role in the Research

The disaster represents a major life experience for all those involved, including those who come into the situation as part of the recovery process. Major life experiences are those which have a powerful formative or shaping effect on the person's future development (Gordon, 1986).

Because time was limited, I was only able to spend three to five days at a time observing and interviewing.<sup>42</sup> Consequently, I experienced a short-term post-disaster environment and

made the adaptations necessary to meet my everyday needs. However, I did not experience the post-disaster environment knowing that I would be living in the community indefinitely as did the residents in this study. So, as is with a case study, I was an outsider, welcomed, but still an outsider because I did not live in the community. However, as accurately as possible, I documented what I observed and reported my overall sense of the post-disaster situation.

I also include photographs throughout, not as complimentary information, but as an element of my observation. Photographs preserve, at least representations of, the moments I describe and interpret. They also serve as a form of documentation of my observations and experiences (Stake, 1995, p. 235).

### Methods and Design

This case study is designed to observe the information needs and behaviors of persons directly affected by the post-disaster situation in Slidell, Louisiana. In order to triangulate the findings, several methods are implemented including newspaper, television, and Internet reports; site explorations and photo shoots, personal interviews; and feedback from respondents. The intent underlying the design of the methodology is to learn how information affects the disaster survivors—how they find it, how they use it, why they use it, why they ignore it, and why they select it. It may be that analyzing these information behaviors applying Elfreda Chatman's concepts of a small world may facilitate the descriptions and analysis of post-disaster problems.

### Purpose and Preview of the Study

The driving theme throughout this study is to reveal insights into the information needs and information behaviors of the residents of post-Katrina Slidell, Louisiana, as well as the

similarities and differences of Elfreda Chatman's small world concepts. Although it is not yet apparent if the analysis of the experiences of Slidell residents may be generalized to the general population of small-town middle-class residents, it is hoped that the findings may be used to inspire future comparative studies. Information scientist Carol Kuhlthau asserts that such case study findings are valuable for two reasons: 1) unlike experiments and closed-question surveys, the case study endeavors to learn "why" persons behave toward information as they do; and 2) case study results can be used for comparison in subsequent studies that implement other research methods (Kuhlthau, 1999). Comparisons may bring scientists closer to understanding typical post-disaster information behavior during information poverty experienced by the ordinarily information-rich.

The literature review in Chapter 2 introduces the history of the interpretation of hurricanes and the evolution of disaster behavior studies. It also reviews information needs research and literature from disaster behavior studies that reflect similar or supporting concepts. The methods and design of the study in Chapter 3 explain the reasons for choosing qualitative methods. The Chapter also describes the participants in the study and how they are categorized. Details of data collection and fieldwork methods, as well as preliminary data collection, data analysis, and methodological issues are discussed. The analysis in Chapter 4 reveals the introduction of an adaptive model of the post-disaster situation in relationship to information behavior. Concepts for the model reflect concepts from social psychology, social systems, information studies, and disaster recovery. Also included are an adaptive model of Maslow's original hierarchy of needs and Chatman's normative theory. Chapter 5 reflects my

conclusions and a discussion of problems I encountered. It also suggests recommendations for future study.

#### Endnotes

<sup>1</sup> The Storm of 1900, a hurricane with 144 mph winds, devastated Galveston, Texas on September 8, 1900. The Storm claimed an estimate of 6 to 12,000 lives in Galveston, while flattening a third of the city (National Weather Service, 2010). A glossary of all terms may be found in Appendix A.

<sup>2</sup> Katrina was third deadliest only to Lake Okeechobee disaster (hurricane) of September, 1928 that killed 1,836 people (National Weather Service, 2010).

<sup>3</sup> Isolation, for the purposes of this study, is the separation from human, cyber, and physical resources (terms from NIPP 2009 to describe elements of risk across the critical systems in the nation's infrastructure) that are outside the community, and possibly in other unreachable parts of the community.

<sup>4</sup> In 1996, The British Parliamentary Labor Party, upon suggestion of British Prime Minister Tony Blair, commissioned Lord Dennis Stevenson of Coddendam to determine the status of information technology in United Kingdom schools. In his report, Stevenson (1997) inserted the word, communications, into IT, coining the term, information and communications technology (ICT). For the purposes of this study, ICT includes the technology and devices, wired and wireless, that enable people to receive, store, and transmit information. These technologies and devices include landline and cell phones, Internet applications including email, messaging, as well as past, present and future applications that support the communication of information.

<sup>5</sup> A disaster is a destructive emergency event, natural or man-made, that causes more devastation to a community's infrastructure than the community can handle without aid from the state or national government.

<sup>6</sup> Hurricane Carol, Hurricane Edna, and Hurricane Hazel hammered New England and the Mid-Atlantic states in 1954.

<sup>7</sup> The National Weather Bureau became the National Weather Service in 1970 as a part of the creation of the National Oceanic and Atmospheric Administration (NOAA) within the U.S. Department of Commerce in 1970 (NWS Internet Services Team, 2008).

<sup>8</sup> STORMFURY experimented between 1962 and 1983 to decrease a hurricane's strongest winds by artificially stimulating the storms with silver iodide (Willoughby, Jorgensen, Black, & Rosenthal, 1985).

<sup>9</sup> Hurricanes and typhoons rotate clockwise; cyclones rotate counterclockwise (National Weather Service, 2010).

<sup>10</sup> June 1 through November 30 is the official Atlantic hurricane season that includes the Gulf Coast states (National Weather Service, 2010).

<sup>11</sup> The southern border of St. Tammany Parish is the north shore of Lake Pontchartrain and has come to be known by the locals as the North Shore.

<sup>12</sup> Lake Pontchartrain is one of the largest estuaries on the Gulf Coast, as well as one of the largest in the United States. It borders south of Slidell and connects to the Mississippi River at New Orleans.

<sup>13</sup> Message from Parish President Ken Davis: Evacuate all areas of St. Tammany Parish south of Interstate 12, and low-lying river areas, by noon today. Hurricane Katrina has winds in excess of 160 miles per hour. According to the National Weather Service, the eye of Hurricane Katrina will pass over St. Tammany. Tropical Storm force winds growing to hurricane force winds will begin tonight. Hurricane force winds will reach us early tomorrow morning, possibly exceeding 130 miles per hour, and stay with us for 6 or more hours. Over 8" of rain and a 15 foot storm surge are possible. Evacuate now. Shelters of last resort will open at noon at William Pitcher Jr High and Creekside Elementary. Watch Access St. Tammany, Channel 10, or other news media for updates. Call 1-866-898-2323 for re-entry information after you evacuate. Thank you and be safe (posted on [www.stpgov.org](http://www.stpgov.org)).

<sup>14</sup> Message from City of Slidell Mayor Ben O. Morris: Please evacuate the city prior to noon today. We have the potential for serious flooding and catastrophic winds. We will institute a curfew at 9:00 pm tonight – and each night until further notice (posted on [www.slidell.la.us](http://www.slidell.la.us)).

<sup>15</sup> Specific examples of damage may be found on the National Hurricane Center's Website at <http://www.nhc.noaa.gov/aboutsshws.shtml>.

<sup>16</sup> New Orleans lies on the southern border of Lake Pontchartrain, northern border of the Mississippi River, the eastern border of Lake Borgne, with the Gulf of Mexico nearby.

<sup>17</sup> "A storm surge is the dome of water that accompanies a hurricane as it moves ashore. Consequently, the greatest potential for loss of life related to a hurricane is from the storm surge," (National Hurricane Center, Army Corps of Engineers, & National Oceanic and Atmospheric Administration, 2002).

<sup>18</sup> The "Twin Spans" is the term that the locals use for Interstate 10's two parallel trestles that bridge southeastern Louisiana, through Slidell, across Lake Ponchartrain into New Orleans. Hurricane Katrina washed away 38 eastbound segments and 26 westbound segments. The storm left 170 eastbound segments misaligned and 26 westbound segments misaligned. The

eastbound span was reopened October 14, 2005 for two-lane traffic. The westbound span was reopened January 6, 2006 to resume four-lane traffic.

<sup>19</sup> Approximately 2.5 million customers in Alabama, Louisiana, and Mississippi reported power outages. Almost three million customer phone lines were knocked out, telephone switching centers were seriously damaged, and 1,477 cell towers were incapacitated. Most of the radio stations and many television stations in the New Orleans area were knocked off the air. Paul McHale, the Assistant Secretary of Defense for Homeland Defense, summarized the damage by stating, “The magnitude of the storm was such that the local communications system wasn’t simply degraded; it was, at least for a period of time, destroyed.”

<sup>20</sup> For the purposes of this study, a community is comprised of residents who share the disaster experience. A community is broadly defined by Luhmann, as a system of auto-poietic (self-reproducing) communications (1996), with interactions (information exchanges) among humans and other sources as the components of the system. The bases of the community as a social system in this study are detailed in the literature review in Chapter 2.

<sup>21</sup> For the purposes of this study, information is “any message or meaning that influences, directly or indirectly, how persons understand their situations” (Slagle-Pipes, 2007). In the post-disaster setting, “information activates communication, forms bonds, reduces uncertainty, and provides knowledge” (Gordon, 2002). In the community social system, information is “a difference that makes a difference” (Bateson, 1972). “Information is information only if it is not just an existing difference; it is information only if it instigates a change of state in the [community] system” (Luhmann, 2006).

<sup>22</sup> For twelve days Slidell residents were trapped in their neighborhoods without power or communications until city workers cleared the trees and power lines that obstructed all streets in most of the city—an estimated 230 kilometers (143 miles) of impassable roads (Wral.Com, 2006).

<sup>23</sup> Information needs include information that reveals the location of, the condition of, and/or the means to meet a need; Information sources, and meta-sources, the location of, credibility of, and/or means to acquire an information source.

<sup>24</sup> The post-disaster situation, as defined for this study, reflects the attitudes and activities of the residents as they adjust to the disaster in the first three weeks. The timeframe includes immediately after impact and the beginning of the recovery phase.

<sup>25</sup> Information behaviors are the “interactions between people, the various forms of data, information, knowledge and wisdom that fall under the rubric of ‘information’ and the situations (contexts) in which they interact” (Belkin, 2004). They are also constructs through which to approach everyday reality and its effect on actions to gain or avoid the possession of

information. The choice of an appropriate course of action is driven by beliefs concerning what is necessary to support a normative way of life” (Burnett, Besant, & Chatman, 2001).

<sup>26</sup> Unlike natural disasters, technological disasters, e.g. chemical spills and nuclear explosions, as well as civil disasters, e.g. terrorism and war, are man-made.

<sup>27</sup> A hurricane is a type of tropical cyclone, the term used to describe all circulating weather systems over tropical waters.

<sup>28</sup> “The NBII Program is administered by the Biological Informatics Office of the U.S. Geological Survey” (“Losing Louisiana,” 2008)

<sup>29</sup> According to the National Hurricane Center (<http://www.nhc.noaa.gov>), Hurricane Rita was the “third Category 5 hurricane of the season [2005] and was a destructive and deadly hurricane that devastated portions of southeastern Texas and southwestern Louisiana and significantly impacted the Florida Keys.”

<sup>30</sup> For this study, information poverty is defined, using an adaptation of part of the definition by Aguolu (1997), as “inaccessibility to information due to lack of infrastructural facilities” (Aguolu, I.E., 1997).

<sup>31</sup> A culture is “a system of shared beliefs, values, customs, behaviors, and artifacts that the members of a society use to cope with their world and with one another, and that are transmitted from generation through learning” (Bates & Flog, 1990).

<sup>32</sup> The U.S. PATRIOT Act Section 1016, short titled the “Critical Infrastructures Protection Act of 2001” – defines the term critical infrastructure as the “assets, systems, and networks, whether physical or virtual, so vital to the United States that their incapacitation or destruction would have a debilitating effect on security, national economic security, public health or safety, or any combination thereof.”

<sup>33</sup> Top circulation of U.S. Newspapers is reported by the Audit Bureau of Circulations (ABC), an independent agency that gathers data about newspapers and magazines.

<sup>34</sup> Cable News includes national television and radio transcripts.

<sup>35</sup> Broadcast News includes national television and radio transcripts.

<sup>36</sup> Television viewing data is measured by Nielsen, an independent ICT measurement ratings company that meters electronic and digital media usage and develops statistics for consumers.

<sup>37</sup> Slidell’s affluence, as one of the wealthiest communities in Louisiana, stems from its centralized location amid the three lunar landing program sites built by NASA in the 1960s. The city of approximately 25,000 residents (Infoplease.com 2000) traces its beginning to 1882 when

the New Orleans and Northeastern Railroad chose the site because it was the “first high ground north of Lake Pontchartrain” to set up a building camp for workers who were contracted to build a railroad from New Orleans to Meridian, Mississippi. In 1888, the Louisiana Legislature chartered the City of Slidell (City of Slidell 2005).

<sup>38</sup> The 2000 U.S. Census reported that 60 percent of Slidell’s residents earn more than \$35,000 annually. The community as a whole had a median household income of \$42,856 in 1999, a figure that is nearly \$1,000 higher than the U.S. median and more than \$10,000 higher than the Louisiana median. The 2000 U.S. Census further reported the median percentage of residents below the poverty level in Slidell to be 9.5 percent in 1999—much lower than the 12.4 percent median in the United States or the 19.6 percent median in Louisiana (Infoplease.com 2000).

<sup>39</sup> The largest of 17 wards in New Orleans, the 9<sup>th</sup> Ward was devastated during Hurricane Katrina.

<sup>40</sup> Participants represent professions including medicine, meteorology, oceanography, military, education, public affairs, banking and finance, energy, construction, and emergency management. According to the 2000 U.S. Census, approximately 80% of Slidell’s working residents are in professional occupations (management, sales, and service). A detailed list of occupation codes used by U.S. Census takers may be found at <http://factfinder.census.gov/metadoc/occupation.pdf>.

<sup>41</sup> “Information behavior is a construct through which to approach everyday reality and its effect on actions to gain or avoid the possession of information. The choice of an appropriate course of action is driven by members’ beliefs concerning what is necessary to support a normative way of life” (Burnett, G., Besant, M., & Chatman, E. A., 2001).

<sup>42</sup> Although I followed up with my son Jarrod and his family regarding their experiences in post-Katrina Slidell on many occasions since, I dedicated my first four trips (21 days), and two days of my last December 2005 trip, to interacting with residents outside my family: September 14-18, 2005; October 27-31; November 15-20; December 2-5, and 21-26, 2005. I also returned four times per year through 2009 to visit my children and observe the Katrina recovery progress.



## CHAPTER 2

### REVIEW OF RELEVANT RESEARCH

To provide a context for the study of a post-disaster community's situation, this chapter presents a review of literature that may support the application of Elfreda Chatman's small world theory to aspects of a post-disaster community—during the first three weeks after impact. To place the post-disaster community in the appropriate context, the review is introduced with a short discussion of the response and recovery phase within disaster phases, a categorization of activities and attitudes related to pre- and post-disaster situations. Immediately following is a review of Chatman's information needs and behaviors research within the context of the small world theory she developed (Chatman, 1991, 1996, 1999, 2000).

The concept of community as an autopoietic social system (Luhmann, 1995; 2006) is then discussed to frame the impact of disaster on a community's infrastructure. Typical community information needs are then discussed using research in everyday life information needs (Savolainen, 2004, 2007). Maslow's theory of a hierarchy of human needs is used to describe the possibility of post-disaster needs correlating to Maslow's deficiency (survival) needs.

Disasters and post-disaster survival behavior are discussed to introduce the possibility of post-disaster behaviors being comparable to small world behaviors. Post-disaster behaviors, including emergent norms, collective behavior, Gordon's post-disaster social dimension theory, and the phenomenon of a disaster subculture are discussed, then in conclusion, compared with small world concepts.

With these items in mind, this interdisciplinary review serves as preparation for the methods, analysis, afterthoughts, and recommendations in the remaining chapters that address the following question that was introduced in Chapter 1.

How may Elfreda Chatman's small world concepts of isolated communities provide insights into the post-disaster information behaviors of the middle-income residents in post-Katrina Slidell, Louisiana?

### Response and Recovery Phases of Disaster

Disaster researchers use the application of disaster phases "to organize important findings and recommendations" while practitioners<sup>1</sup> use the disaster phase categories to "improve their disaster capabilities" (Neal, 1997). "Codification efforts and taxonomies are part of the scientific process. They provide scientists a way to organize, describe, and explain data" (Neal, 1997). The codification schemes vary within defined phases, but most may be identified within one or more of four types of disaster-related activities: preparation, response, recovery, and mitigation. These four overlapping phases appeared in the 1979 *Governor's Guide for Comprehensive Emergency Management*, written by the National Governors' Association (NGA) (1979). The NGA outlined the four overlapping phases of activities to:

[1] reduce the probability of the occurrence of a disaster [mitigation], [2] develop plans to save lives and minimize...damage [from unpreventable disasters], [preparedness], [3] provide emergency assistance...search and rescue, emergency shelter, medical care, mass feeding, [and potable water]...immediately after disaster [response], [4] return life to normal, or improved levels [recovery].

Quarantelli (2002) accepts the NGA's interpretation of phases in his history of disaster research presentation at the Hazards 2002 Conference in Turkey. He uses the NGA's four phases across social levels (individual, organizations, communities, and societies) to frame findings in disaster research from the second half of the 20<sup>th</sup> century. Carr (1932) categorizes

the social aspects similarly, but places them only in the recovery timeframe—a period he calls readjustment and reorganization. Carr is credited with one of the first attempts to codify disaster activities (Neal, 1997)— from a researcher’s perspective, and in so doing describes the readjustment and reorganization from three perspectives: individual, interactional, and cultural (Carr, 1932)—a codification that seems to include, though not explain, the aspect of information behaviors, since information behaviors describe individual attitudes toward and activities involving information, interaction with information, information sources, and other individuals; and information behaviors based on cultural beliefs. Some aspects of the recovery period after disasters may resemble Chatman’s small world societies.

#### Information in Isolated Societies

Elfreda Chatman pioneered information behavior research in isolated communities— without using contrived experiments or mainstream surveys—focusing on how non-academic, uneducated groups such as janitors and imprisoned women shared or did not share information within their own small worlds. She spent months with the groups, observing and interviewing them in depth.

#### Normative Behavior in the Small World

Chatman’s death in 2001 prevented her from developing normative behavior further than its introduction. Normative behavior, as is stated in Chapter 1, offers explanations of how small world communities socially construct—that is learn from each other through interacting to adopt social norms, worldviews, and social types specific to their own community, regardless of their affiliation with a larger community. These socially constructed norms and worldviews

influence how they interact as insiders with each other and how they interact with outsiders, those outside the small world. These interactions are their information behaviors.

### *Insiders and Outsiders*

Chatman borrowed her insider/outsider theory from Merton (1972). Insiders in the small world understand each other, and know the small world's cultural norms and worldviews.

The Insider doctrine can be put in the vernacular with no great loss in meaning: you have to be one in order to understand one. In somewhat less idiomatic language, the doctrine holds that one has monopolistic or privileged access to knowledge, or is wholly excluded from it, by virtue of one's group membership or social position (Merton, 1972).

Outsiders do not understand the insider, the insider's culture, or the insider's worldviews.

Outsiders have a structurally imposed incapacity to comprehend alien groups, statuses, cultures, and societies. Unlike the Insider, the Outsider has neither been socialized in the group nor has engaged in the run of experience that makes up its life, and therefore cannot have the direct, intuitive sensitivity that alone makes empathic understanding possible (Merton, 1972).

### *Social Norms*

Chatman garnered her original ideas of social norms from Whyte (1981), who wrote an in-depth study of the Italian-American slums, its street gangs he called corner boys. He introduced the idea that off-the-mainstream societies are socially organized just as are mainstream societies.

Social norms "allow for standards to dictate 'rightness' and 'wrongness' in social appearances" (Chatman, 2000). Consequently, norms differ from group to group—or community to community. Norms are "regular patterns of behavior or thinking that come to be accepted in a group as the usual way of doing things (Keyton, 1999)" Unlike rules, which are explicit guidelines of behavior, norms are implicit guidelines of behavior that emerge as the

small world evolves. These conventions, though unsaid, are powerful enough to shape the community members' worldviews and information behavior (interaction). Norms become apparent early in the small world's formation. They are typically developed as members observe each other and become cohesive. What is acceptable and not acceptable is just understood as members come to know each other. Norms are often expressed or enforced using nonverbal cues, such as frowns, smirks, sighs, or folded arms (Frey, 1999).

### *Worldview*

Social norms characterize behavior, but worldview characterizes priorities. Each member of the small world has learned from other members the ideas and/or beliefs that are valuable and the ideas and/or beliefs that are not valuable.<sup>2</sup>

### *Social Types*

Their beliefs include the classification of other people—assigning others to social types. Consequently, members of the small world assume that certain behavior will be typical of others to whom they have labeled with social types. Some social typing may include stereotyping—using superficial or rumored information to classify another person, such as social typing a teenager with tattoos as a delinquent.

### *Information Behavior*

Consequently, the members of the small world react to information (interact) based on their social norms, their worldview, and the social types that provide or relay the information. Chatman suggests that insiders perceive information and information sources [based on norms and worldviews] as unacceptable if the social type who provides the information is perceived as an unacceptable source or an outsider.

Chatman describes members of small world communities as individuals who develop their information behaviors based on their community's already constructed norms, worldviews, and social types. These evolutionary small worlds seem to provide a predictable, routine, and a manageable approach to their members' unique perception of all aspects of their reality, including their perception of information—what is important, what is not, and how importance is determined.

Chatman's application of social themes that influence information behavior in a small world has been used by others to conceptualize a variety of themes including electronic government (Jaeger & Thompson, 2004) and the physical, intellectual, and social aspects of information access (Burnett, Jaeger, & Thompson, 2008). Meyers, Fisher, & Marcoux (2009) describe the life information behavior of preteens, and Jones (2006) defines legal information behavior in the framework of a small world.

#### Small World Concepts and Disaster Studies

Disaster studies, however, have not applied Chatman's small world concepts and normative behavior, as such, to post-disaster communities. However, other theories have been posed that may be compared with Chatman's theories.

#### Chatman's Small World and Moore's Disaster Subculture

In a study of Gulf Coast disaster survivors after Hurricane Carla, Harry E. Moore (1964) identified a phenomenon he called a disaster culture—later referring to it as a disaster subculture—in a disaster-prone community. The disaster-prone community may transform into a post-disaster situational small world that includes “those adjustments, actual and potential, social, psychological and physical, which are used by residents of such areas in their efforts to

cope with disasters which have struck or which tradition indicates may strike in the future” (1964, p. 195). Moore’s disaster culture concept would be expanded by Anderson (1964) from the response of community organizations, rather than directly from the response of the community’s residents. The concept of the disaster subculture is later addressed by several researchers (Anderson, 1964; Fine & Kleinman, 1979; Granot, 1996 ; Hayim, 1996; Kennedy, 2004; Shaw, 1992; Wenger & Weller, 1973), but Wenger & Weller developed the concept a little further (1973) stating that “previous community disaster activity provides some residue of learning which is applied to subsequent situations.” They focus on disaster studies from the disaster survivors’ perspective, rather than strictly from the disaster management perspective by analyzing post-disaster behavior including collective behavior, emergent behavior, and aspects of the disaster subculture.

#### Chatman’s Normative Behavior and Rob Gordon’s Fusion

Dr. Rob Gordon, Australian trauma psychologist, determined that following a disaster of Katrina’s magnitude, there is a period of fusion, where residents come together because of their shared experience—they commiserate losses, commemorate recoveries, and reflect on common changes. Gordon points out that they “develop a shared disaster culture of stories, incidents, symbols and memories” (2002), a concept Chatman describes as shared norms, worldviews, social types, and information behaviors.

#### Chatman’s Norms and Quarantelli’s Emergent Norms

The greater the disaster, the more there will be the emergence of new behavioral structures and functions at the crisis time period.

*E.L. Quarantelli*

Disaster researcher Quarantelli (1999, p. 3) determined that up to ninety percent of initial search and rescue is performed by non-professional responders, members of the community who happen to be in the vicinity of need. Stallings and Quarantelli (1985) refer to these people as emergent groups, “individuals and organizations replace their traditional structures and functions with new ones” (p. 84). The idea of these emergent norms would suggest that norms in the small world of post-disaster communities may adjust to accommodate the situation, meaning that the small world of a disaster-prone community assumes post-disaster norms when necessary, but may have mainstream norms when there is no threat of disaster. For instance, it is perfectly acceptable and understandable to leave a boat blocking the entryway of your home in the disaster-prone community. Ordinarily, it would be against the neighborhood ordinances to park a boat in front of your home (Figure 17).



*Figure 17* Boat parked on front porch of home in southern Slidell. Photo taken by Tisha Slagle, September 15, 2005.



### Chatman's Worldviews and Mead/Blumer's Symbolic Interactionism

Chatman explains that worldview determines what information a member of a small world finds to be important or not important. Blumer, a student of George Mead, coined the term symbolic interactionism, based on Mead's three principles: community members react to things based on the meanings they ascribe to those things; the meaning of such things is derived from, or arises out of, the social interaction that one has with others and society; and these meanings are handled in, and modified through, an interpretive process used by the persons in dealing with the things they encounter. The idea of this symbolic interactionism, the term that Mead's student Blumer coined from Mead's work, would suggest that worldviews, as values and beliefs learned through interaction with other members of the community, may adjust also to accommodate the post-disaster situation. For instance, those outside a disaster-prone community may believe that staying through a hurricane is foolhardy. Those inside a disaster-prone community may evacuate, but understand why others stay, and are often glad when their neighbors stay to watch over the neighborhood.

### Chatman's Social Types and Wolenski and Miller's Disaster Roles

Chatman explains that members of a small world assume what will be typical of others to whom they have labeled with social types. (Wolensky & Miller, 1981). For instance, members of a small world may find local law enforcement's duties to be minimal unless there is a disaster. The idea of disaster roles are assumed, but change in a disaster situation suggest that social types, as assumptions drawn from interaction in the small world, may adjust to respond to the post-disaster situation. However, the interaction among residents of a community is disrupted right after disaster strikes. They become isolated from others within the community, as well as

from the world outside. Gordon (2002) calls this isolation debonding from “the suspension of communication” and the “disruption of the social bonds defining the stability of the social system” (Gordon, 2007). The disaster impact thus prevents residents from connecting with others, including loved ones and friends.

### Maslow’s Hierarchy of Needs

Abraham Maslow (1954) identifies the need to interact with others as one of four needs (Table 7) that must be met before people can self-actualize—address and meet their intellectual or spiritual needs. Post-disaster information needs may be related to human deficiency needs identified by Maslow.

Table 7

*Maslow's Original Levels of Human Needs*

Type	Need	Motivators
Deficiency	Level 1: Physiological	to satisfy hunger, thirst, be warm
	Level 2: Safety	to feel secure, safe, and out of danger
	Level 3: Social	to affiliate, be accepted, loved, belong, avoid loneliness
	Level 4: Esteem	to achieve, be competent, gain approval/recognition
Growth	Level 5: Self-actualization	to find self-fulfillment; see symmetry, order; beauty; to know, understand, explore

Abraham Maslow taught that humans are motivated when they “feel, desire, or want or yearning or wish or lack” (Maslow, 1962). Maslow (1943, 1954, 1963, 1971) approached his studies with the understanding that people are intrinsically able to access what they need to grow and achieve. Maslow (1954) defines motivation as the major factor in determining the “hierarchy of [human] needs (Figure 18).” He believed that meeting the need to self-actualize, the highest-level need, was contingent on the meeting of what he deemed the lower-level needs.<sup>3</sup> He believed that the need to survive is the foremost motivator of human behavior.

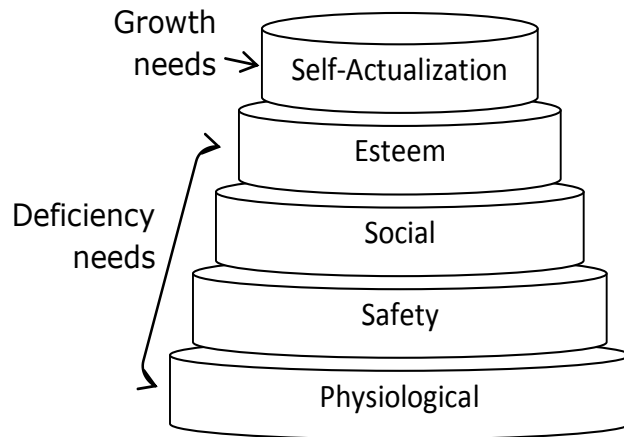


Figure 18. Adapted from Maslow's original hierarchy of needs (1954).

#### Disaster Survival Aid

For an event to be deemed a disaster, it must be impossible for the community to survive without outside assistance. Based on the Robert T. Stafford Disaster Relief and Emergency Assistance Act, responsibility for an emergency event starts with those who are involved. If the persons involved do not have the resources to respond to the event, then the community is called to assist. If the community is overwhelmed, then the state is called. If the state does not have the resources, the federal government is called to assist (Figure 19 ) (FEMA, 2007).

Until the establishment of the Disaster Research Center (DRC) at the Ohio University in 1963, “practically no attention had been given to the activities of the emergency organizations in the community even though the action of such groups generally determines the effectiveness and efficiency of the reactions just prior to, during, and immediately after impact” of a disaster (Quarantelli, 1986).

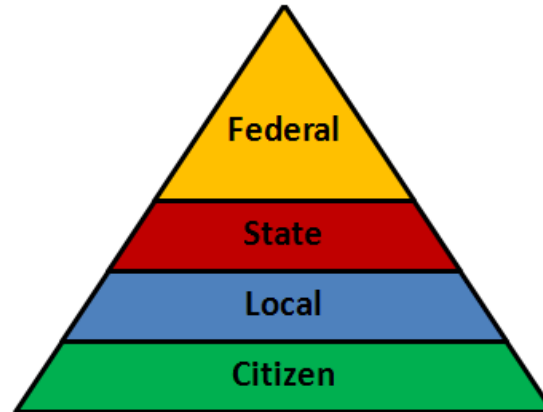


Figure 19. Hierarchy of responsibility to an emergency event. Adapted from FEMA 2007.

#### Disaster Studies

Often perceived as Acts of God, a form of divine retribution, disasters are frequently depicted as a type of punishment for human transgression.

*Frank Furedi*

The Act of God perception is a belief that still exists and has for many centuries. In fact, the “original Latin meaning [of disaster] signified the unfavorable aspect of a star; disaster thus connoted a harmful influence that came from the heavens and was beyond human control” (Hoetmer, 1991, p. xvii).

Disaster researchers challenged the “act of God” theory in their determinations that disasters, such as hurricanes, are simply a “part of normal environmental processes” (Perry, 2006, p. 9) that interrupt, and consequently change, the normal activities of human living. During the last half of the 20<sup>th</sup> century, meteorologists, oceanographers, and environmentalists began to focus more closely on disasters and disaster management in light of human experiences.

### *Disaster Recovery*

Unseasoned survivors and seasoned survivors who relocate recover more slowly than do those who remain in the community throughout recovery (Gordon, 2002). Seasoned survivors often have their own disaster management plans, similar to those of professional responders. For those who stay, the recovery period includes short-term and long-term activities to return to as close to normalcy (pre-disaster living conditions) as possible. Short-term activities may include cleaning up; relocating temporarily, if necessary; and contacting various service providers (insurance, utilities, reparation, etc.).

### *Post-Disaster Communities as Social Systems*

German sociologist, Niklas Luhmann (1995) suggests a theory of human interactions he calls social systems: “autopoietic (self-reproducing), interdependent systems of communications.” Luhmann used systems theory, originally applied to biological systems,<sup>4</sup> to adapt to the concept of social systems—an application that provides a compelling symbolic foundation for the study of a community’s once-intact social system. Luhmann’s definition of communications is not the “conventional notion of communication as an asymmetrical process of transferring meaning or information from a sender to a receiver” (Seidl, 2004). Rather, Luhmann defines communications as “the synthesis of information, utterance and understanding” and a social system as “an autopoietic system of communications, where communications reproduce communications” (2006).

Social systems use communications as their particular mode of autopoietic reproduction. Their elements are communications which are recursively produced and reproduced by a network of communications and which cannot exist outside of such a network (Luhmann, 1986).

Social systems include face-to-face human interaction and ICT. They are vital to the critical infrastructure, specifically the systems that ensure the production and/or maintenance of security and well-being. The U.S. Government in the National Strategy of the Physical Protection of Critical Infrastructures (February 2003) identified and listed the following critical infrastructure systems: agriculture; banking and finance; emergency services; energy; health; information technology, telecommunications; postal and shipping; transportation systems; and water.

### *Disasters and Behavior*

Disasters are something from the “outside,” striking into men's beloved normality. As long as men survive with health and property intact, there is no disaster.

*L.J. Carr*

The systematic study of disasters did not begin until 1950 (Fritz & Williams, 1957) with subsequent studies addressing human aspects including the notions of disaster subcultures, collective behavior (Dynes, Tierney, & Fritz, 1994; Kreps & Bosworth, 1993; Mawson, 2005; Quarantelli & Dynes, 1977; Taylor, Priest, Sisco, Banning, & Campbell, 2009; Weller & Quarantelli, 1973), emergent behavior (Quarantelli, 1995; Rodriguez, Trainor, & Quarantelli, 2006), and disaster recovery (Comfort & Haase, 2006; Gordon, 2002, 2010; Quarantelli, 1989, 1999; Tennant, 2001; White, 1994; Yoon, 2005). Negative post-disaster behaviors included studies of panic (Quarantelli, 1954); blame and hostility (Bucher, 1956-57), and hysteria and rumors (Miller & Miller, 1951; Pendelton, 1998). Positive post-disaster behaviors included studies of emergent heroism and improvisation (Quarantelli, 1995; Rodriguez, Trainor, & Quarantelli, 2006).

Information behaviors are inherent in post-disaster studies and may exist within all post-disaster behaviors as social networks of communities where communication is the vehicle for exchanging resources, including information that leads to the meeting of survival needs. However, no current information behavior models include specific cultural aspects that influence how people meet or strive to meet their post-disaster information needs. A theory of everyday information seeking behavior or non-work information seeking (Savolainen, 1995), details everyday information needs—some that may also include information needs of people in post-disaster situations. However, meeting post-disaster information needs is thwarted by the damage to typical information sources. Notably, others' studies use everyday life information seeking behavior to discuss issues including health, preteens, and organizations, but post-disaster information needs and post-disaster information behavior have received little attention by researchers in information science or researchers in disaster behavior. Although the concepts of post-disaster information needs and post-disaster information behavior are not stated as such in disaster studies, researchers in emergency and disaster management conduct many studies of post-disaster behavior that involve problems with information flow.

So, post-disaster studies appear to have neither focused much on the information behaviors of post-disaster communities, nor often targeted middle-income residents in post-disaster communities. Consequently, it is important to at least add the concept of post-disaster information behaviors to existing works in information sciences and disaster studies. Chapter 3 explains how data from Slidell and other sources were gathered and analyzed, with the intention of presenting as clear a picture as possible of the post-disaster situation.

## Endnotes

<sup>1</sup> Disaster practitioners are those involved in a community's emergency management. They are emergency responders: Although initial disaster responders are survivors of the disaster, governmentally-assigned official first responders are police, fire, and emergency medical treatment (EMT) services ([www.fema.gov](http://www.fema.gov)). Assisting first responders are governmentally-assigned officials including transportation/highway services, forestry—secondary responders who help first responders secure the disaster areas. Tertiary responders restore mainstays by supplying food, water, and medical supplies, as well as restoring utilities to aid in the delivery and maintaining food, water, and health. This group of responders include FEMA, military, as well as volunteer organizations such as Red Cross, Salvation Army, churches, and other extra-community helpers.

<sup>2</sup> A worldview is “a comprehensive philosophy that shapes a body of beliefs about human life. It is a system of shared experiences that provides an outlook or point of view. It serves as a measure to gauge one's role, position, status, etc., within a network of similar others and to assess the relevance of events, people, happenings, and so on, in the larger social world” (Pendleton & Chatman, 1998).

<sup>3</sup> Although later, Maslow's hierarchies include cognitive and aesthetic needs, Maslow considered cognitive and aesthetic to be aspects of self-actualization needs in his original hierarchy of needs. He later added self-transcendence, spirituality (Maslow, 1971).

<sup>4</sup> “Chilean biologists Humberto Maturana and Francisco Varela. Autopoiesis (Greek: autos =self, poiein = to produce) means self-(re)production. Autopoietic systems thus are systems that reproduce themselves from within themselves, as for example a plant reproduces its own cells with its own cells” (Seidl, 2004).



## CHAPTER 3

### METHODOLOGY

#### Post-Katrina Slidell, Louisiana as a Case Study

Qualitative research adopts assumptions about social life and it involves documenting real events, recording what people say (with words, gestures and tones), observing specific behaviors, studying written documents or examining visual images (Neuman, 1997).

Basic qualitative research is used when the purpose of a study is to “understand and explain” the nature of a phenomenon and to generate new theories and/or test existing theories (Patton, 2001, p. 215). The term, qualitative research, has varied definitions, some as simplistic as to explain what it is not: “research that produces findings not arrived at by statistical procedures or other means of quantification” (Strauss & Corbin, 1996, p. 10). However, Neuman’s definition describes my intent to gain insights into concepts that would describe how residents of Slidell looked for information and how they used it to solve their post-disaster problems during the first week after Katrina.

#### What is Qualitative Research?

Qualitative research focuses on subjective meanings, definitions, metaphors, symbols and description of specific cases. The aim is to capture aspects of the social world for which it is difficult to develop precise measures expressed as numbers (1997).

Qualitative research involves the researcher as an “instrument” to collect and analyze data (Guba & Lincoln, 1981), thus the imperativeness of face-to-face interaction, what Glesne & Peshkin call “the mark of qualitative research” (Glesne & Peshkin, 1992). In order to understand the personal views of residents in Slidell, face-to-face interaction (Glesne & Peshkin, 1992) was essential. Because the interviews were conducted “at the scene,” “thick descriptions” are more likely to be possible—an aspect of reporting that may help to authenticate the study. These

depictions allow the “meanings people place on the events, processes, and structure of their lives” to be revealed to the reader (1994, p. 10) in the attempt to answer the research question (repeated below) that emerged from this case study.

How may Elfreda Chatman’s small world concepts of isolated communities provide insights into the post-disaster information behaviors of the middle-income residents in post-Katrina Slidell, Louisiana?

Also, case study strategy provides a framework for a deeper understanding of the post-disaster situation. To clarify the major issues, I purposefully selected participants, that is, I deliberately found people who were personally involved in the aftermath of disaster and willing to share their stories (Patton, 2002). I collected qualitative data—interviews, observations, and documents—to illuminate the case of Slidell’s experiences before, during, and after Hurricane Katrina. This strategy allows the post-disaster events to be revealed from the residents’ viewpoints (Tellis, 1997). According to Patton, qualitative inquiry allows:

- *naturalistic inquiry*, where real-world situations are studied as they unfold naturally
- *emergent design [format] flexibility*, where understanding deepens and/or situations change; and
- *purposeful sampling*: where people, organizations, communities, cultures, events, and/or critical incidences are selected because they are "information rich" and illuminative, that is, they offer useful manifestations of the phenomenon of interest; sampling, then, is aimed at insight about the phenomenon, not empirical generalization from a sample to a population (2002, p. 40).

#### *Naturalistic Inquiry*

Studying the residents of Slidell as a case allows me to describe and explore the interactions of residents (Schramm in Yin, 2003, p. 12) in the aftermath of disaster. Being in Slidell just 15 days after Katrina provides me with an understanding of the emotions of the

people, as well as the dilemmas they face. One resident, who climbed into her attic with an axe in case she had to cut through the roof said:

They [the police] could've covered a lot of territory, just you know they could've gone down a couple of these streets with a megaphone or something. It's not that I wanted to get out or anything, it was just you know, let them know that I was here you know (personal communication, September 15, 2005).

### *Emergent Design [Format] Flexibility*

American society is where “two or more cultures edge each other, where people of different cultures occupy the same territory, where under, lower, middle, and upper classes touch, where the space between two individuals shrinks with intimacy (Anzaldúa, 1987).

The disaster culture (Wenger, 1978) of disaster-prone communities has evolved over centuries of experiencing and expecting periodic major disasters. Since 1900, Louisianans have suffered an average of 2.57 major hurricanes (as compared to the Gulf Coast average of 1.03) each decade (National Weather Service, 2010), meaning each lifelong resident may have experienced at least 10 such storms by the age of 50. Consequently, residents of the disaster-prone communities enter an “emergency mode” each hurricane season, girding up for possible death and destruction to befall their communities.

This recurring disaster culture mode provides an apt setting for using an emergent research format<sup>1</sup> with the use of phenomenological<sup>2</sup> and ethnographical<sup>3</sup> methods to study and understand the post-disaster scene. So, although I had specific interest in post-disaster information needs and behaviors, I entered Slidell with the intent of “suspending judgment as to the core set of aims, the key research questions, and the nature of the data to be collected” (Schostak, 2010) until I collected and analyzed the data. The post-disaster scene as a

phenomenon (Schutz, 1976), the disaster culture in disaster-prone communities, and the decision I made to interview these disaster survivors, warrants this emergent format approach.

### *Decision to Interview*

“Listening to people’s lives, recording their experiences, their moments of crisis, their frailties, their intimacies, these are the challenges to the researcher.” Schostak (2006) explains the interview, in theory, as the combination of the two parts of the word, “inter” and “view.”

Inter suggests a relationship of mutual acceptance, but a relationship “with space between the two entities”—interviewer and interviewee, meaning the two persons have a distinct difference in cultures—in this case the interviewer never experiencing major disaster and the interviewee had just experienced and was likely to have experienced disaster before and expected to experience disaster again. View suggests that the researcher looks at the interviewee and creates an image based on the researcher’s culture. Thus, the researcher reports somewhat biased interpretations. The intent of the researcher, however, is to focus only on the person’s words and body language and not interpret as the interview is in progress. View, from the interviewee’s viewpoint, helpful or pointless, depending on the interviewee’s interpretation of the culture differences and the interviewers’ body language. To avoid, as much as possible, difficulty with interviewee’s possible distrust of me, I asked my son, who lived in Slidell, to accompany me.

### *Purposeful Sampling*

To clarify the major issues, I chose purposeful sampling, that is, I deliberately found people who were personally involved in the aftermath of disaster and willing to share their stories (Patton, 2002). Although I was not required to obtain formal permission from officials in

Slidell to conduct this study, all participants did sign consents forms (Appendix B) in compliance with the Institutional Review Board (IRB) of the University of North Texas, the Board that approved this research (Application No. 05-262), to comply with the ethical principles and guidelines for the protection of human subjects involved in research (Appendix C).

Three groups of participants provided information for this study: residents, key informants, and supporters. Each group was selected purposefully, based on pre-determined criteria to enhance the quality of the study (Table 8).

Table 8  
*Selection of Participants*

Group	Reason for selection	Method of Selection
Residents	Middle-income residents in Slidell, Louisiana before, during, and after Hurricane Katrina	Residents were approached outside in front of their homes; subsequent residents were approached after recommendations from residents who I had already approached.
Key Informants	Residents or responders who could: provide an insider's viewpoint; confirm information from other participants; and coordinate access to sources of evidence (Yin, 2003).	Residents in Slidell who had unique expertise were asked to provide detailed and follow-up information as needed.
Supporters (professional/volunteer responders)	Public safety emergency response team members who officially respond or volunteer team members who unofficially respond administratively or personally to critical incidents in a community	Officials outside Slidell were contacted by phone for in-person meetings. Officials and volunteers inside Slidell were approached on the street while they were performing public safety duties or in their city offices.

## Residents

To target the areas in Slidell where residents fall into the selected middle income range, I customized a map (Figure 20) of Slidell's annual median household incomes from the U.S. 2000 Census Bureau using the U.S. Department of Education Institute of Education Sciences determination that middle income range in the United States is \$45,000–74,999 (Presley, Clery, & Carroll, 2001). The purposeful sampling from the residents of Slidell produces a sample that is representative of a larger population; the middle-income, disaster survivors in this community. After my observation of three distinct types of damage, 1) minor, 2) moderate, and 3) flooding devastation in Slidell, detailed in Chapter 4, I located middle-income neighborhoods in each of the three areas.

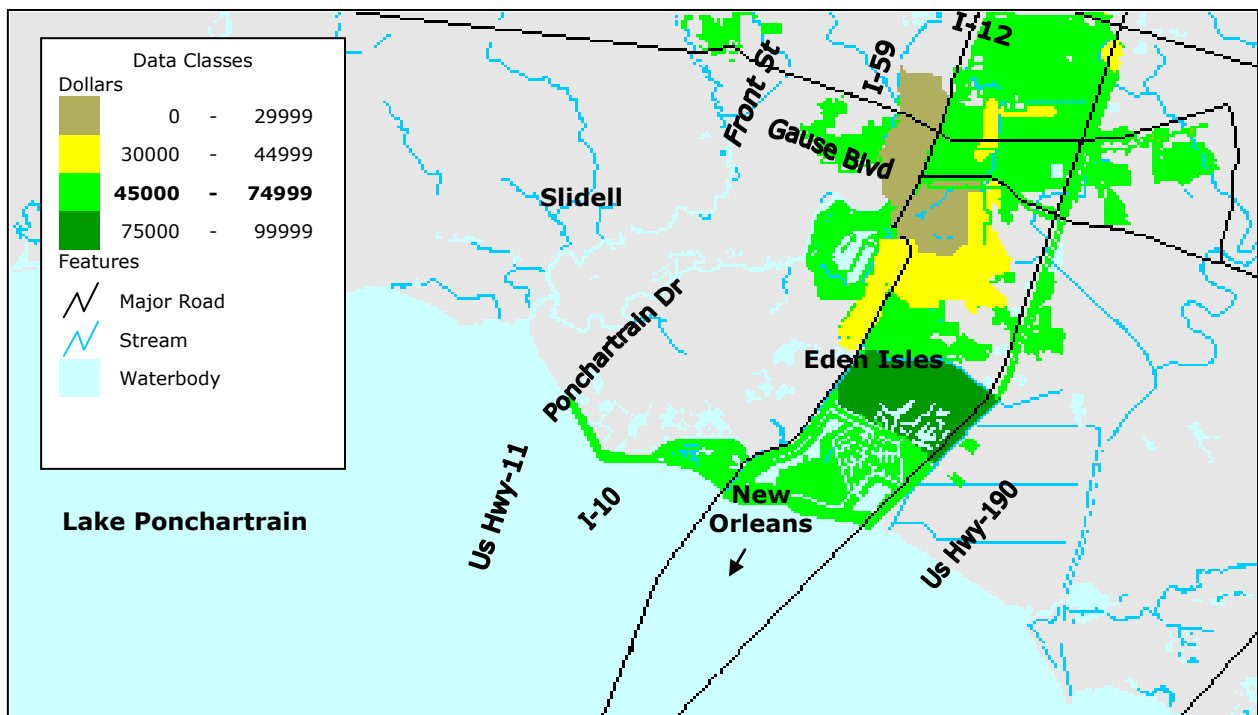


Figure 20. Income levels in Slidell as of 2000 U.S. Census. Map adapted from <http://factfinder.census.gov>.

I approached residents in front of their homes and requested interviews. At the end of each interview, I asked the resident to suggest neighbors or acquaintances that the resident believed would also be willing to share their experiences. This snowball-sampling (Patton, 2002) technique provided me with tape-recorded semi-structured interviews with eight women and three men, who suffered varying degrees of property loss from the disaster. The interviews ranged in length from 36 to 78 minutes, with an average time of 43.6 minutes. I also took field notes during the interviews and documented additional personal observations after interviews.

### Key Informants

During my September trip, three residents agreed to serve as key informants: my son and daughter-in-law, Jarrod and Carmen Knudson; and Lennie Forstall, lifelong resident of Slidell. During my October trip, I dropped in on the Office of Mayor Ben Morris, who warmly received me and also agreed to serve as a key informant. Key informants provided information throughout the visits. The selection of key informants in this study is based on their unique ability to interpret, define, and/or confirm the: 1) dimensions of the study in relationship to the culture; 2) geographical and demographic boundaries of the participants; and 3) discrepancies in participant reports (Tremblay, 1957). All key informants live in Slidell and consequently can provide an insider's viewpoint. My unlimited access to Jarrod and Carmen provided me with rich post-disaster data on a day-to-day basis.

### Supporters

Many officials and volunteers provided support and assistance for the affected residents. During my September trip, I approached and interviewed military officers and police. Also in September, I recorded interviews with emergency managers from Denton and Fort Worth,

Texas. In October, I recorded an interview with a Federal On-Scene Coordinator from the Environmental Protection Agency (EPA). All were encouraged to expound on their personal experiences. These interviews ranged in length from 20 to 49 minutes, with an average time of 35.5 minutes. I also took field notes during the interviews and documented additional personal observations after the interviews. The data from the interviews of supporters is used to provide background and other detailed information about Katrina and the recovery in Slidell.

### Participant Summary

Purposeful sampling allows the study of those who have experienced a specific phenomenon, such as recovery from a natural disaster. I deliberately approached residents whose incomes fell within the U.S. 2000 Census middle-income range; public officials who were directly or indirectly involved with Slidell residents; and key informants who had an insider's viewpoint and agreed to share their expertise on a continuing basis. After my initial review of recorded interviews with all participants, I determined to use data from 25 participants: 11 residents, four key informants, and 10 supporters. Three of the supporters who were not Slidell residents, but participated in recovery efforts were interviewed at later dates. These three supporters are noted with an asterisk in Table 9.

I assigned a unique faceted code to identify each participant for analysis purposes. All participants have a primary facet that represents their assigned group: R for residents, K for key informants, and S for supporters. The secondary facet represents a unique sequential number. The residents and key informants, those who personally experienced the disaster, have a tertiary facet that begins with a dash (-) and is followed by a mnemonic identifier that represents the type of damage: T1, T2, or T3 (Table 9).



Table 9

*Participants in the Study*

Facet	Gender	Age	Occupation	Unique Characteristics
R1-T1	F	50-55	Daycare Owner	Predicaments involving families with children
R2-T1	F	70-75	Retired Teacher	Dilemma involving a 90-year-old visitor from flooded nursing home
R3-T1	M	70-75	Retired Military	No breathing machine during power outage
R4-T2	F	25-30	Navy Oceanographer	Expertise in hurricanes and hurricane technology
R5-T2	M	30-35	Navy Oceanographer	
R6-T2	M	35-40	Cabinet Maker	Communicated with no one for 13 days
R7-T2	F	45-50	Schoolteacher	Confined to attic for 3 days; lost employment
R8-T3	F	55-60	School Administrator	Forced to relocate while home was repaired
R9-T3	F	35-40	Librarian	Lost everything; had to borrow clothing to return to work
R10-T3	F	60-65	Homemaker	No medical care for chronic illness
R11-T3	M	50-55	Automobile Dealer	Neighborhood watchdog in worst-hit area
K1-T1	M	25-30	Physiologist and Medical Student	Experience in areas where disasters are frequent and in areas where disasters are infrequent
K2-T1	F	25-30	Banker	Frequent access to hundreds of residents (secondary sources)
K3-T2	M	60-65	Retired Lockheed Executive	60+ years in the disaster culture
K4-T2	M	60-65	Mayor	Unpublished demographic and geographic information, as well as access to other officials.
S1	M	40-45	Army Major	Dispatched to distribute ice, food and water
S2	M	35-40	Army Captain	Dispatched to distribute ice, food and water
S3	M	20-25	Army Lieutenant	Dispatched to distribute ice, food and water
S4*	F	40-45	EPA Federal On-Scene Coordinator	Provided specific information regarding environmental concerns after flooding
S5*	M	45-50	Police Lieutenant	Rescued hundreds of residents from rooftops after Katrina-driven waters flooded their homes
S6*	M	40-45	City Emergency Manager	Experience with direct response to hurricanes and specific information regarding Katrina victims
S7	M	35-40	City Emergency Manager	
S8	F	45-50	Library Director	Preparation for reopening flooded libraries
S9	F	35-40	Secretary	Solely repairing elderly mother's damaged home
S10	M	35-40	Associate Pastor	Provided hard-copy list of volunteer organizations

Part of the protection of participants, as well as the integrity of a study is the assurance of participant privacy. Privacy allows participants to decide if, when, and how their private information is reported. Participants in this study understand that their personal information is transcribed into an electronic database where alphanumeric codes are substituted for actual names. Real names are only used with permission. My field notes are stored on a flash drive and locked in a portable safe that also contains all hard copies of participant documents. However, all key informants and supporters gave me permission to use their names and to associate their names with the information they provided.

#### Data Collection and Fieldwork Methods

The qualitative case study included the collection of qualitative data—interviews, observations, and documents. Qualitative data can provide personal perspectives from Slidell residents and detailed, thick descriptions of residents and their environments (Patton, 2002, p. 40). “Qualitative inquiry means going into the field—into the real world of...neighborhoods, street corners—and getting close enough to the people and circumstances there to capture what is happening” (p. 48).

After my third trip to Slidell, I realized that I should stop collecting data, at least in the field. Although the decision was difficult, I knew that the last two trips had yielded redundant information about the aftermath and fusion period I first encountered in September. Glaser & Strauss call this point in the data collection theoretical saturation (1999, p. 132). However, holes I discovered when transcribing interviews led me to follow up with key informants. The following description of my data collection process is presented in the order the events occurred.

### Preliminary Data Collection

After Jarrod and his family returned to Slidell on September 6, I asked them informally, and they agreed, to allow me to stay in their home so that I could perform field research in Slidell. The New Orleans Airport had not yet reopened, and because I was not sure when it would reopen, I scheduled a flight to New Orleans for September 14 and began to make plans for the selection of participants. I picked up the IRB Approval letter on September 14, just in time to keep my flight.

### *Document Collection*

A major advantage of collecting data from documents is that the collection required little, if any, assistance from the participants. During the week before I traveled to Slidell, I collected dozens of news stories and government documents related to the community of Slidell. Mahoney states several advantages to documents that I found to be true. The articles provided insights that I was unable to collect through interviews (Mahoney, Koerner, & Fitzpatrick, 2007). The documents were available from the Internet and cost me nothing. Reporters living in the culture wrote the articles so the stories reflected the culture of the Slidell area, such as the colloquialisms, historical trends, and overall attitudes of the residents (1997).

### *Public Records*

Although Slidell received negligible television news coverage the first week following Katrina, many newspaper- and cable television-supported Web sites posted pertinent articles within a month. I also collected various supporting documents from online disaster study organizations including Natural Hazards Center, FEMA, Weather Underground, and the National Hurricane Center.

These external public records, current and archived national news and weather, census statistics, educational and non-profit organizational websites, as well as other federal or state government records provided data that revealed cultural particularities, as well as broader and/or significant trends. Data from these documents also facilitated the creation of interview questions and substantiated data from other sources (Mahoney, 1997). The data were also helpful in my ability to target middle-income areas. I used the 2000 U.S. Census records to map the locations of middle-income homes in Slidell. The 2000 U.S. Census also provided immediate access to demographic statistics in tables and maps I customized and downloaded from American FactFinder for inclusion in this study.

I was also able to collect internal public records, such as current and archived local (Slidell) news, public notices posted on Slidell's streets, in local libraries, post offices, churches, banks, and other public community settings. These records provided data that revealed the community's "resources, values, processes, priorities, and concerns" (Mahoney, 1997). Combined data from these documents also provided background details that were unavailable from external documents and other sources. For instance, FEMA brochures were in the library and the city offices, with a phone list of government agencies. I also collected blogs before, during, and after Katrina that provided dozens of first-person accounts—testimonials I would not have time to solicit through personal observation or interviews. Although "personal accounts of events and experiences," (Mahoney, 1997) may not always represent actual constructs, they did confirm patterns of attitudes I observed in the residents I interviewed.

### *Photographs*

As Jarrod and I drove through the city, I took 134 photos of damaged homes, businesses, and piles of debris along the roads. I also took photos of all the residents I interviewed, with their permission so I would remember their faces as I listened to their recorded interviews.

### *Interviews*

From September 14 – 18, 2005, I stayed in the Knudson home in Slidell. Jarrod, as a recent PhD, was quite interested in my fieldwork in information science, even though he was studying medicine. So, he assisted me with driving, directions, paperwork, interviews, and introductions to the townspeople. I studied maps of the area and drove through the damaged sites two or three times a day. Although I have determined to limit this report to the events from August 26 to September 18, I did return three more times, once each month in October, November, and December. Data collected during the three subsequent visits, as well as extensive interviews with Jarrod and Carmen over the next two years, are included only as they relate to the first three weeks.

During interviews, I kept notes of what residents were doing, how they were acting, and how I perceived their attitudes and actions. Activities included chores that the residents were performing to rebuild, such as cleaning up debris, mending broken fences, or rummaging through scattered belongings. Activities also included notable human behaviors such as wading through waters, bicycling across town through debris, or canoeing into a neighborhood. Attitudes included behavior or expressed feelings toward neighbors, family, or authorities, such

as resenting the police for not patrolling a specific neighborhood. Jargon included words and/or phrases common to the area or disaster culture.

Two of the phrases common to the area referred to local bridges: Twin Spans and The Causeway. Both are parallel bridges crossing Lake Pontchartrain: the Twin Spans connects Slidell and New Orleans, while the Causeway<sup>4</sup> (full name is Lake Pontchartrain Causeway) connects Metairie ( a New Orleans suburb) and Lancombe on the North Shore.

### *Field Observations*

I conducted field observations using a planned procedure. The procedure enabled me to check off items as they were completed, as well as to apply the same criteria to the evaluation of each area to be observed (Mahoney, 1997). For instance, during my initial observation of the damage to the city, I kept field notes to record the setting and idiosyncrasies in the setting. The setting included the date, the time, the location, and the physical surroundings, such as twisted signs and dangling wires. Idiosyncrasies included any part of the environment that appeared unconventional, compelling, or conspicuous, such as messages scrawled with paint on garage doors of homes.

### Data Analysis

“Data analysis involves organizing what you have seen, heard, and read so that you can make sense of what you have learned” (Glesne & Peshkin, 1999, p.127). When I looked at the massive amount of data from transcriptions, field observation notes, and documents, making sense of the data as a whole seemed an insurmountable task. However, my intention was to follow a step-by-step process to generate patterns and themes from my experiences with the residents of Slidell as they began their recovery from Katrina. My ambition was to inductively

analyze the data and “yield inferences from all kinds of verbal, pictorial, symbolic, and communication data” (Krippendorff, 2004). I followed a framework for qualitative data analyses outlined by Miles and Huberman of separating the analysis into three major phases: data reduction (coding of data), data display (organizing information into a matrix or diagram), and conclusion drawing and verification (making sense of the information) (1994). The more I repeated these three phases, the more I realized that I had to select data referring to a timeframe, the first three weeks after Katrina. I determined then to save the other timeframes, and ideas with them, for subsequent articles. The data I use for the immediate aftermath includes interviewees recalling their experiences, news articles, government reports, other researchers’ presentations, and journal articles. The data I use for the situation I encountered when I arrived in September includes personal observations, residents’ descriptions of their current circumstances, government reports, other researchers’ presentations and journal articles.

#### *Data Reduction: Coding of Data*

Quantitative studies often use deductive content analyses where coded categories are assigned to the units of text before the analyst begins the analysis. However, before I, as the “researcher,” can produce scientifically supportable interpretations of their data, ...[I]... isolated [interpreted] specific items or elements, patterns and structures, (or relationships in the patterns of the data) that are related to the research questions” (Schensul & Lecompte, 1999, p. 150). I then categorized my interpretations into code that represents the themes and patterns of concepts and behaviors I have identified. The first step is a rudimentary evaluation and categorization.

This first categorization allowed me a starting point for subsequent processes of “constant comparisons” (Glaser & Strauss, 1965). This interpretation of theory is a “systematic and intensely disciplined process” (Berkowitz, 1997, p. 4.1) where I initiated a “process of selecting, focusing, simplifying, abstracting, and transforming the data that appear in written-up field notes or transcriptions” (Huberman & Miles, 1998). To facilitate this interpretive analysis, I typed observation notes, field notes, and interview transcripts into Microsoft Word. To facilitate the mechanics of the repetitive process of coding, I separated and labeled rudimentary categories and began coding from the transcribed text.

#### *Data Display*

Microsoft Word facilitated the arrangement of the text into organized units that I display in tables or diagrams throughout this report. For instance, I can display an “information needs” category by placing the list of participants in one column of a table with their expressed information needs in an adjacent column. This visual display of the data allows me, as an analyst, to begin “stepping back to consider what the analyzed data mean and to assess their implications for the questions at hand” (Berkowitz, 1997, p. 4.11).

#### *Conclusion Drawing and Verification*

This process of assessing exemplifies the qualitative approach to this study by allowing me to define the concepts that emerge from the patterns and common themes in the data I collected from the community. Qualitative evaluation entails an iterative analysis, a process where

data collection and data analysis are not temporally discrete states: as soon as the first pieces of data are collected, [I, as] the evaluator begin the process of making sense of the information. [In fact], part of what distinguishes qualitative analysis is a loop-like



pattern of multiple rounds of revisiting the data as additional questions emerge, new connections are unearthed, and more complex formulations develop along with a deepening understanding of the material (Berkowitz, 1997, p. 4.2).

### Methodological Issues

Several issues are addressed to ensure that methods include proper data gathering and analysis techniques. As I address the typical issues of assumptions, validity, and reliability, it is necessary to relay factors within my relationship to the research that may enhance and/or challenge the analysis and findings. Challenges are addressed with methods to alleviate possible ramifications.

### *My Relationship to the Research*

When designing a study, it is imperative to understand how preconceptions based on prior studies, interests, and/or concerns may impact objectiveness. Preconceptions are inevitable, and especially in qualitative research, are integrated into the observations, interpretations, and conclusions of the researcher. Although my preconceptions are examined and addressed here, they do not qualify as researcher biases that hinder the objectivity of the findings. Just as the preconceptions of the residents I interviewed play a role in how they identify and meet their post-disaster information needs, my preconceptions as an observer/interpreter play a role in how their post-disaster information needs and information-seeking behaviors may be modeled in relationship to other models of human needs, information-seeking behavior, and disaster vulnerability. Preconceptions I bring to this study include prior—childhood and adult—experiences, prior interests, and prior concerns.

### *Childhood Conceptions*

My early childhood interest in, fear of, and eventually, fascination with natural disasters provided me with many years to accept the inevitability of disasters. However, I never lost the empathy for the survivors. At first, I thought my empathetic approach was the reason they all seemed interested in telling their stories to me. However, looking back, I believe the almost instant, effortless rapport with survivors may be attributed to the friendly Slidell culture. Regardless of the reason, I found it easy to approach these strangers and document the intensity of the facts and their feelings.

Although empathy invites openness in those I interview, I realize that great empathy could compromise my objectivity and consequently affect the reliability of my findings. I addressed this possibility by asking two other researchers to review the codes I assigned to data. Details of this method are under Reliability below.

I am also aware that my distaste for those who minimized the gravity of disasters' devastation by deeming it righteous judgment may increase my desire to emphasize the suffering rather than the information sciences. Because of my distaste, I reviewed a checklist as I write to ensure that my reporting reflects—as much as possible without losing my individual assessment as a participant observer—the participants' actions and attitudes rather than any aggrandizement I may inadvertently include.

### *Preconceptions From Adult Experiences*

My childhood interests in disaster prompted my informal and formal study of the phenomena surrounding the Galveston Storm of 1900. In the early 2000s, encouraged by Dr.

David McEntire, I began studying the integration of disaster studies with information sciences, particularly disaster information-seeking behavior.

Past research may enhance the believability of my study by providing a conceptual foundation of information science and disaster studies. It may also serve to provoke more interdisciplinarity between information science and disaster studies, perhaps leading to a new direction of research—disaster information behavior. However, because this is my first fieldwork experience, I feel I must review my findings periodically with experienced researchers to ensure I provide sufficient background to possibly place this report in disaster studies, as well as information science research.

#### *Preconceptions From Prior Interests*

Lifelong fascination with disasters and communication may enhance my study by providing and abiding enthusiasm for my topic that may strengthen readability and viability. It also brings my unique appreciation of the topic that will allow a part of myself to be enmeshed with my findings—an appreciation that promises passionate commitment to the completion of this project and the continuation of the study. Because of my passion for the topic, however, I must take care to avoid undue dramatization of the topic and revisit my data regularly to ensure that I do not water down my findings with self-imposed ideas.

#### *Preconceptions From Prior Connections*

My prior connections to the city of Slidell, both directly through my children and indirectly through their contacts, may have enabled me to better analyze and report my findings. The opportunity to clarify data provided me during interviews through an open line of communication with my key informants may have enhanced the validity and reliability in my

findings. Being able to examine my data—not only as an insider whose close family members experienced the effects of post-Katrina, but also as an outsider, someone who has never personally experienced a natural disaster—may have provided me a unique advantage similar to participant observation. It is possible that these connections also enabled me to include personal insights that may not be as easily attainable by a non-family member, as well as to include behavior of residents who are middle-income and college-educated earners, groups less frequently studied by disaster researchers. My prior connections allowed me to access data, through my son's contacts, from people who are new to a disaster culture, people who are born into the disaster culture, and people who have lived in the disaster culture for many years.

Where I had to monitor my analysis, was in the reporting of my children's experiences. I checked periodically to ensure that I was not focusing my attention on aspects of the study that were more impactful to my children than to others—a possible bias that could cause me to assume that the same experiences were impactful to others. I also had to review my data to ensure that I did not overlook important factors relevant to my research questions whether they affected my children or not.

### *Assumptions*

The major assumption in this study is that phenomena, such as how survivors of disaster cope with the disruption of information following a disaster, can best be examined using language that describes how they make sense of or apply meaning to their situations (Kaplan & Maxwell, 1994). Walsham says that qualitative methods in information science are "aimed at producing an understanding of the context of the information system, and the process whereby

the information system influences and is influenced by the context"(1998), a concept that also defines the assumptive intent of this study.

### *Validity*

#### Construct Validity

Construct validity is ensuring that the data collection methods are appropriate for the type of data being gathered. Yin suggests three tactics to ensure construct validity: 1) use multiple sources of evidence when collecting data; 2) establish chain of evidence; and 3) have key informants review draft case study reports (Yin, 2003, p. 35).

To ensure construct validity in data collection (Yin, 2003, p. 34), I implemented multiple methods including field observation, document studies, key informants, and interviews. To establish a chain of evidence, I am taking care as I report the results, to present a logical, step-by-step explanation of the development of theory from the data. Also, all key informants agreed to review the draft case study report; two agreed to review the report as many times is necessary during the phase of conclusion drawing and verification. All participants asked for a copy of the final report.

#### External Validity

External validity is establishing the theory to which the study's findings can be generalized. However, case studies are not measured like other types of survey research that use the results from a sample to generalize about the population. Instead, especially in a single case study, the results of the study are used to generalize to broader theory. In this case, the broad theories that introduce this case study—information and disaster concepts—are domains to which I may later generalize the results (Yin, 2003, p. 37).

### *Reliability*

Data reliability is ensuring that subsequent research employing the same methods will replicate the results. To increase the reliability of the inductive content analysis, two other researchers, as mentioned earlier, who have experience using the content analysis method, reviewed transcribed text from five participant interviews and assigned codes I created for the data. This reproducibility, often called intercoder reliability, is a test to confirm that a “research procedure is reliable when it responds to the same phenomena in the same way regardless of the circumstances of its implementation” (Krippendorff, 2004, p. 211). Intercoder reliability, in this case, is tested using Krippendorff’s alpha, a test that divides the number of observed disagreements (in applied codes) by the expected agreement to produce the desired agreement, the at least 80% agreement that is considered to be apt for this type of study (p. 242). The 92% agreement of codes in this case substantiates that the codes are reproducible and therefore can be used to yield reliable results.

### *Summary*

In order to observe and report how middle-income residents cope with the lack of information during recovery from disaster, I designed a descriptive case study in the natural setting of the community of Slidell, Louisiana. Sources of the data collected are historical, public and personal documents, information from key informants, notes from field observation, and transcribed text of semi-structured interviews. Validity was ensured by the triangulation of these sources while reliability was ensured by repeated review of assigned codes and feedback from participants. Three groups of participants provided information for this study: residents,

key informants, and supporters. Each group was selected purposefully, based on pre-determined criteria to enhance the quality of the study (Table 9).

#### Endnotes

<sup>1</sup> The emergent format is a method of allowing the research design to emerge through a “process of critical reflection during the process of engaging in the research.” The design is “shaped by the researcher’s engagement with the broad scene of research under study (Schostak, 2010)”

<sup>2</sup> Phenomenology is method of studying “the appearance of things...or the ways we experience things, thus the meanings things have in our experience” (Smith, 2008).

<sup>3</sup> Ethnography is a method of studying the “cultural characteristics of a group of people” and a description of “cultural scenes” (Johnson & Christensen, 2004).

<sup>4</sup> The 24-mile long Lake Pontchartrain Causeway is longest over-water highway in the world.” It connects Lancombe on the North Shore (St. Tammany Parish) to Metarie (a suburb of New Orleans in Jefferson Parish) (Johnson, Trotter, & Zeigler, 2003). It was the only route to New Orleans from August 29, 2005 until October 14, 2005 when the Twin Spans reopened.

## CHAPTER 4

### ANALYSIS

#### The Post-Disaster Situational Small World

After enjoying the sights of Slidell on eight occasions pre-Katrina, entry into the city post-Katrina overwhelmed me. The physical structure of the pristine community I knew, was gone. As I drove through, then walked around the barren areas along the shore, I felt irreverent, like I was stepping on someone's grave. Worse for me though, was seeing, smelling and touching—strolling through the mutilated, mold-infested remnants of peoples' lives—toys, clothing, lamps, linens, computers, refrigerators, televisions, furniture—scattered and/or stacked along the streets. The air was thick with the stench of waste. Apparently, garbage removal services had not yet been restored.

I had been saddened by photos and videos of the devastation in other areas on television. However, the in-person experience was more difficult. It was almost as though the losses were mine and I was just facing them—similar to the difference between knowing someone died and actually viewing the corpse.

Although only one person reportedly died in Slidell from Katrina, the upheaval of lives seemed to be a death of sorts—a death of what has always been or what felt normal; death of reminders of accomplishments, death of immediate hopes and plans. The people of Slidell were grieving their losses and the losses of those they loved, and I grieved with them. In most cases, residents were somber, quietly amenable, still in disbelief of the tragedy that had targeted their community. Some expressed hopelessness; others seemed sad, but optimistic. I was filled with compassion for these residents who were rummaging through piles of household goods in front



of their gutted homes. Some told me how they “rode out the storm;” others told me how they left and returned during the first week, against the mayor’s mandate. I began to feel more inclined to study those who had stayed, or returned to endure their situations without the community’s information infrastructure restored. I decided then that my study would emphasize post- disaster information behavior, the actions and/or attitudes that affect encountering, needing, finding, choosing, or using of information to survive the aftermath of disaster (Slagle-Pipes & Knudson, 2006). Many factors, revealed in this chapter, seem to shape the survivors’ attitudes about, and actions related to, information.



*Figure 21.* Thousands of downed trees in Slidell September 13, 2005. Aerial photo from <http://www.noaa.gov>. Photographer is Lieutenant Commander Mark Moran, NOAA Corps, NMAO/AOC.

#### Observations of the Landscape and Activities

[The] people [of Slidell] were using shopping carts, strollers and dollies to carry the possessions they wanted to save. Evacuees were not allowed to drive back through

police roadblocks, and were forced to walk miles if they wanted to see their homes (*Mobile Register*, September 1, 2005).

When I arrived on September 14, 2005,<sup>1</sup> the waters had receded, revealing the extent of the damage. Katrina had crushed hundreds of kilometers of Slidell's greenery (Figure 21), along with thousands of private dwellings and businesses. Some businesses were swept away, their properties only identifiable by their signs that stood unharmed (Figure 22). Other businesses stayed intact, but their signs had been torn out of the ground, bent and battered by the wind (Figure 23). Winds and waters also damaged many public buildings (Figure 24 and 24).



*Figure 22.* Property where Northwestern Mutual Life Insurance Agency stood. Photo taken by Tisha Slagle, September 15, 2005.



Figure 23. Hibernia Bank, untouched except for prostrate sign. Photo taken by Tisha Slagle, September 15, 2005.



Figure 24. Flood-damaged debris from the interior of the Slidell Police Station. From <http://www.slidell.la.us>.



*Figure 25.* Flood-damaged debris removed from building and piled in front of Slidell's Fire Station. From <http://www.slidell.la.us>.

Jarrold drove me through neighborhoods from north of Gause Boulevard to the North Shore of Lake Ponchartrain. I noted three broad types, with varied intensities, of damage to property: 1) wind damage, 2) wind and water damage, and 3) flooding devastation (Figure 26). The differences in what is needed to repair the different types of damage influenced the types of information needed.

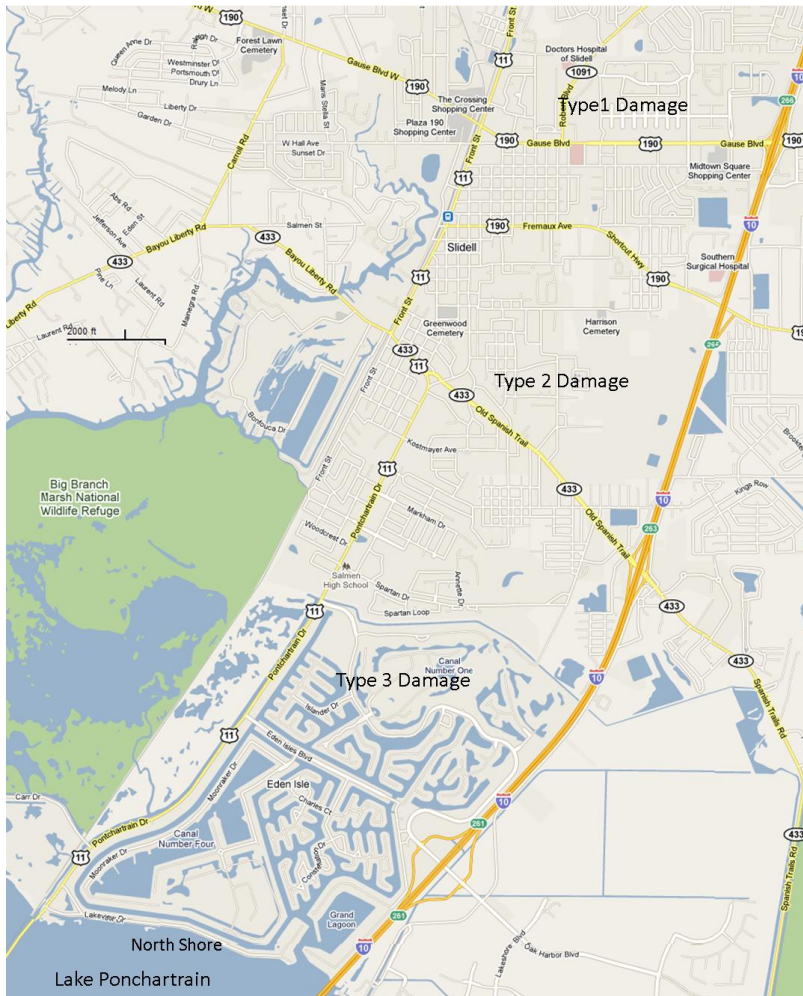


Figure 26. Map of Slidell labeled to indicate three types of damage across the community. Map adapted from Google Maps, 2009, with labels to indicate the approximate (overlapping) areas of damage across the community.

### *Wind Damage*

In northern to central Slidell, from a little north of Gause Boulevard to Fremeaux Avenue, many residents sustained minor to major wind damage to the exterior of their homes. Some lost a few belongings with no more than a few inches of water, if any, entering their homes. Wind-driven debris and falling trees/utility poles had damaged rooftops, fences, outdoor furniture, and/or utility sheds. Lawns were laden with fallen trees and although the curb-level flood waters had receded, dangling power lines, some coiled up in the streets, still impeded

entrance into many neighborhoods. Twisted tree roots protruded through broken chunks of pavement—many with their trunks snapped and resting in the clefts of the rooftops they had crushed (Figure 27). Huge stumps and freshly-cut branches cluttered the curbs. Electricity had been restored the day before, but residents still did not have phone, cable television, or Internet service. I spoke with five residents with Type 1 damage who stayed through the storm or evacuated and returned to their homes within a week. Residents in this area were reconnected to electricity in 1-3 weeks; mail service in 3 weeks; and television/internet in 2-3 months (personal conversation, Ben Morris, October 28, 2005).



*Figure 27.* Wind damage uprooted a pine tree and slammed it across the roof of a home in central Slidell. Photo taken by Tisha Slagle, September 16, 2005.

#### *Wind and Water Damage*

In central to southern Slidell, residents reported the onslaught of several feet of flood waters that receded within a few days. An estimated 75 percent of Slidell residents had water in their homes. These residents also sustained wind damage to rooftops, fences, outdoor

furniture, utility sheds, garage doors, screen doors and/or siding, along with inside framework (floors, walls), plumbing pipes, electrical wires, most or all household goods, furnishings, and automobiles. Lawns in these areas were also laden with fallen trees and dangling power lines and yards littered with twisted tree roots, huge stumps, piles of trash, and freshly cut wood. Residents were busy hurling mud-covered items atop giant, jagged heaps of molded furniture, appliances, clothing, and toys (Figure 28). Electricity had not been restored and residents had no phone, cable television, or Internet services.



*Figure 28.* Water damage ruined the contents of this home in south-central Slidell. Photo taken by Tisha Slagle, September 16, 2005.

### *Flooding Devastation*

In southern Slidell, along Lake Ponchartrain Drive, in Eden Isles, as well as near and along the north shore of Lake Ponchartrain, residents reported total submersion in flood waters. In many cases, the destruction included entire homes (Figure 29), but at least, all household goods, furnishings, and many automobiles. On Lake Ponchartrain Drive, warped scaffolds

exposed remnants of apartments' kitchens, bedrooms, and dens. Massive mountains of rubble crowded the shoulders of the narrowed roads. Because the storm surge was over the rooftops some of these areas, the Slidell police, fire fighters, emergency workers, and volunteers had to use boats to rescue approximately 350 people from rooftops. A few people were sifting through the wet wreckage that covered their yards and the area where their homes once stood.



*Figure 29.* Flooding destroyed this home on Pontchartrain Drive in southern Slidell. Photo taken by Tisha Slagle, September 17, 2005.

### Introduction to the Analysis

As I observed and studied all my data, I determined, for this report, to focus on the intangible situations, instigated by the Katrina-induced tangible situations—physical damage of personal, business, and public property on August 29, 2005. The report examines the results of approximately the first three weeks after the storm (August 29-September 18), particularly how I found Slidell September 14-18. My insights, with the data I have and the limitations I have expressed, are summarized in a model of the situational small world and its relationships within and outside the small world to answer the research question.



How may Elfreida Chatman's small world concepts of isolated communities provide insights into the post-disaster information behaviors of the middle-income residents in post-Katrina Slidell, Louisiana?

The results of my observations and analysis of interviews and documents are introduced with a sequence of post-disaster situations,<sup>2</sup> beginning with the explanation of the collapse of the community's infrastructure. The discussion defines the concept of community in the context of this analysis, provides an explanation of the collapse, as well as aspects of the collapse and the resulting situations. Also explained are the relationships among the situations that develop into the post-disaster situational small world. Situations and relationships are presented with an explanation and/or diagram/table to describe the situation and/or relationship. The final result is a model that depicts the major situations and relationships during the first three weeks post-Katrina.<sup>3</sup>

#### Community Infrastructure Collapse

So long as the ship rides out the storm, so long as the city resists the earth-shocks, so long as the levees hold, there is no disaster. It is the collapse of the cultural protections that constitutes the disaster proper" (Carr, 1932).

Katrina swept through Slidell and caused the collapse of the community's critical infrastructure by destroying or blocking access to the community's cultural protections—its critical infrastructure. Like the nation's critical infrastructure defined by U.S. PATRIOT Act Section 1016, a community's critical infrastructure provides security, economic security, public health, and/or safety to its residents.

Civil infrastructures are vital elements of a nation's physical well-being and quality of life because modern economies rely on the services these systems provide to move goods, people, and information safely and reliably (Little, 2005).

When the community’s infrastructure collapsed, critical systems<sup>4</sup> (Table 10) were compromised, including ICT systems, “electronic information and communication systems, and the information contained in these systems” as well as the community’s social system, its network of communications—informational exchanges—and bonds, the relationships that convey the information.

Table 10

*Critical Infrastructures Systems*

Infrastructure Sector (system type)	Service Systems that Become Unavailable
Agriculture	Agricultural production/ food systems from farm to table <sup>5</sup>
Banking and finance	Physical/electronic services that provide residents access and control of deposits, payments, credit, debit, savings, investments
Information and Communications and Technology (ICT) <sup>6</sup>	Service providers for wireline, wireless, satellite, cable, radio, television, Internet
Emergency services	Law enforcement, fire service, emergency medical service, search and rescue, emergency management
Energy	production, refining, storage, and distribution of oil and gas, and electric power (except for commercial nuclear power facilities);
Public health	Hospitals, doctors, pharmacies
Transportation	Traffic control, highway, rail, airway, water
Water	Water, sewage

The community’s infrastructure collapse immediately disrupts information, thwarting cyber and face-to-face communications. The abrupt inability to access and/or apply information creates isolation and an information poverty spell, as well as change to residents’ needs, information needs, social behaviors, and information behaviors.

*Information Disruption*

As if the trauma of the disaster were not enough, “the scarcity of information...[and]...the inability to communicate...places additional strain on the community”

(Drabek & McEntire, 2003). Communicational bonds are severed by information disruption, the sudden scarcity and/or loss of information that supports the communications in an intact social system. Information disruption changes how and where people get information to help them survive. It breaches their life continuums, their “understanding the past, anticipating and planning for the future, and making big and small decisions that link past and future together in the present” (Gordon, 2002, p. 655). Information disruption impedes information flow and destroys autonomy—the “self-steering and self-control” that is necessary to maintain any information system, whether it be in an individual, a society, or a community. Autonomy ensures information flow from the outside world, safeguards information from the past, and protects internal information—the knowledge from memories, experiences, ideas, and ideals (Deutsch, 1966, p. 50).

The severed bonds among those in the disaster-struck community create intra-community information disruption, information disruption among those in the community. Intra-community information disruption forces survivors within a community to find information with alternate, possibly unfamiliar means. Inter-community information disruption occurs between the disaster-struck community and the intact social systems outside the disaster-struck community.

The result of intra- and inter-community information disruption is immediate isolation.<sup>7</sup> Residents are suddenly isolated from other residents who stayed through the disaster, from residents who evacuated before the disaster; as well from friends, families, and others outside the disaster-struck community.

## *Isolation*

Typically, in a post-hurricane situation, flooding creates physical barriers—winds may blow down utility poles and cell towers, but ultimately the billions of tons of water sweeping through a community separate people from each other, from emergency responders, from their homes, from ICT. After the water recedes, neighborhoods are still impassable. Entry into and exit from neighborhoods is difficult, if not impossible. Neighborhoods disappear beneath debris from destroyed homes and other buildings. Roadways are undistinguishable beneath fallen trees, branches, and leaves; downed signs, utility poles, and coils of dangling wires. Often, police barricades are the only indications of the city's limits, blocking entries and exits into and from roadways. Washed-away bridges prevent entry and exit by water.

Virtual barriers isolate residents by preventing electronic communications within the community and between the community and the outside world. Signals are blocked because of damage to ICT structures, including downed cell towers, downed telephone lines, broken/burned/submerged Internet/television cables, submerged backup generators, and electrical outages.

Physical barriers and virtual barriers create a line of separation between those in the disaster area and those outside the area—the disaster event horizon (Gordon, 2002) marks the entry into the disaster impact zone, the brink of a “black hole”—as Mayor Morris called it. Gordon applied the physics concept of the event horizon—the term used to describe the ring of light that appears to surround the entrance to a black hole—the area thought to be where an ancient star collapsed—an area so dense that anything that passes across the event horizon is sucked into the never-ending nothingness the black hole represents. The event horizon is

sometimes called the “point of no return,” a one-way entrance with no exit (Bunn, 2006). So, when applied to the perimeter of a disaster area, the implication is clear. The disaster event horizon represents the physical and virtual barriers preventing the disaster-struck community from sending information to, and receiving information from, the intact communities in the outside world.

### *Information Poverty Spell*

Until the barriers could be removed, the information disruption and isolation would change the residents’ informational priorities and in so-doing change their interactions, their attempts to interact, and where and with whom they interacted. How Slidell residents adapted after Katrina was dependent upon these interactions within their community because people must have information to meet their daily routines<sup>8</sup> (Rodriguez, Trainor, & Quarantelli, 2006). Interruption to their daily routine because of physical or virtual barriers transforms the post-disaster community into what Prince (1920) describes as a walking corpse. After the Mont Blanc exploded at Halifax in 1917, he said “the city ceased to be a city, its citizens a mass of unorganized units—[were] seeking safety, shelter, covering, and bread” (p. 31), as well as the information they needed to help them meet these basic human needs. Prince was describing post-disaster information behaviors,<sup>9</sup> the Halifax survivors were seeking information that would lead them to “safety, shelter, covering, and bread” (p. 31). When information becomes scarce, inaccessible, and/or inapplicable for a prolonged period, the disaster survivors may be in an information poverty spell, with temporary circumstances similar to a socioeconomic poverty spell, except that the information poverty spell is characterized by lack and loss of information, instead of the lack and loss of financial support (Slagle-Pipes & Knudson, 2006). Socioeconomic

poverty exists where there is “severe deprivation of basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education, and information.” (Bane, M.J. & Ellwood, D. T., 1983). Information poverty may co-exist with socioeconomic poverty. However, in the case of Slidell, where the residents were well above the poverty level, there only existed severe deprivation of information needed to meet and manage basic human needs.

### *Needs Regression*

The community infrastructure collapse left more than half of Slidell’s residents without the ability to meet their basic human needs, particularly their three basic survival needs—needs that Abraham Maslow (1954) identified as the lowest-level of human needs—physiological,<sup>10</sup> safety<sup>11</sup> and social<sup>12</sup> needs—basic necessities, such as food, water, shelter, and loved ones. Maslow called these needs deficiency needs. He believed that humans must have these needs met in order to survive physically and emotionally. He believed that a lower need must be met before the next higher need can be met. Ordinarily residents of Slidell, a community in St. Tammany Parish, the wealthiest parish in Louisiana, had no trouble meeting their basic needs. The residents I interviewed had the financial means to maintain health, safety, and frequent communications with family and friends, inside and outside the community. They were all educated and by all evidence, contributing members of their community—qualities indicating that they had met their needs for self-esteem.<sup>13</sup> According to their activities pre-disaster, their focus was on what Maslow called growth needs, self-actualization, the needs to learn, explore, and improve.<sup>14</sup>

Maslow compared his hierarchical theory of needs to homeostasis, a state of stability where the longing or hunger for something has been satisfied. Perhaps homeostasis is like a

physiological and psychological thermostat that humans, as well as other animals, possess to let them know when they are in need of something and when they are satiated, or homeostatic. Without the critical infrastructure, Slidell residents were not homeostatic physiologically or socially. They regressed from pursuing ways to meet their growth needs to ways to meet their physiological, safety, and social (love and belonging) needs.

A phenomenon I noted in this study however, was that social needs seemed to be as important to residents as physiological and safety needs—perhaps because the residents had already established social attachments. Maslow said that physiological needs must be met before safety needs are addressed, and that safety needs must be met before social needs are addressed. Perhaps this hierarchical order applies to people who have not yet established social attachments. Perhaps after attachments—relationships—are already formed, they become more important than before they are formed. Established relationships with family and friends may rank higher than the need to establish relationships. It seemed that the meeting of physiological and safety needs for residents' families was as vital to residents as the meeting of physiological and safety needs for themselves.

However, Maslow's hierarchy of physiological before safety needs may have application for residents in the post-disaster community. For instance, if a household's food is spoiled, water is unsafe to drink, and the home is without air conditioning in 90+ degree weather, it is possible that the residents may set aside safety needs temporarily until their comfort needs are met. They may risk safety to wade through varmint-infested waters to find food and potable (drinkable) water, and/or a generator to power a fan, to ensure the comfort and safety of themselves and those they love. If however, if after they, and those they love, are fed, hydrated,

and comfortable, they become more cognizant of dangerous situations and take measures to protect themselves. However, it was obvious that the need to boost self-esteem or read a good book meant little to residents who were searching for signs to direct them to food and water stations<sup>15</sup> along sidewalks, dangerously strewn with hot electrical cables and puddles of lingering flood waters. During pre-disaster times when residents were healthy, safe, and confident that loved ones were healthy and safe, they were interested in focusing on the higher level needs of self-actualization. However, the collapse of the community’s infrastructure’s systems forced Slidell residents into a needs regression—a situation where post-disaster residents’ need for growth reverts back their need to ensure survival for themselves and those they love (Table 11).

Table 11  
*Needs Regression: Survival Needs and Collapsed System(s) Responsible*

Need Level	Survival Need	System
Physiological	Fresh food products	Agriculture/Transportation
	Food purchases	Banking and Finance
	Household Repair	Emergency services
	Medical treatment, supplies, medicine, water testing	Transportation
	Use of refrigerators, fans, air conditioning, lights	Energy
	Drinkable water, working sewers, sanitation	Public Health
Safety	Rescue	Emergency Services
	Fire extinguishing	
	Home Security	
	Travel/Fuel	Transportation/Energy
Social	Safety of and contact with loved ones and/or pets	Emergency services/ICT



### *Information Needs Regression*

An important principle to be considered is that people will not tolerate being without the information they need. In the absence of accurate, trustworthy information they will actively seek it out through their own resources (Gordon, 2010).

Post-disaster information disruption limits disaster survivors' access to information<sup>16</sup> that would help them meet their survival needs—and the “*freedom to investigate and seek for information*” [italics mine] is a prerequisite for the satisfaction of all other needs. The “danger to these [prerequisites] is reacted to almost as if it were a direct danger to the basic needs themselves”(1954, p. 92). In post-Katrina Slidell, survival information needs<sup>17</sup> included the location of, condition of, and/or means—access to a source—to determine the location of and/or condition of what is needed (Slagle-Pipes & Knudson, 2006) (Table 12).

Survival information needs also included the location and credibility of an information source.<sup>18</sup> The credibility of human information sources is based on the survivors' opinions of the information medium and/or the social type of the human information provider. I identified three predominant social types (Table 13) in Slidell that were quite similar to social types Chatman identified (1999).

Table 12

*Examples of Information Needs in Slidell*

Survival Need	Survival Information Needs		
	Location	Condition	Means
Food and water	Where is the nearest open grocery store? Where is the Red Cross Distribution Center stationed?	Is the water running? Is it tainted? When will it be safe?	Does my Internet work? Are phones (hard line and/or cell working yet? If not, how can I contact someone to tell me? Are the roads clear to drive? Do I have transportation?
Family, friends, and/or pets	Where are they?	Are they safe, sheltered, fed, alive, injured?	
Protection	Where are the emergency shelters? Where are the emergency roof tarps provided?	Is my house damaged or destroyed? Is it accessible?	

Table 13

*Social Types Identified in This Study*

Insiders	Stayers	The residents and/or local responders who stayed in their homes through the storm are called stayers in this report.
	Returners	Those who left on their own or were evacuated—rescued and sheltered during the disaster, but returned soon afterward to habitable homes (homes that could be repaired enough to supply shelter), are called returners in this report.
	Evacuators/ Evacuees	For simplicity and to differentiate among the types of survivors identified in this study, those who left and did not return in the first three weeks are evacuators, and those who were evacuated and/or displaced to shelters <sup>19</sup> or other cities are evacuees.
Legitimates	For simplicity, in this study, the social types Chatman identified as legitimate others, outsiders accepted by insiders, are called legitimates and include family and friends who lived outside disaster-prone areas, most non-local responders, <sup>20</sup> local news media, volunteers, and insiders they had not met before (other residents).	
Outsiders	Some representatives of the federal government, national news media, police, and vendors who took advantage of residents' desperate conditions <sup>21</sup>	

### *Information as the Utmost Human Need*

Information from insiders and legitimates was generally accepted as accurate, whereas, information from outsiders may have been suspect and subject to scrutiny, but often solicited anyway in the desperation of the post-disaster situation. Just as human necessities are scarce, information is scarce, inaccessible, and/or inapplicable. Being able to access and apply information may determine whether survivors can acquire the necessities to survive. So, not only is information fundamental for the satisfaction of human needs (Maslow, 1943), information is itself a need that, when acquired, changes human perception by relieving anxiety, fulfilling a goal, realizing another need, or actualizing a concept (Case, 2002). So, If humans consider investigating and seeking information a freedom, then the loss of that freedom exacerbates the frustration of information disruption in the post-disaster environment. Not only are the survivors deprived of what they believe is an inherent right, they are deprived of what they need to survive. Information to survive—survival information—then may be the utmost human need. So, it is reasonable that before survivors can have food and drinkable water, they must have information that reveals how and where to get food and drinkable water. Before they can live in a safe place, they must have information that reveals how and what they need to fix their homes, or the location of attainable shelter. Before they can help or receive support from their family and friends—they must have information that reveals where their family and friends are; and how their family and friends are doing.

If someone, for instance is hungry, then the applicable survival information might reveal the location of FEMA's food distribution center. If someone, for instance needs a place to stay until the water recedes from their home, the applicable survival information might reveal the

location of a Red Cross shelter. If someone, for instance loses a pet, the applicable survival information might reveal the location of the nearest Noah’s Wish.<sup>22</sup> It seems logical then, that information is a requisite for meeting every level of human need. This possibility may mean that information is also a human need—and in this case a survival need (Slagle-Pipes & Knudson, 2006). As such, three types<sup>23</sup> of survival information (as information needs), (Table 14) correspond with the three survival needs in a revised hierarchy of needs (Figure 30). Information enters the hierarchy before each level of human need and becomes itself a deficiency need, a need that must be met before the need above it can be addressed.

Table 14

*Types of Survival Information*

Survival Need	Survival Information Need	Information, information source(s), and/or meta-sources regarding anything to:
Physiological	Subsistence	keep the body healthy and alive—such as money to purchase/maintain subsistence needs, as well as food, water, shelter (housing), sleep, activity, clothing, household cleaners
Safety and Security	Protection	ensure against injury or threats to safety (from other people, disease, neglect, or accidents)
Social	Attachment	maintain emotional bonds with family, friends, social groups (churches, clubs, etc.), and/or pets; often meeting others’ survival needs

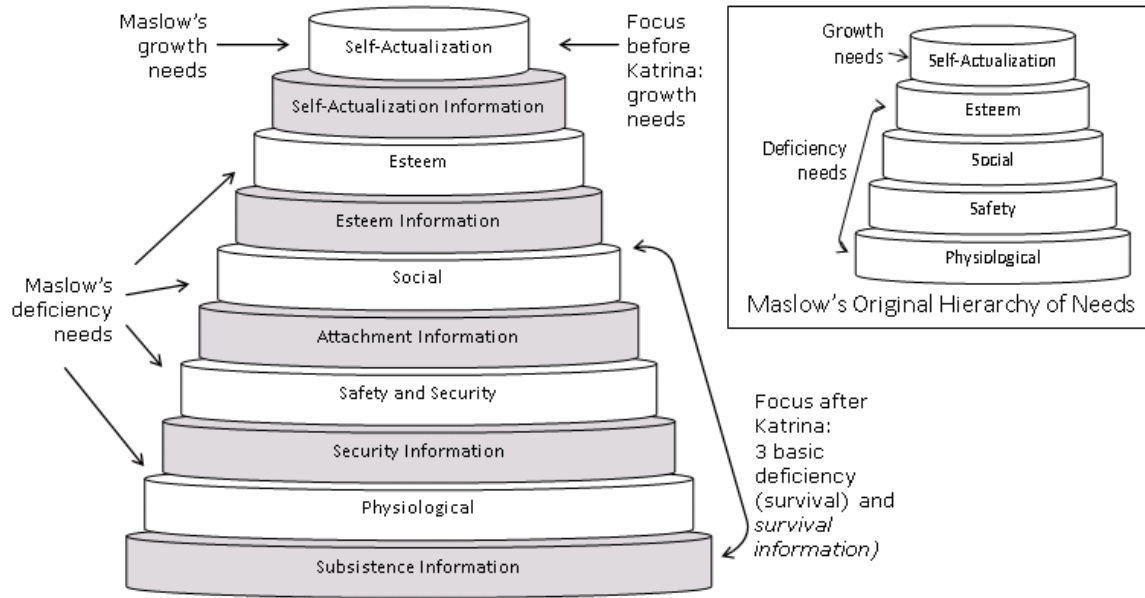


Figure 30. Adapted from Slagle-Pipes and Knudson's version (2006) of Maslow's (1954) original hierarchy of needs.

So it would seem that information to meet regressed needs also reverts the types of information, back from self-actualizing and esteem information to survival information—subsistence information, protection information, and attachment information. So, this information needs regression not only affects the types of information needed, but also affects information behaviors—behaviors that demonstrate how and why information is selected and used.

### *Situational Social Norms and Situational Information Behavior*

So, the community infrastructure collapse results in intra- and inter-community information disruption, isolation, an information poverty spell, needs regression, and information needs regression—all observable changes in the residents' lives. These changes in their life situations necessitated changes in their behaviors to accommodate the disaster-initiated life situations. Consequently, they adopted situational behaviors, and in so doing, had to alter their thinking—their beliefs<sup>24</sup> about traditionally appropriate behaviors—because an

altered situation requires altered beliefs to justify altered behaviors. Once they, as a community, adopted alternate behaviors, the alternate behaviors became the norm—social norms that were now appropriate for their post-disaster situation. These situational social norms evolved from the alternate methods and alternate means now required to meet post-disaster information needs—their situational information behavior. Thus, situational social norms, examined in this study, are constructed by situational information behaviors.

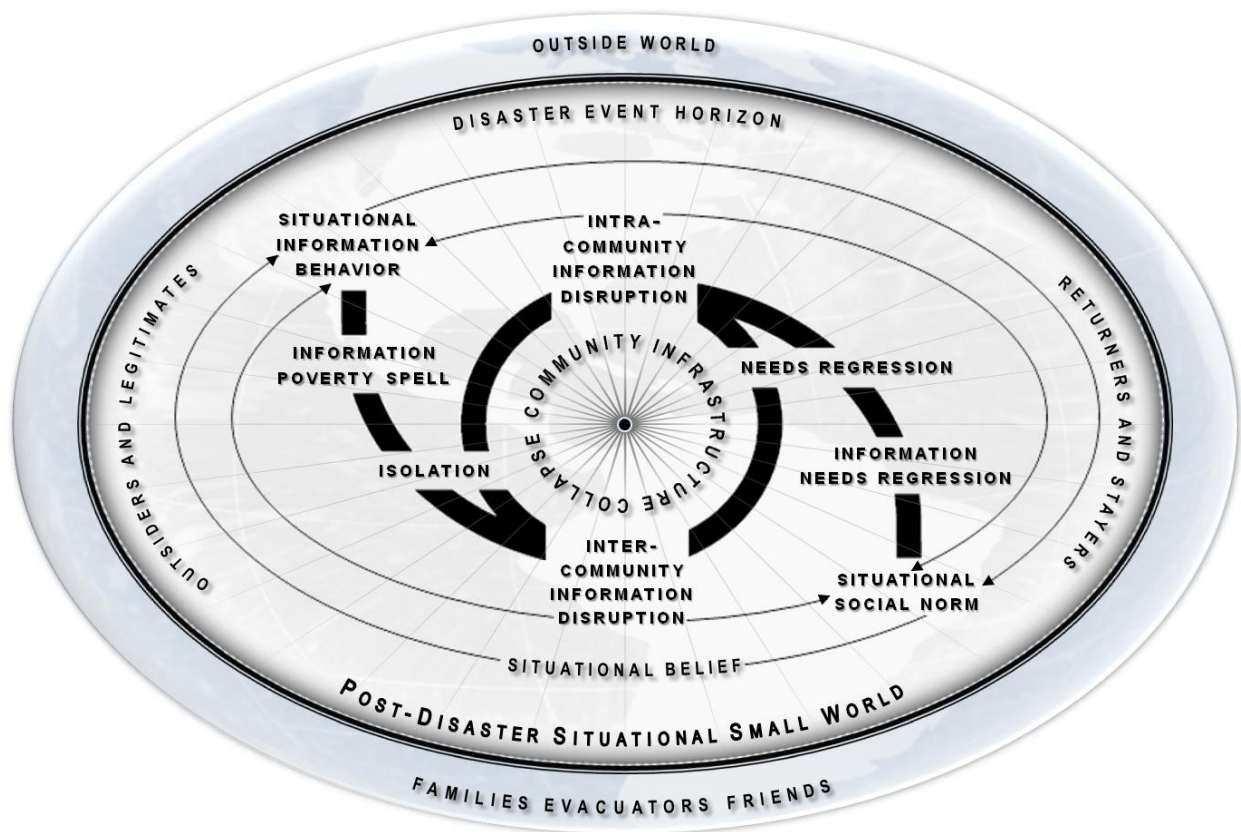


Figure 31. Model of the post-disaster situational small world.

So, the residents of Slidell had to change to survive. They had to change what they did and how they thought. Not all ordinary behaviors and beliefs could apply in the post-disaster community. Residents trusted information from most insiders, but more than half the people in Slidell after Katrina were from the outside—temporary workers and volunteers. Consequently

many outsiders in the case of post-Katrina Slidell were trusted, unlike most outsiders in Chatman's small world societies. Post-Katrina survivors trusted strangers to survive. The introduction to this post-disaster situational small world (Figure 31), is described as I encountered it in the third week after Katrina hit Slidell.

#### What They Did and Why

We have rediscovered that from weakness comes strength, from poverty comes wealth, and from suffering comes assurance and power. And most of us have learned this through the power of community. For in walking this path of recovery and restoration, we've realized that holding hands is not just an outward sign of love's first blush. It is a reciprocal invitation of fidelity, accountability and respect (O'Connor, 2006).

Many researchers have studied behaviors typical of disaster survivors (Barton, 1970; Carr, 1932; Comfort & Haase, 2006; Drabek, 1986; Drabek & McEntire, 2003; Gordon, 2002; Prince, 1920; Rodriguez, Trainor, & Quarantelli, 2006). Post-disaster survivors' behaviors and beliefs that affect information behaviors may seem somewhat unconventional in the 21<sup>st</sup> century. The atmosphere I encountered in Slidell reminded me of growing up in the 1960s when people sat out on their porch swings, acknowledged passer-bys by name, and visited in the street. The post-disaster situation forced residents into a post-disaster mode, so to speak, where three major categories of social behaviors affected information behaviors: trusting strangers, makeshift messaging, and disregarding the law. These activities were common and accepted methods to provide or receive/request information in the post-disaster situation. Their matter-of-fact description of their behaviors indicated to me that these behaviors were understood and accepted by residents and law enforcers in their post-disaster situational small world (Table 15).

Table 15

*Post-Katrina Situational Information Behaviors in Slidell*

Situational Social Norm	Specific Behavior	Belief	Pre-disaster Behaviors
Trusting Strangers	Sharing personal feelings and information with strangers <sup>25</sup>	Strangers can be trusted with my personal feelings and information because they are here to help.	Sharing personal feelings and experiences with a closer circle of friends or trusted officials (responders or trusted service providers) when requesting a service
	Approaching strangers for information	Information from strangers is reliable because they are here to help or in the same situation.	Using phone/cell phone to call known or verifiable contacts
	Accepting information from strangers		Verifying information from little-known or unknown sources
Makeshift Messaging	Using hand-made signage	Creating hand-made signs	Contracting professionals to create publicly-viewed signs that carry important messages
		Looking for and adhering to information on hand-made signs	Verifying credibility or only using information from known sources
	Spray-painting messages on property	Graffiti is an acceptable way to get/send important information.	Using phone or email to contact family and service providers or insurance adjusters directly
	Neighborhood networking	Creating message trails is a workable way to get/send information.	Phoning, emailing, checking online, or watching television



Table 15

*Post-Katrina Situational Information Behaviors in Slidell*

Situational Social Norm	Specific Behavior	Belief	Pre-disaster Behaviors
Disregarding the law	Disobeying city officials	Staying against orders	Adhering to city official mandates
		Returning against orders	
		Taking the law into their own hands	Police do not have the resources to protect us and/or our homes.

*Trusting Strangers*

Although I was a stranger, Slidell residents invited me into their lives, inside what was left of their homes, offered me water, and/or provided me a place to sit when available. This willingness to share information with a stranger was just one way I found that the residents trusted little-known or unknown sources that I observed. Their trust is not to be confused with naivety. Rather, their trust was an honest openness to outsiders who had volunteered their help to a community suffering dire circumstances—they trusted because they believed that outsiders were there to help. Other behaviors that indicated their trust of little-known or

unknown sources include approaching strangers for help and hitchhiking to get or send information.

### Sharing Personal Feelings and Information With Strangers

When I first saw Mr. Lennie Forstall (Figure 32), he was working in his driveway, cleaning up debris. I introduced myself, and my son Jarrod, and explained what I was doing. The first thing he said was, “Come on in. Let me get you some water. There’s not much breeze out here today.” I know that Slidell is a friendly community—brimming with southern hospitality. However, Mr. Forstall’s invitation was more than hospitable. He was willing to share his life’s experiences—his personal tragedies and triumphs of the past, and of course, his experience the day of the storm. He and his cat, Stella Rose, stayed upstairs in the walk-in closet in his bedroom.

I threw a blanket down and had my flash light, a radio, and my cat was with me and we just stayed there and had some water and I’d get up and go watch it, watch the wind. I could see those trees bending and hear the wind hollering. I’d go by the door listening and all of a sudden you’d get a gust—and Stella Rose would run back in [to the closet]. I was kind of fearful of a tornado, you know.



*Figure 32.* Mr. Lennie Forstall is listening to my questions while we were seated at a custom patio table adorned with a statue of the LSU tiger. Photo taken by Jarrod Knudson, September 18, 2005.

Mr. Forstall showed us every room of his house, and its damage, but made sure we knew that other residents had lost so much more than he had. His biggest concern seemed to be his family photos—he had several albums laid out on the porch to dry, trying to salvage memories of his wife he had lost four years before, and early photos of his children. By the time we left a few hours later, I felt that I had known this delightful gentleman for many years. He shared his passion for LSU, his alma mater, and baseball—he admitted that he bleeds purple and gold (LSU's school colors). I know about his love for his community, his family, his close friendships, his favorite car, and his affinity for Saint Augustine grass. Mr. Forstall's willingness to share information was not uncommon for Slidell residents. Many others shared personal life stories, and details about their experiences with hurricanes. All were open and amiable.

Although residents often need to share personal information with responders (police or other rescuers), they also shared personal information with service providers. Because Hibernia Bank was the first bank open in Slidell the week after Katrina, Carmen, as a banker (financial service provider) at Hibernia, interacted with many people new to the bank. Consequently she heard more personal stories after Katrina than she ever had before—personal stories unrelated to their financial needs. She relayed that one customer told her about her harrowing experiences during the storm. Carmen said that a lady she never met sat down and told her that:

The water kept rising and rising and they had a neighbor that lived in a two-story house that had stayed, and so, she said they put on the life vests and swam across the street. She said they barely made it the water was rushing so hard and the dog was swimming across the street too. They stayed in the house for a few days until rescue people came and they [the rescuers] said, 'I'm sorry, you know, you can't take your dog.' And she said the dog followed them for a long time in the boat and then he just turned around, he had swam after them in the boat. She said her son was just crying, reaching out for him.

She said when they came home like two or three weeks later, the dog was sitting at their house. He was just sitting there, alive!

Carmen was not the only resident I interviewed who said others they did not know or hardly knew, had relayed their personal stories to them. The hurricane was a binding experience that built residents' trust in strangers,<sup>26</sup> during the time I visited in mid-September.

### Approaching Strangers to Get Information

Mrs. Betty Dossett, a 75-year-old retired schoolteacher matter-of-factly mentioned that she asked some people she hardly knew if she could “bum a ride to Baton Rouge” (81 miles west of Slidell) to use the phone. Although most who lived in Mrs. Dossett’s area of town (north of Gause Boulevard) had minimal damage, homes still had no phone service and streets were covered with downed power lines, broken branches, foliage, and mud. The roads out of her neighborhood were even more treacherous than how I found them when she trudged through three blocks of the debris on Thursday (September 1, 2005) in hopes of finding someone to help her find a working phone to call her 93-year-old friend’s daughter. She had picked up the 93-year-old Miss Velma because the retirement home where Miss Velma lived was evacuating all its residents. Miss Velma’s closest relative, her daughter, was in North Carolina. Mrs. Dossett explained:

They’ve got my name on a list out there at Azalea States [the retirement home], so they called me. I was trying to make chocolate chip cookies so she would have something to nibble on. They [the retirement home] called me and said ‘we’re leaving at two o’clock, you’ve got to come get her now’ and I said, you all first told me six o’clock. That would’ve given me a little time to get things ready. But they said come now and get her, so I went and got her. Two o’clock they shut the place down—and there we go.

So, from 2:00 pm Sunday, August 28 through Thursday, September 1, through the storm and the blackout, Mrs. Dossett was caring for an elderly lady that needed care “with all her

personal needs.” She was fearful for Miss Velma’s health in the heat, as well as for her own stamina. When she heard from some neighbors about some people down the street going to Opelousas (138 miles west of Slidell), she took the opportunity to get a ride to Baton Rouge where her niece lived and where she hoped would be a working phone. They agreed so she loaded up Miss Velma into a compact car with five other people she did not know and rode 81 miles to use the phone to call her friend’s daughter. Her niece had opened her home to eleven people that night. How did the schoolteacher return to Slidell? She sighed before she said,

So we made it fine and so I stayed up there with them until Monday—I stayed from Thursday to Monday morning. And two of them [the eleven guests] were coming down this way and I said, ‘well I want to hitch a ride back’ [to Slidell]!

Carmen also witnessed residents accepting information from strangers in the bank where she worked. When Carmen arrived at the bank each morning at 8:00, customers were already waiting on the sidewalk and lawn. When she unlocked the doors customers flooded the bank’s lobby, forming tumultuous waves of activity throughout the room. The only uniformity to the flow was the winding stream of check-cashers who were forming a line from the teller’s window to the door, outside, and down the street for several blocks. Carmen said she noticed bobbing heads of customers scrambling to beat everyone else out of the 25 coveted chairs in the lobby. The rest sank to the floor, and crowded in, crouched or cross-legged, knees up, to accommodate those squeezing in on either side of them. Carmen said she learned where to get bottled water and where the Meals Ready-to-Eat being supplied by FEMA were being distributed. She also overheard people asking questions of anyone regarding the condition or another area or when they thought FEMA would arrive.

Jarrold also began to feel comfortable approaching people he hardly knew for information. Without phone service, he could not call the Slidell's branch of the St. Tammany Parish Library to see when it would re-open. Haley had asked him every day for nine days if the library was open yet. She was accustomed to frequent trips to browse for books to read and movies to rent. Jarrod drove by the library several times, but had not seen any notice posted that indicated a specific date for reopening. Haley was quite bored after Katrina. Her friends had evacuated and some never returned. Her school was flooded. Her cable cartoons were inaccessible. She had read all her library books and after power was restored, had watched all her DVDs. The second day I was in Slidell, she asked about the library again just as I was gearing up<sup>27</sup> to take another tour of the city and look for residents for me to interview. Jarrod told Haley, "Hang on, I have an idea." He hopped over downed power lines and across the yard to a neighbor's door—neighbors he had lived by for two years, and never spoken to until a few days earlier when the neighbor had told him he had opened a gate and kept Jarrod's yard and home from severely flooding. Jarrod saw the neighbor outside and as though they were fast friends, told the neighbor Haley's dilemma and asked him if he knew when the library would re-open. Coincidentally, the neighbor's wife had just mentioned that the library was opening that day. Jarrod accepted that the neighbor's wife had somehow been able to find the information when Jarrod had attempted several times unsuccessfully.<sup>28</sup> So, we immediately drove to the library and while Haley browsed for books and movies, I interviewed two librarians, and then decided to get online. I did not stay online but a minute because I realized people were coming in to file their claims online with FEMA and check their email, something they had been unable to do until the library's opening that day. When I got up to allow someone else in my seat, I noticed a

stack of email address and phone lists beside the next computer. I introduced myself to the man with the list who I would later find called himself a “collector of email addresses.”

### *Makeshift Messaging*

In my opinion, what I am calling makeshift messaging is one of the most intriguing aspects of the disaster recovery. The sense of emergency among residents and strangers seemed to form a temporary community of people bound by the disaster event, sort of a makeshift messaging system for sharing needed information. Some of the ways the residents initiated makeshift messaging were through hand-made signage, spray-painting property, and neighborhood networking.

#### Using Hand-Made Signage

When I drove around Slidell during the first few minutes after I arrived, I was taken with the prevalence of hand-made signage along the roads and in parking lots. Without phones and email, they created their own means for communication by way of hand-made signs, often quickly made flyers, or planks of rough plywood or cardboard with messages scrawled on them in thick magic markers or paint. In my experience, hand-made signs were flyers nailed to telephone poles advertising garage sales, looking for lost pets, or pointing drivers to temporary parking during a graduation or other non-daily events.

#### Creating Hand-made Signs

Mr. John Massarini, who I met in the library, introduced me to his brand of makeshift messaging, creating hand-made signage of email addresses for his church members, as well as other helpful contact information for any residents in the community. Now that the library was open, stayers and returners could email other parishioners who had evacuated, helping them

meet their need to stay in touch with others—their social needs. Mr. Massarini would later write in the Episcopal Church Foundation’s Vestry Papers that one thing he and his church learned through Katrina was that “communication, food, housing and money are the most important items in the early days.” He facilitated communication with makeshift messaging.

Police, city workers, firefighters, military, and volunteer organizations had taped, nailed, or propped hand-drawn messages on cardboard or plywood along the curbs to direct residents regarding their survival needs. The Environmental Protection Agency painted “Boil Water” on plywood before nailing the signs to stakes at the entrance of neighborhoods to warn residents about contaminated water (Figure 33). Once water was safe again, the signs remained, but the message changed (Figure 34).

Hand-made signs began popping up beginning September 1, leading residents to food, water, and ice (Figure 35). Other signs were created to warn of possible dust inhalation (Figure 36). Others served dual purposes such as one posted in cardboard on the entrance to FEMA’s food, water, and ice station that directed residents to the location of blue roof tarps for repairing damaged rooftops (provided by FEMA’s Operation Blue Roof<sup>29</sup>) and the location of the Red Cross’s shelter (Figure 37). Businesses also created hand-made signage and some were advertisements for repair services (Figure 38). Many were warning signs to possible looters (Figure 39) and some using humor to give directions (Figure 40).

#### Looking for and Adhering to Information on Hand-Made Signs

Apparently people trusted the signage in spite of its unofficial, unattractive appearance. Neighborhood residents, even if unacquainted with each other previously, trusted those who made the signs! Many residents did not have time to analyze the validity of the messages on



the signs. They did not have time to search for other sources for comparison. They did not have the luxury of choices—oftentimes the signs were the only information they had regarding the location or condition of needed items. For many, the signs were the only form of information about the location or condition of their basic survival needs.



*Figure 33.* Plywood sign with BOIL WATER spray painted in yellow paint in the entrance to Eden Isles in southern Slidell. Photo taken by Tisha Slagle, September 19, 2005.



*Figure 34.* Plywood sign with WATER OK painted over a BOIL WATER warning. Photo from [www.fema.gov](http://www.fema.gov).



Figure 35. Cardboard sign with red spray-painted words: FOOD WATER ICE USE CURB LANE ONLY. Directed residents to FEMA-provided provisions. Photo taken by Tisha Slagle, September 19, 2005.



Figure 36. Plywood sign scored to align white spray painted words: PLEASE SLOW DUST BAD. Photo taken by Tisha Slagle, September 19, 2005.



Figure 37. Cardboard sign with red marker directions to locations for Blue Roof (tarps to cover roof damage) and Red Cross . Photo taken by Tisha Slagle, September 17, 2005.



Figure 38. Wood plank advertising house-gutting and carpet/sheet rock removal written in black spray paint. Photo taken by Tisha Slagle, September 19, 2005.



Figure 39. Resident propped white cardboard signs against the outside of his home with a warning to looters spray-painted in gray. Photo taken by Tisha Slagle, September 19, 2005.



Figure 40. A frustrated business-owner stated that residents kept mistaking his truck for FEMA so he spray-painted NOT FEMA on his truck, then propped a KEEP OUT message in spray paint on a plank that he propped up against debris in front of his business. Photo used with permission from photographer David Metreaux [http://www.davidmetreaux.com/images/news/katrina/large/katrina\\_041.jpg](http://www.davidmetreaux.com/images/news/katrina/large/katrina_041.jpg).

## Spray-Painting Messages On Property

Responders spray-painted the number of feet of water in the homes and the number of casualties on the homes. It was commonplace to see orange paint with a number representing the feet on the left side of an X, and then a number representing casualties on the right side of the X, as on this house where a resident also left a message for family members (Figure 41).



*Figure 41.* Residents of this south Slidell home spray-painted a message on their garage door that assured friends and family they were safe. The message that they had removed valuables from their home may have been for family or potential looters. Photo taken by Tisha Slagle, September 19, 2005.

Residents also spray painted messages on their rooftops, and the bricks or siding on their homes for others including responders (Figure 42) and FEMA representatives (Figure 43.). It seems that it was common, after disasters, for residents to use graffiti-like messages, ordinarily taboo in their neighborhoods, to communicate important information.



*Figure 42.* Sign spray-painted in white on the roof of a central Slidell home with a message to SEND ICE AND WATER. Photo taken by Tisha Slagle, September 16, 2005.



*Figure 43.* Residents of a central Slidell home spray-painted a ☹ as a message for FEMA representatives who apparently had not yet arrived to help. Photo taken by Tisha Slagle, September 19, 2005.

Neighborhood Networking

Police Lieutenant (later Assistant Chief of Police before he retired in 2010) Jesse Simon (Figure 44), was one of the first to welcome me to Slidell. Lieutenant Simon was facilitating the U.S. Army’s provision of food, water, and ice that had been sent by FEMA to Slidell residents.

He, as a responder and a resident, knew first-hand about Slidell's situation. Although his neighborhood networking, the term I use for word-of-mouth message passing, was for professional, not personal purposes, it exemplified behavior I learned from several residents.

Lieutenant Simon explained how the Slidell Police Force networked.

The land lines were down, cell lines were down, our radio system was down, [if] you had to communicate with somebody, [if] I needed to talk to you, I had to number one, remember where you were last, drive there and ask everybody, you know, this is who I'm looking for and then they'll say, well that person left and [then they would tell me] where can I find him.

So if I was somewhere and I left that location, I would tell everybody I'm leaving this location and I'm going here. You might go five stops before you find the person you were looking for. Within about thirty six to forty eight hours we had our radio system back, it was pretty tough. So, in the beginning it was tough. There was just no way to communicate.



*Figure 44.* Slidell Police Lieutenant Jesse Simon shared the seat of his six-wheel ATV (all-terrain vehicle) with me where he answered questions above the roar of hot wind in Slidell's Walmart parking lot. Photo taken by Jarrod Knudson, September 15, 2005.

Mrs. Elenora Burckel (Figure 45), owner of Just Kids, Incorporated found information in blogs to be incorrect during the few days she had evacuated. After she returned home she found that the best way to communicate was neighborhood networking. "And fortunately you

know, many of us have lived here, so you know when one heard something then they would share it with other neighbors.”



*Figure 45.* Mrs. Elenora Burckel (right) welcomed me into the garage of her home that she had cleared out, carpeted, and air conditioned temporarily to use for daycare while her daycare center, flooded in the storm, was being repaired. Photo taken by Jarrod Knudson, September 15, 2005.

Jarrod commented that, “I mean we weren’t sure that our house was okay until we were able to contact somebody here on a landline after about a week or so and they had driven by to check.” Mr. John Massarini commented that, “people were very good about passing information verbally back and forth about where gasoline stations were open or where food was or whatever.”

### *Disregarding the Law*

Determining whether to evacuate or ride out a storm was not necessarily based on official mandates. Rather, some decided long ago to never leave, regardless. Others decided long ago to decide on a hurricane-by-hurricane basis. Others decided long ago to always evacuate and use the time for vacation. Regardless of their pre-determined decisions, the stay

or go decisions were relayed similarly to me and among each other—and the decisions were not based on mandates from city officials.

### Disobeying City Officials

In spite of technological advances in disaster forecasting, there is often no time for ample warning or people have grown accustomed to false warnings and ignore warnings that could save their lives. Some ignore warnings because they have no way to evacuate; some because they do not trust just one source of warning and spend time trying to confirm the warning; others do not believe the storm will affect them, or if it does, will not affect them seriously (National Weather Service, 2010).

The accepted disregard of official mandates by law-abiding citizens presents an interesting dichotomy amidst the Slidell residents. All participants in the study were upstanding citizens, yet all found it acceptable to ignore the law in hurricane situations. They took note of the mayor's mandates, but seldom considered them when determining whether to evacuate or stay. The information from officials was virtually ignored. They determined on their own to stay or return to restricted areas, wait until dark, then wade or canoe around police blockades and into their neighborhoods.

### Staying Against Orders

According to Slidell police (personal communication, September 15, 2005), approximately 7,500 people stayed in their homes to weather the storm. When I asked them why they stayed, I heard varied responses, with one commonality: they stayed because they had never left. Responses from four different residents were:



I've never left for a storm, ever. My father never did. So, my son—he's 22 years old—he and I stayed and my wife and my daughter went to Monroe, Louisiana. They—my wife always evacuates. She can't swim.

We've never left. We've never flooded before, you know and we are high and dry here. But we won't stay again. No sir, no sir, and I'm speaking for him (points at husband) too. He will not stay again either. I don't care what we do.

We've stayed through all the storms, Camille and all of them, so you know I thought well I'm gonna stay through this one. I had all my animals—I've got four dogs, six cats and I mean, you know, you can't go to people with that.

Yeah, I decided to ah stay, I've always stayed, I've never left. Even when I was a kid we didn't leave because ah primarily because ah you usually can't get back in when you want to. You want to get to your belongings, you want to get to your home, your house and you can't usually. They want to restrict you because they have things to do, clear roads, and this and that, it's for your own safety and that of your families, but I want to get to my property when I want to get to it, so I just soon stay behind.

Consequently, these stayers were disconnected from the outside world, as well as from those from Slidell who had evacuated to the outside world. Most who stayed in Slidell were long-time residents who did not want to leave their property unprotected and did not believe the water would rise above their rooftops.

I went through a lot of hurricanes around here, and I always, we have, like, four feet, three feet, and it's why if I'm getting some water, I, I'm just gonna stay.

Experience had taught them that the city authorities did not have the time or personnel to protect every person's property—and they knew they might be prevented from re-entering Slidell for several days. When the water rushed in, they climbed upstairs, into their attics, or onto their roofs to wait for rescue to transport them to shelter in Slidell or nearby communities.

### Returning Against Orders

Frustrated and fearful, many decided to return to Slidell before city officials opened the city. Lack of information drove these law-abiding citizens to bypass the law and re-enter their

neighborhoods. Some parked outside restricted areas, waited until dark, then waded, or even canoed to their homes.

Because they usually had ICT services in the area where they evacuated, they spent days calling other Slidell residents who evacuated to sites closer to Slidell. However, most of southern Louisiana could not receive cell phone calls because towers were down.

They [city] gave us this, we had this evacuation pamphlet, brochure they gave us with all these emergency numbers, all of that was completely useless because every number we called didn't work or you know you get a recording. We were using their [people where they evacuated] home phone or cell phones, we couldn't reach anybody.

After a few days, evacuators tried text-messaging and reached some residents who had cell phones. However, residents with cell phones were not checking them the first several days because they did not realize they could sometimes receive texts. They also poured over Weblogs and Internet news sites for hours, searching frantically for any information about Slidell. Much of the information on blogs, however, was found to be inaccurate.<sup>30</sup>

Those who evacuated found that the only sure way they could get information about their community was by returning to Slidell. They had tried without success to call and email. So, they resorted to some unconventional methods to look for what they needed. They, like stayers, changed their priorities—embraced unconventional worldviews—alternate beliefs to cope with their unconventional behaviors.

#### Taking the Law Into Their Own Hands

Another interesting aspect of the law-breaking was the overlooking of law-breaking by officials. Approximately 7,500 Slidell residents stayed in their homes through Katrina and as many returned within a week. Officials were understanding of the residents ignoring the

mandates—most of the officials were displaced from their homes, at least temporarily. Also, police were just too busy to cover all of Slidell.

Resident and store-owner Ralph Kastner said that the mayor encouraged residents to take the law into their own hands, if necessary, because of the police being so busy with rescue and recovery. Kastner is quoted by Brian Grow, writing for Business Week Online, in Grow's report that

Mayor Ben Morris has declared martial law—and police cars zip up and down the main drag, Route 11. The get-tough approach has thwarted some looting. "The Mayor said, 'If you see looting, take care of business -- and we'll worry about it later,'" says Kastner (Grow, 2005).

#### Summary

As a result of Hurricane Katrina's devastation, Slidell's critical infrastructure failed. ICT failure created information disruption between and among residents within and outside the community. These intra- and inter-community information disruptions isolated residents physically and virtually. Physical obstructions, such as storm debris, and virtual obstructions, such as downed cell towers, prevented information flow—and as the isolation continued, the residents faced an information poverty spell where their ordinarily information-rich lifestyles were thwarted by information scarcity and the inability to meet their basic needs. Their physiological, security, and social needs suddenly became paramount. Their needs regression from self-actualization to survival needs was exacerbated by the lack of information available to equip them to meet their survival needs. Needing Information to survive—beset with information needs regression in the post-disaster situation—changed how residents approached and responded to information. The residents adopted situational information behavior where they were forced to reconstruct social norms. Change in social behavior was

naturally based on a temporary change in the residents' belief systems, and what followed, naturally, was situational information behavior. Residents trusted strangers, improvised makeshift messages, and if necessary, disregarded the law to meet their post-disaster survival needs.

## Endnotes

<sup>1</sup> This descriptive section of the physical state of Slidell is an adaptation, augmented with further knowledge, from a chapter published *Learning From Catastrophe: Quick Response Research in the Wake of Hurricane Katrina*, published by the Natural Hazards Center in Boulder, Colorado (Slagle-Pipes & Knudson, 2006).

<sup>2</sup> Post-disaster situations, for the purposes of this study, represent tangible and/or intangible conditions that affect disaster survivors and are the direct or indirect result of disaster destruction.

<sup>3</sup> Terms used in this chapter are created to better explain concepts and relationships. Terms may have different, broader, or narrower dictionary meanings, but are used in this study to emphasize the information behavioral aspects of the post-disaster situation. Some are borrowed, or partially borrowed from previous research and cited accordingly on first use in this document.

<sup>4</sup> Critical systems (sectors) listed in the U.S. Department of Homeland Security's 2005 Interim National Infrastructure Protection Plan (NIPP) are adapted to a community for this study and include the systems of agriculture, banking and finance, emergency services, energy, ICT, public health, transportation systems, and water. The 2005 Interim NIPP, as well as the current NIPP (2009), was originally published as *National Strategy of the Physical Protection of Critical Infrastructures* in February 2003. There is insufficient data collected for this study to include postal and shipping, as well as key assets (national monuments, nuclear power plants, dams, government facilities, and commercial assets) that are listed in the NIPP.

<sup>5</sup> Includes supply chains for feed, animals, and animal products; crop production and the supply chains of seed, fertilizer, and processing, production, and packaging through storage and distribution to retail sales, institutional food services, and restaurant or home consumption.

<sup>6</sup> Information Technology and Communications are separate sectors in the NIPP, but combined for this study.

<sup>7</sup> As stated in Chapter 1, isolation, for the purposes of this study, is the separation from human, cyber, and physical resources (terms from NIPP 2009 to describe elements of risk across the

critical systems in the nation's infrastructure) that are outside the community, and possibly in other unreachable parts of the community.

<sup>8</sup> Daily routine is defined from interviews with post-disaster survivors and includes (but is not inclusive) checking the weather forecast; paying bills, buying groceries, gasoline, prescriptions or other necessities; calling friends and family; cooking; driving to do errands; watching television; taking a hot bath; drinking water from the sink (personal communications, September 15-17, 2005).

<sup>9</sup> As defined in Chapter 1, information behaviors are the "interactions between people, the various forms of data, information, knowledge and wisdom that fall under the rubric of 'information' and the situations (contexts) in which they interact" (Belkin, 2004). They are also constructs through which to approach everyday reality and its effect on actions to gain or avoid the possession of information. The choice of an appropriate course of action is driven by beliefs concerning what is necessary to support a normative way of life" (Burnett, Besant, & Chatman, 2001).

<sup>10</sup> Physiological needs, when met, enable the body to function. Examples: hunger, thirst, warmth, health.

<sup>11</sup> Safety needs, when met, ensure the body remains uninjured and able to function. Examples: security, out of danger,

<sup>12</sup> Social needs, when met, ensure that there is affiliation, acceptance, love, belonging, and the avoidance of loneliness.

<sup>13</sup> Self-esteem is a feeling of confidence, respect, and approval usually met by gaining approval and achieving goals.

<sup>14</sup> Maslow later included self-transcendence, spiritual growth as the highest level of need (Maslow, 1971).

<sup>15</sup> The U.S. military and local police, set up a site on the Walmart parking lot on September 1, 2005, third day after Katrina hit Slidell where they provided bottled water, food, and ice . A FEMA representative who had to visit several parishes, was onsite for approximately one hour a day (U.S. Army Major, personal communication, September 14, 2005).

<sup>16</sup> As mentioned in Chapter 1, information needs include information that reveals the location of, the condition of, and/or the means to meet a need; Information sources, and meta-sources, the location of, credibility of, and/or means to acquire an information source.

<sup>17</sup> This explanation of information needs is not intended to be comprehensive—obviously there may be meta-sources leading to meta-sources leading to meta-sources, and so on, indefinitely. The explanation is meant to provide aspects of information needs that determine information

behaviors and the effects of situational social behavior (post-disaster norms, worldviews, and social types) on the information behaviors.

<sup>18</sup> The information medium and/or the humans that create the medium and/or directly provide the information (word-of-mouth, signage, ICT, libraries, city offices, broadcast media, Internet, etc.

<sup>19</sup> An official allowed me into a back entrance of the Red Cross shelter so I could interview evacuees, but I was quickly escorted out by the person in charge!

<sup>20</sup> As explained in Chapter 1, initial disaster responders are usually survivors of the disaster. However, in this study, governmentally-assigned official first responders are police, fire, and emergency medical treatment (EMT) services ([www.fema.gov](http://www.fema.gov)). Other governmentally-assigned officials, including transportation/highway services and forestry, are secondary responders who help first responders secure the disaster areas. Tertiary responders restore mainstays by supplying food, water, and medical supplies, as well as restoring utilities to aid in the delivery and maintaining food, water, and health. This group of responders include FEMA, military, as well as volunteer organizations such as Red Cross, Salvation Army, churches, and other extra-community helpers.

<sup>21</sup> A few residents complained about local vendors tripling and quadrupling regular prices for needed supplies and services like generators and tree removal. They said the vendors called it “hurricane pricing.” One resident said, “and the guys [tree removal services] were victims themselves.”

<sup>22</sup> “*Noah's Wish* is a unique animal welfare organization dedicated exclusively to rescuing and sheltering animals in disasters, throughout the United States and Canada” (<http://www.noahswish.org/>).

<sup>23</sup> Norwood (2009) proposed the concept of typing information needed to meet Maslow’s five hierarchical needs. He posited that the type of information needed to meet: physiological needs could be called coping information; safety could be called helping information; social (belongingness) could be called enlightening information; esteem needs could be called empowering information; and self-actualization could be called edifying information.

<sup>24</sup> The term beliefs is being used in this analysis rather than the term worldview. The term worldview intonates broader, encompassing beliefs about the outside world. The beliefs, in this case, represent justification for the altered social norms in the post-disaster situation.

<sup>25</sup> The term strangers is used in this report to describe persons with whom the residents are barely acquainted, perhaps known only by sight, as well as persons with whom they have never been acquainted.

<sup>26</sup> According to Rob Gordon (2010), this type of bonding is natural after a disaster, but does not last long. What Gordon calls fusion, a temporary state, is an interesting topic, but is not the focus of this study.

<sup>27</sup> I did not want to carry a purse or brief case everywhere I went in Slidell and I was not accustomed to using pockets. Also, it was my first time in the field and I was nervous I would forget something I really needed when I met someone to interview. So, before each trip, I took me a few minutes to inventory my vest pockets for all my paraphernalia—name badge, spare batteries, camera, two recorders, comb, lipstick, breath mints, notepad, and pencils. Jarrod started telling Haley that we could not leave until her grandmother “geared up.”

<sup>28</sup> Jarrod would later learn that the neighbor’s wife was a member of the St. Tammany Parish Public Library Board.

<sup>29</sup> FEMA provides blue plastic sheeting for damaged roofs to prevent roof leakage until roof is repaired.

<sup>30</sup> Many blogs about Slidell markedly exaggerated the extent of the damage. It was true that many areas of Slidell were devastated and even obliterated; however, many blogs mistakenly reported high flooding in areas in northern Slidell that only took curb-level water. Many evacuees who returned the first week were shocked and relieved to find their homes still standing and unscathed by flooding (Slagle-Pipes & Knudson, 2006).

## CHAPTER 5

### RECOMMENDATIONS AND CONCLUSIONS

My intent of the descriptions and analyses in the previous chapters is to provide an overview of post-Katrina Slidell. I realize it is by no means a comprehensive description of disaster survivors' information behaviors. It is, rather, a description of my insights of residents' social and information behaviors, post-Katrina, with a general application of Elfreda Chatman's small world concepts.

A more detailed study may have resulted had it been possible for me to travel to the site sooner and stay on the site for longer periods. However, I had too many responsibilities at home to allow more than a few days absence at a time. Although I heard vivid accounts from the residents and was able to see the results of Katrina's winds and water, I think that my understanding of the people's experiences would have been greatly enhanced had I been able to go sooner and stay longer. I would have, of course, had more data, but also richer observations had I been able to visit the disaster site immediately, rather than almost three weeks after the event, as well as spend at least a month in the community. Although the reported results of this study only provide a broad overview of the post-disaster situation, it is possible that the results also provide a basis for other, more in-depth studies.

#### Recommendations

As I analyzed my data and wrote the report, several other possible studies occurred to me that may be beneficial to the study of post-disaster information behaviors. Some of these possible studies include application of Chatman's Life in the Round propositions, intra-community comparison studies, three approaches to information behaviors and disaster phases,



responder information behaviors, ICT and information behaviors, systems models for post-disaster information behavior, establishment of digital imaging metadata protocol, and disaster meta-reports.<sup>1</sup>

### *Life in the Round Propositions*

A study, based on Chatman's Life in the Round propositions<sup>2</sup> might bring to light many more in-depth issues regarding post-disaster situational information behavior. Perhaps a comparison of each proposition, with a semi-structured interview schedule to address each question, could further illuminate the actions and attitudes of post-disaster survivors in their attempts to recover from the upheaval disaster brings to their lives.

Of particular emphasis might be the extended definition of worldview in the third Life in the Round proposition that describes "the language, values, meaning, symbols, and a context that holds the worldview within temporal boundaries" (Chatman, 1999). The questions I asked and the data I gathered did not provide me with enough basis to develop the concept of worldview as Chatman describes it in Life in the Round. Instead, as is common in qualitative studies, I determined during analysis to apply, as detailed as my data would allow, the concepts of the normative theory she was developing at the time of her death. A future study, more focused on the more fully developed Life in the Round theory, would allow the description of more specific behaviors and beliefs. Also, another study could target the normative or Life in the Round theory from the inception of the project so that specific questions and observations with that intent could be prepared beforehand.

### *Intra-Community Comparison Studies*

As I interviewed in September, then in October, November, and December, I noticed that information behaviors were similar, but, of course, not exactly the same among those affected. Many factors, not developed in this study, affect information behaviors and deserve further examination. I noticed differences in information behaviors were affected by how much experience residents had dealing with disasters, the extent of damage to their homes, and whether the residents were stayers, returners, or evacuees. I noted several factors that those who evacuated took into consideration: the intensity of the storm, size and makeup of households, past experience, and family traditions. A study of how these factors, as well as others that could be determined with further study, affect post-disaster information behaviors might provide a significant contribution to the decades of studies about hurricane evacuation behavior. So, the post-disaster situational small world has several overlapping situational small worlds where normative behaviors blend and differ, based on the factors I mentioned, as well as ones I did not observe during my short visits.

### *Information Behaviors in Disaster Phases*

As mentioned in Chapter 2, Carr (1932) is credited with one of the first attempts to codify disaster activities (Neal, 1997)—and in so doing describes the readjustment and reorganization (response and recovery) from three perspectives: individual, interactional, and cultural (Carr, 1932)—a codification that also may be used to categorize post-disaster information behaviors.

### *Social Change During Response and Recovery Phases*

It might be informative to observe and report how, when, and why individuals change; how, when, and why relationships change; and how, when, and why the community's culture changes, then consider how these factors may influence post-disaster information behaviors of survivors as individuals, as members of an interactive society, and as the collective whole a community's culture becomes over time. Perhaps, a post-Katrina study would add insights similar to Carr's observations of social change after several major disasters.

"At Halifax, after the disaster, women conductors appeared on the street cars; a new attitude existed toward Sabbath observance; bungalows replaced the old square houses; a new public health program was developed; the schools adopted a more socialized point of view; community team work increased; and so on. At Galveston the new sea-wall and the commission form of government were two outstanding cultural gains from the disaster. The Ohio floods led to an extensive program of flood-control. The "Titanic" disaster led to increased emphasis on bulkhead construction. And so it goes" (Carr, 1932).

### *Social Levels*

Quarantelli provides a history of disaster research by categorizing social levels across disaster phases. (Quarantelli, 2002). A possible study that emphasizes information behaviors within Quarantelli's social levels across all four time phases (mitigation, preparedness, response and recovery) might further add to the predictability of post-disaster information behaviors.

### *Overlapping of Disaster Phases*

It may be important to note that phases are not always linear or temporal, but may be described as "mutually inclusive" and "multidimensional" (Neal, 1997). A study following information behaviors within and across the phases might add another dimension to information behavior research, as well as understanding of disaster behavior for disaster researchers and practitioners.

### *Responder Information Behaviors*

Quarantelli (2002) adds another level of responders to FEMA's description of primary, secondary, and tertiary responders introduced in Chapter 2 as he explains the changing and/or static structure and functions of responding organizations. A further study, concentrating on the changes new information technologies and consequent information behaviors contribute to the changes in structure and function of these responding organizations could add insight for disaster practitioners who must plan for and mitigate the severity of future disasters.

Quarantelli explains that

Type I organizations are established ones that do not markedly change their general structure and functions at times of crises (E.g., many police and fire departments maintain their traditional forms and spheres of activity). Type II organizations are expanding ones that have new structures but old functions (E.g., Red Cross chapters who by preplanning incorporate many volunteers into a new social structure but carry out traditional agency tasks). Type III organizations are extending ones that have old structures but new functions (E.g., a construction company using its traditional group structure to undertake building or street debris clearance). Finally, Type IV groups are new entities that had no pre-impact existence but which carry out new disaster functions (E.g., informal search and rescue teams, or damage assessment groups). These last kinds of groups play crucial roles in the crisis period of a disaster.

### *ICT and Information Behaviors*

Accessible, applicable information enables residents, as well as responders, to effectively identify problems and plan recovery. Inaccessible information is, of course, useless and, unfortunately, electronic information is quite vulnerable to destruction that renders it inaccessible. So, it might be worthwhile to determine if those who were not dependent on electronic information to communicate (did not have or seldom used cell phones, television, or Internet) adjust to the absence of ICT more quickly. Might they adjust because they are

unaccustomed to the luxury of ICT and consequently oblivious, by choice, to many hardships triggered by its inaccessibility?

Ideally, researchers and practitioners should collaborate to discover to what degree and how typical post-disaster information behavior depends on ICT and how this dependence may intensify post-disaster information breakdowns that lead to an information poverty spell. Perhaps with increased understanding, they can find ways to propagate non-ICT methods used by past victims of disaster. Including experienced disaster victims in research could benefit researchers and practitioners who may lack first-hand experience dealing with disasters.

#### *Systems Models for Post-Disaster Information Behavior*

Researchers could further illuminate the problems of post-disaster information poverty and meeting post-disaster information needs through the adaptation of systems concepts and models. Suggested studies include a comparison of ICT and person-to-person information systems, as well as an expansion of Shannon's Information System Model.

#### Person-to-Person Versus ICT

In communities with enough funding, ICT becomes the framework that supports the community's communications within and outside the community. Residents of a community are inherently bound within their community's infrastructure. So, when an ICT-rich community is suddenly deprived of ICT, the residents are forced to employ the less familiar non-technologic methods to give and receive warning information. One drawback to person-to-person message transmission is that the message often becomes distorted somewhere between the intended message and the interpreted message (Shannon & Weaver, 1948). A post-disaster study of ICT-transmitted versus person-to-person information in the post-disaster situation using Shannon's

model might reveal where the distortions originate in ICT-transmitted and person-to-person information systems. Improvements in both systems might then be possible.

### Shannon's and Weaver's Information System Model

Information is “the difference that makes a difference” (2006). It may be a difference in a person’s perception; it may be a difference in a person’s environment; it may be a difference simply within a person. It can be “any aspect” that a person notices “in the pattern of reality”(Case, 2007, p. 5). The impact of this difference—information in an information system—explicates Shannon and Weaver’s Information System Model (Figure 46).

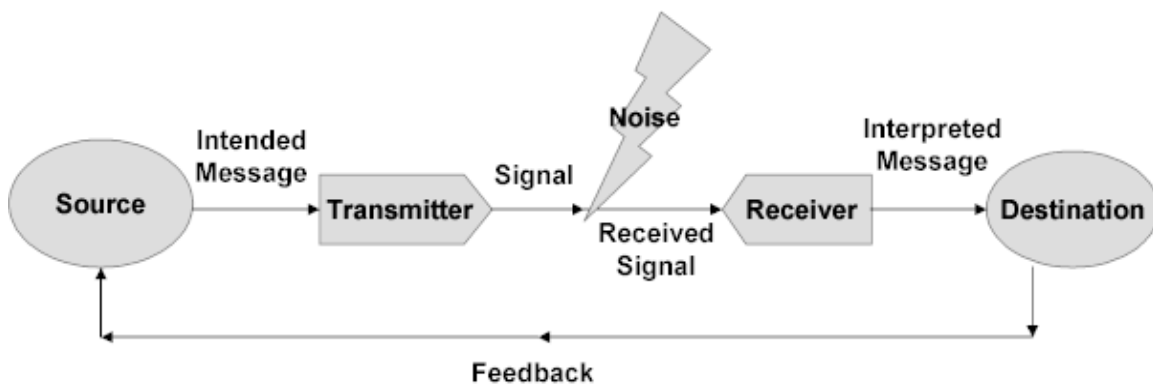


Figure 46. Shannon and Weaver's information system model. Model is revised from the original 1948 model to include “noise” (Wood, 2010).

The model demonstrates deliberate information transmission with its description of the path of an intended message. According to this model, when information transmitted as an intended message enters the system, it transforms—as a result of noise, and the perception of the receiver—into an interpreted message, another indication that attitudes toward information depend on perspective—or differences in interpretation. So, even if information is not deliberately transmitted—or deliberately sought—it always makes a difference in the system. Once someone encounters information, there is change. Even if the information is inapplicable

to a disaster survivor's information need, the survivor is different just from the encounter with the information. For instance, survivors may be looking for information about food and water, and in the process pass a sign that they have not seen before that tells the location of free household supplies—something they did not know before. Even if the survivor does not need household supplies or knows of no one who may need to know how to acquire household supplies, the survivor's knowledge (information system) has changed—before seeing the sign, they did not know about the location of household supplies and now they do know the location of household supplies or at the least they will probably remember that they saw a sign that told the location of household supplies.

Something was not known; then information arrives, namely that these, and none other, are the facts of the matter. Now one has knowledge [received signal] and, as a consequence, one cannot help orientating one's subsequent operations by means of this knowledge (2006).

Thus, information has made a difference. And this difference, may in turn, effect more differences if it is transmitted later. So, if the survivor does encounter someone needing household supplies and shares the location indicated on the sign, then the system again changes.

One begins with a difference [intended message] and, interestingly, ends with a difference [interpreted message]. Information processing in its entirety takes place between an initial difference and a difference that emerges during [perhaps with noise], and as a consequence of, the process [transmission from source to destination]. The difference that has thus come about [interpreted message] can in turn be a difference (2006).

Lewin, Lippitt, and White (1939) introduced the systems approach<sup>3</sup> to studying the group information flow process. However, scholars did not embrace the metaphor until Bales (1950) enhanced it by comparing groups, such as communities for instance, to open systems

that are, from inception to outcome, cyclical processes—dynamic, continuous, and evolving (Hare, 1962; Harris & Sherblom, 2002). Neighborhoods, for instance, might be considered subsystems within the larger social system (community). As open systems, the community and its neighborhoods have sets of interrelated components (people, ICT) that operate together as a whole making transactions—meaningful interactions (including messages, memories, meanings, and memes). The transactions are comprised of three major elements: input—receiving unprocessed information—a message in some form, process—making sense of the information in the message, and output—applying the information to meet a need. The purpose of these transactions is to achieve a mutual goal, a successful outcome (Bales, 1950), the meeting of an information need. However, even if the outcome is not successful—the information is not accurate or not communicated accurately—information changes the system—as mentioned before, it always makes a difference.

Perhaps studying Shannon’s distortions or Bales’ processes as differences—as patterns of reality—might reveal specific and helpful insights into disaster survivors’ interpretations of survival information, and consequently enable disaster practitioners to create clearer disaster messages.

#### *Establishment of Digital Imaging Metadata Protocol*

Government entities are in a position to improve data collection and documentation that might facilitate post-disaster research. Disaster researchers might benefit from a federally-established metadata protocol for digital image collections (Brian O’Connor, Personal Communication, March 5, 2010) . Although news articles and blogs generally include consistent metadata—such as time, date, and location—digital images are taken using various cameras



and inconsistent settings. Consequently EXIF (Exchangeable Image File Format)—digital imaging metadata such as the technical aspects of the camera, date, time, or even global positioning system (GPS) data, about a particular image—are inconsistent, if not absent. For example, metadata shown in Table 16 and Table 17 are inconsistent between two images (Figure 47 and Figure 48) of post-Katrina Slidell, both taken by FEMA and provided for public use through Wikimedia Commons.

If governmental, and other official disaster relief organizations, could adhere to agree-upon protocols for post-disaster digital image collection—same cameras, same settings, same specifications—post-disaster images could be cross-analyzed, as well as embedded in mapping systems to provide a timeline of data for disaster researchers to analyze.



*Figure 47.* Slidell, LA 9/5/05 -- This part of Slidell was flattened by hurricane Katrina. Photo taken by Liz Roll, FEMA photographer, September 5, 2005 and accessed at [www.commons.wikimedia.org](http://www.commons.wikimedia.org).

Table 16

*Metadata for Figure 47: This Part of Slidell Was Flattened by Hurricane Katrina*

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Image title	Slidell, LA 9/5/05 -- This part of Slidell was flattened by hurricane Katrina. Photo by: Liz Roll
Camera manufacturer	NIKON CORPORATION
Camera model	NIKON D100
Exposure time	1/400 sec (0.0025)
F Number	f/11
Date and time of data generation	17:36, 5 September 2005
Lens focal length	65 mm
Orientation	Normal
Horizontal resolution	300 dpi
Vertical resolution	300 dpi
Software used	Adobe Photoshop CS2 Windows
File change date and time	22:14, 6 September 2005
Y and C positioning	2
Exposure Program	Normal program
Exif version	2.2
Date and time of digitizing	17:36, 5 September 2005
Image compression mode	4
Exposure bias	0
Maximum land aperture	4.7
Metering mode	Spot
Light source	Unknown
Flash	Flash did not fire
DateTime subseconds	20
DateTimeOriginal subseconds	20
DateTimeDigitized subseconds	20
Color space	sRGB
Sensing method	One-chip color area sensor
Custom image processing	Normal process
Exposure mode	Auto exposure
White balance	Auto white balance
Digital zoom ratio	1
Focal length in 35 mm film	97
Scene capture type	Standard
Contrast	Normal
Saturation	Normal
Sharpness	Normal
Subject distance range	Unknown

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From [www.commons.wikimedia.org](http://www.commons.wikimedia.org).



Figure 48. FEMA notice beside destroyed home in south Slidell. Photo by Andrea Booher, FEMA photographer and accessed at [www.commons.wikimedia.org](http://www.commons.wikimedia.org)..

Table 17

Metadata from Figure 48: FEMA Notice Beside Destroyed Home in South Slidell

Image title	New Orleans,LA.,10/19/2005--Destruction in Slidell area due to Hurricane Katrina. FEMA photo/Andrea Booher
Orientation	Normal
Horizontal resolution	300 dpi
Vertical resolution	300 dpi
Software used	Adobe Photoshop CS Macintosh
File change date and time	16:34, 25 October 2005
Color space	sRGB

From [www.commons.wikimedia.org](http://www.commons.wikimedia.org).

*Disaster Meta-reports?*

When terrorists attacked the city of Mumbai, India on November 26, 2005, news of the bombs and gunfire immediately filled the blogosphere “with details of casualties, sieges, gunfights, and even the suspected names of terrorists.” Apparently, Twitter texters published

piecemeal accounts of the attacks more quickly than did television or newspapers. Photos were uploaded to the photo-sharing web site Flickr within minutes. “ Bloggers provided a ‘public service’ function, creating sites that divert users to Foreign Office advice, police reports, helpline numbers, and Google documents containing lists of the injured and killed.” Within a day, Wikipedia writers uploaded and corrected more than 4,000 reports on the attacks while traditional news media trailed behind (Lewis, 2008). These bulleted disaster reports provided people with survival information, directing them to safe areas and relief facilities. They even pointed out errors in news reports. It is possible that reporters will use these rapid reports of disasters to “stitch them together into a coherent story.”

Even more interesting than the rapid reporting of disasters, though, is the disaster meta-reporting, the reporting of how disasters are reported. News about news reports is not a new phenomenon. After the Storm of 1900, newspapers reported telegraph reports; after Katrina, newspapers reported Internet and other newspaper reports. The information behaviors of disaster reporters—the file-sharers and traditional news reporters, as well as the relationships among them, would add another dimension to disaster information behavior studies (Feder, 2008).

### Conclusions

It was an honor of become acquainted with the residents in Slidell, Louisiana. My inclination in this first attempt at field research was to ask questions and make observations specifically applicable to information and information behaviors. However, although I did allow open dialogue with participants, I feel my study would have been greatly enhanced by encouraging more open dialogue, rather than limiting dialogue to information topics. I do

believe, though that, conclusions drawn from responses to this question may provide some bases for further post-disaster information behavior research. Researchers and practitioners may be able to more easily envision and create methods for communicating post-disaster information before disaster impedes or even obliterates typical methods for sharing information.

What then might our ultimate responsibility as professionals and scholars be? In Park's classical work, *Human Communities* (Park, 1952), he argues that 'it is the [recognition] of the existence of a critical situation which converts what was otherwise mere information into news.' In closing, the challenge is to identify that critical situation within the context of a social world that will be newsworthy to its inhabitants (Chatman, 1996).

#### Endnotes

<sup>1</sup> Meta-reporting is a term I use to describe how news is reported—or reporting about methods of reporting.

<sup>2</sup> Chatman's six Life in the Round (small world) propositions are: 1) A small world conceptualization is essential to a life in the round because it establishes legitimized others (primarily "insiders") within that world who set boundaries on behavior; 2) Social norms force private behavior to undergo public scrutiny. It is this public arena that deems behavior, including information-seeking behavior appropriate or not; 3) The result of establishing appropriate behavior is the creation of a worldview. This worldview includes language, values, meaning, symbols, and a context that holds the worldview within temporal boundaries; 4) For most of us, a worldview is played out as life in the round. Fundamentally, this is a life taken for granted. It works most of the time with enough predictability that, unless a critical problem arises, there is no point in seeking information; 5) Members who live in the round will not cross the boundaries of their world to seek information; and 6) Individuals will cross information boundaries only to the extent that the following conditions are met 1) the information is perceived as critical 2) there is a collective expectation that the information is relevant and 3) a perception exists that the life lived in the round is no longer functioning.

<sup>3</sup> This section is adapted from Slagle-Pipes, 2007.

APPENDIX A

GLOSSARY

Community	a social system of shared lives based on common locality, culture and routine within a communicating group in which members are united by their common identity in spite of personal differences (Wiggins and Schwartz, 2002). selects sources of information and encounters, finds, seeks, ignores, or uses information—based on shared social norms, opinion of others, and worldviews.
Critical infrastructure systems	Critical systems (sectors) listed in the U.S. Department of Homeland Security’s 2005 Interim National Infrastructure Protection Plan (NIPP) are adapted to a community for this study and include the systems of agriculture , banking and finance, emergency services, energy, ICT, public health, transportation systems, and water. The 2005 Interim NIPP, as well as the current NIPP (2009), was originally published as National Strategy of the Physical Protection of Critical Infrastructures in February 2003. There is insufficient data collected for this study to include Postal and shipping, as well as key assets (national monuments, nuclear power plants, dams, government facilities, and commercial assets) that are listed in the NIPP.
Culture	a “system of shared beliefs, values, customs, behaviors, and artifacts...[that enables people]... to cope with their world and with one another...” (Bates & Flog, 1990)
Disaster culture	where other norms and behaviors have emerged from the “repetitive impacts” of natural disasters and subsequent devastation (Wenger & Weller, 1973)
Disaster event horizon	represents the physical and virtual barriers preventing the disaster-struck community from sending information to, and receiving information from, the intact communities in the outside world.
Disaster recovery	the phase of disaster recovery where action and attitudes develop to adjust
Disaster recovery	the phase of disaster recovery where action and attitudes develop to adjust
Disaster survivors	Disaster studies researchers generally refer to disaster survivors as disaster victims. However, this study emphasizes the survival of disaster victims—how and why they used information to meet their survival needs during post-disaster isolation. Consequently, this document uses the term survivor throughout to refer to the surviving victims of disaster.

Disaster/hazard types	Technological	Natural	Civil
	chemical spills	earthquakes	cold war
	electrical fires	flood	cyberterrorism
	nuclear	hurricanes	information
	explosions	landslides	warfare
	Information	volcano	terrorism
	systems failures	eruptions	wars

Adapted from Slagle-Pipes (2007)

- Disasters** accidental or uncontrollable events, actual or threatened, that are concentrated in time and space, in which a society, or a relatively self-sufficient subdivision of a society, undergoes severe danger, and incurs such losses to its members and physical appurtenances that the *social structure is disrupted* [italics mine] and the fulfillment of all or some of the essential functions of the society is prevented” (Fritz, 1961). For the purposes of this study, the term “disaster” will predominantly refer to Hurricane Katrina, a natural disaster that was deemed by the U.S. Government to be a catastrophe because of the widespread collapse of the critical infrastructures.
- Ethnography** method of studying the “cultural characteristics of a group of people” and a description of “cultural scenes” (Johnson & Christensen, 2004).
- Event horizon** the term used to describe the ring of light that appears to surround the entrance to a black hole—the area thought to be where an ancient star collapsed—an area so dense that anything that passes across the event horizon is sucked into the never-ending nothingness the black hole represents
- Global warming** an increase in the average temperature of the earth's atmosphere, especially a sustained increase that causes climatic changes
- Gulf coast** Gulf Coast states include Texas, Louisiana, Mississippi, Alabama and Florida.
- Hurricane** A hurricane is a type of tropical cyclone, the term used to describe all circulating weather systems over tropical waters.
- Information behavior** the “interactions between people, the various forms of data, information, knowledge and wisdom that fall under the rubric of ‘information’ and the situations (contexts) in which they interact” (Belkin, 2004).



Information disruption	The deprivation or disruption of information needed to meet informational and survival needs. Interruption of information flow. Deutsch identifies three types of informational flows that are crucial to the well-being of a community: 1) information from the outside world, 2) information from the past, and 3) internal information (1966, p.129).
Information need	the location of, the condition of, and/or the means to meet a need using sources such as word-of-mouth, signage, ICT, libraries, city offices, broadcast media, Internet, etc., and meta-sources, the location of, credibility of, and/or means to access/acquire an information source (Slagle-Pipes & Knudson, 2006).
Information poverty	Information poverty is the deprivation, by inaccessibility and/or inapplicability, of information relating to basic human needs Information connectivity perspective refers to inaccessibility: the information-poor do not have access to information because of inferior or non-existent ICT. The Information content perspective refers to inapplicability: the information-poor cannot use information because it is inadequate and/or irrelevant (Britz, J.J., 2004).
Information poverty spell	a sudden deprivation of information—a situation where customary means to access information is abruptly withdrawn for a period of time “resulting in unavailability and/or inapplicability of information” (Slagle-Pipes & Knudson, 2006).
Infrastructure collapse	Temporary, Though Perhaps Prolonged Breakdown Of Some Or All Public Services (Libraries, Cultural Activities, Emergency Management, Police And Fire Protection), And The Physical Facilities That Provide Power And Water, Sewage, Garbage, Transportation, Roads, Schools, And Information And Communications Technology (ICT) To A Community.
Insiders/ outsiders	Insiders are trusted persons within a person’s small world. Outsiders are persons who are not trusted and are from outside the person’s small world
Isolation	Separation From The Outside World (Deutsch, 1966, p. 129) , As Well As, For A Time, To And From Others Within The Familiar Realms Of Their Community.
Lake Pontchartrain	one of the largest estuaries on the Gulf Coast, as well as one of the largest in the United States. It borders south of Slidell and connects to the Mississippi River at New Orleans.

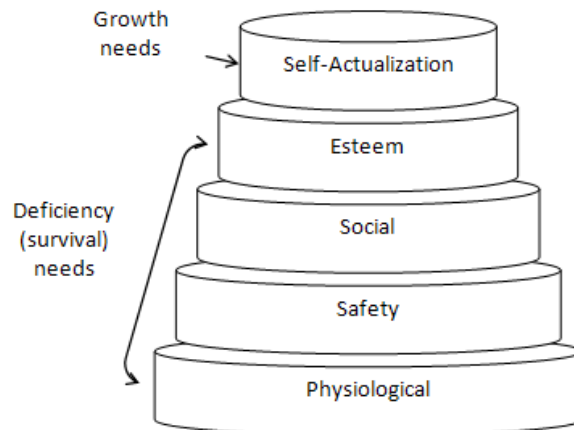
Life continuum

a person's "understanding the past, anticipating and planning for the future, and making big and small decisions that link past and future together in the present"

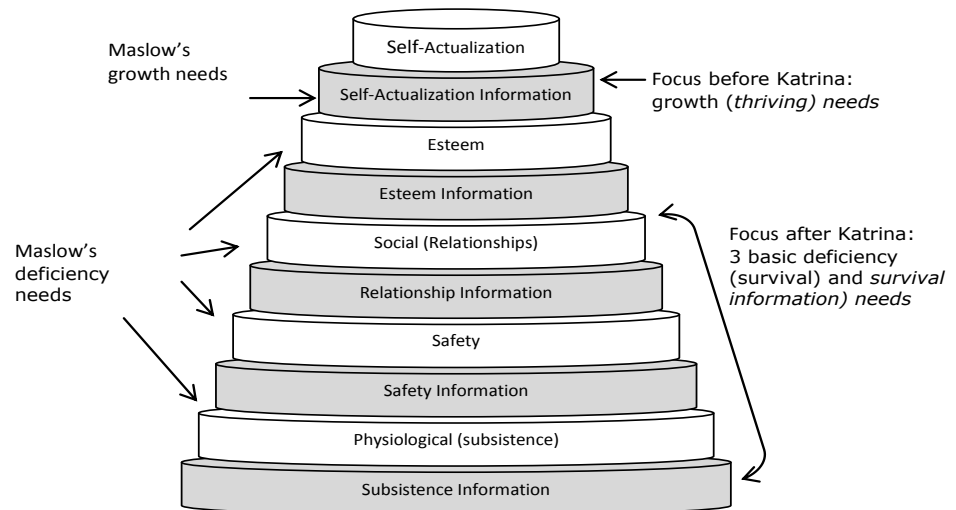
Loss of autonomy

temporary, though perhaps prolonged loss of independence and the inability to act without help from unusual, undesirable, or the unfamiliar means

Maslow's/Slagle's hierarchy of needs



Adapted from Maslow's Original Hierarchy of Needs (1954)



Adapted from Slagle-Pipes and Knudson (2006).

National response plan (NRP)

an all-discipline, all-hazards plan that establishes a single, comprehensive framework for the management of domestic incidents. It provides the structure and mechanisms for the coordination of Federal support to State, local, and tribal incident managers and for exercising direct Federal authorities and responsibilities. The NRP assists in the important homeland security mission of preventing terrorist

attacks within the United States; reducing the vulnerability to all natural and manmade hazards; and minimizing the damage and assisting in the recovery from any type of incident that occurs” (Homeland Security and Appointed Disaster-Related Departments and Organizations, 2004).

Natural disaster	A disaster (see disaster) that results from a natural hazard, e.g. flood, earthquake, hurricane, etc.
Normative behavior	Chatman’s normative behavior theory of a small world entails four major concepts: social norms (Norms dictate how members of the small world deal with information, as well as the appropriateness (from their perspective) of how they dress, talk, and/or behave), worldviews (“collective perception” of what is important or unimportant), social types (“a certain signature, which defines what role that person plays in his social world”), and the information behavior (how people encounter, judge, and use information) (Chatman, 2000).
Phenomenology	method of studying “the appearance of things...or the ways we experience things, thus the meanings things have in our experience.’
Potable water	drinkable water
Privileged	those with the economical means and interest in being informationally connected with the world outside their community.
Responders	persons who formally or informally render aid during and after disaster
Responders (emergency)	first responders: police, fire, emergency medical technicians (EMTs); second responders: FEMA, military, public works (providers of electricity, water, etc.); third responders: such as red cross, salvation army, Noah’s wish pet rescue , organized disaster management efforts by hospitals, churches, and other social organizations
Risk	a result of proximity or exposure to triggering agents, which increases the probability of disaster and the potential for human or material
Saffir-Simpson damage-potential scale	<p>This scale was developed in the early 1970s by Herbert Saffir, a consulting engineer in Coral Gables, Florida, and Dr. Robert Simpson, then Director of the National Hurricane Center. The scale is based primarily on wind speeds and includes estimates of barometric pressure and storm surge associated with each of the five categories</p> <p>Category 1 [Minimal]: damage primarily restricted to shrubbery, trees, and unanchored mobile homes; no substantial damage to other structures; some damage to poorly constructed signs; low lying roads inundated; minor damage to piers; small craft in exposed anchorages torn from moorings.</p>

Category 2 [Moderate]: considerable damage to shrubbery and tree foliage, some trees blown down; major damage to exposed mobile homes; extensive damage to poorly constructed signs and some damage to windows, doors and roofing materials of buildings, but no major destruction to buildings; coastal roads and low lying escape routes inland cut off by rising water about 2 to 4 hours before landfall; considerable damage to piers and marinas flooded; small craft in protected anchorage torn from moorings; evacuation of some shoreline residences and low lying areas required

Category 3 [Extensive]: foliage torn from trees; large trees blown down; poorly constructed signs blown down; some damage to roofing, windows, and doors; some structural damage to small buildings; mobile homes destroyed; serious flooding along the coast; many small structures near the coast destroyed; larger coastal structures damaged by battering waves and floating debris; low lying escape routes inland cut off by rising water about 3 to 5 hours before landfall; flat terrain 5 feet or less above sea level flooded up to 8 or more miles inland; evacuation of low lying residences within several blocks of shoreline may be required

Category 4 [Extreme]: shrubs, trees, and all signs blown down; extensive damage to roofs, windows, and doors, with complete failure of roofs on many smaller residences; mobile homes demolished; flat terrain 10 feet or less above sea level flooded inland as far as 6 miles; flooding and battering by waves and floating debris cause major damage to lower floors of structures near the shore; low lying escape routes inland cut off by rising water about 3 to 5 hours before landfall; major erosion of beaches; massive evacuation of all residences within 500 yards of the shore may be required, as well as of single story residences in low ground with 2 miles of the shore

Category 5 [Catastrophic]: trees, shrub, and all signs blown down; considerable damage to roofs of buildings, with very severe and extensive damage to windows and doors; complete failure on many roofs of residences and industrial buildings; extensive shattering of glass in windows and doors; complete buildings destroyed; small building overturned or blown away; mobile homes demolished; major damage to lower floors of all structures less than 15 feet above sea level within 1500 feet of the shore; low lying escape routes inland cut off by rising water about 3 to 5 hours before landfall; major erosion of beaches; massive evacuation of residential areas on low ground within 5 to 10 miles of the shore may be required; (Weather Channel, 2005).

Semi-structured interview	An interview with a pre-determined list of questions; however, questions are also asked as a result of the content of responses	
Post-disaster situational small world (Slagle's)	The post-disaster situational small world, based on Elfreda Chatman's small world is defined for this study as a group of people who suddenly and/or temporarily develop alternate, "common cultural meanings" (Chatman, 2000), relevant "to [their] particular individual situation" (Wilson, 1973) who are isolated from the outside world, deprived of their community's usual critical infrastructure to sustain information flow necessary to maintain their life continuum. They collectively assume different norms and beliefs that influence their selection of trusted information and trusted information sources. The situational small world is a quickly transformed community that emerges among mainstream or communities outside the mainstream because of vulnerability to a possibly sudden, but certainly unexpected, uncommon, infrequent, or periodic event or phenomenon that impedes the flow of information and causes an information poverty spell.	
Slidell	located in St. Tammany parish, the most affluent parish in Louisiana, with approximately 32,000 residents (2000 U.S. census). the residents of Slidell, Louisiana live in a quiet, quaint atmosphere—a small culture-conscious town, home to many who commute the 23 miles to New Orleans five or six days a week.	
Small world	people who share physical and/or conceptual space within a common landscape of cultural meaning.	
Social system	an autopoietic system of communications, where communications reproduce communications (Luhmann, 1995)	
Storm surge	the dome of water carried with hurricane winds onto the land	
Supporters	persons who formally (fire, police, emergency medical, public works, Red Cross, FEMA) or informally (individuals, organizations) render aid during and after disaster	
Survival information (Slagle's)	subsistence information	information about anything to keep the body healthy and alive, such as money to purchase/maintain subsistence needs, as well as food, water, shelter (housing), sleep, activity; necessary to meet level 1 physiological needs
	protection information	information about anything to ensure protection against injury, or threats of injury, inflicted by people, disease, neglect, or accidents; necessary to meet level 2 safety needs

	attachment information	any information that facilitates the connections between and among family, friends, and pets
Susceptibility		a product of social, political, economic, and cultural forces and activities that determines the proneness of individuals and groups to being adversely affected by disaster
Texting		noun – the use of a cell phone’s text messaging software; verb -- sending text messages from a cell phone (text. texted)
Underprivileged		those without the economical means or the interest in being informationally connected with the world outside their community.
Victims		people who are directly and negatively affected by disaster
Vulnerability		the dependent component of disaster that is determined by the degree of risk, susceptibility, resistance and resilience
Worldview		is a collective perception members of a social world hold in common regarding those things with are important and things deemed trivial or unimportant.

APPENDIX B  
INFORMED CONSENT FORM

## GRADUATE STUDENT INVESTIGATOR AND ADULT SUBJECTS

University of North Texas Institutional Review Board

### Informed Consent Form

Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the purpose and benefits of the study and how it will be conducted.

Title of Study: Information Flow among Victims of and Responders to the Collapse of Infrastructure in the After-Math of Disaster

Principal Investigator: Tisha Pipes, a graduate student in the University of North Texas (UNT) Department of School of Library and Information Sciences.

#### **Purpose of the Study:**

You are being asked to participate in a research study which involves learning how, when, and where victims of and responders to disaster shared information.

#### **Study Procedures:**

You will be asked to explain how you sent and received needed information immediately before, during, and after the disaster. The time you spend telling your story will be at your discretion.

#### **Foreseeable Risks:**

The potential risks involved in this study are (include any foreseeable risks or discomforts which the subject may experience or state that "No foreseeable risks are involved in this study.").

#### **Benefits to the Subjects or Others:**

We expect the project to benefit future victims of and responders to disaster by allowing them to learn from your innovation and self-preservation methods for obtaining life-sustaining information. Information scientists and Emergency Managers can benefit from learning how real people share information during times of catastrophe. The information you provide can help these scientists create improved methods for disaster preparation and response.

#### **Procedures for Maintaining Confidentiality of Research Records:**

Your name and contact information will only be documented and viewed solely by I for the purpose of later contact if clarification of your information is required. The recording of your story will be maintained until transcribed to an electronic file. The electronic file will not include your name. Your name will not be used in publications of the study.

#### **Review for the Protection of Participants:**

This research study has been reviewed and approved by the UNT Institutional Review Board (IRB). The UNT IRB can be contacted at (940) 565-3940 with any questions regarding the rights of research subjects.



**Research Participants' Rights:**

Your signature below indicates that you have read or have had read to you all of the above and that you confirm all of the following:

- Tisha Pipes has explained the study to you and answered all of your questions. You have been told the possible benefits and the potential risks and/or discomforts of the study.
- You understand that you do not have to take part in this study, and your refusal to participate or your decision to withdraw will involve no penalty or loss of rights or benefits. The study personnel may choose to stop your participation at any time.
- You understand why the study is being conducted and how it will be performed.
- You understand your rights as a research participant and you voluntarily consent to participate in this study.
- You have been told you will receive a copy of this form.

\_\_\_\_\_  
Signature of Participant

\_\_\_\_\_  
Date

**For the Principal Investigator or Designee:**

I certify that I have reviewed the contents of this form with the participant signing above. I have explained the possible benefits and the potential risks and/or discomforts of the study. It is my opinion that the participant understood the explanation.

\_\_\_\_\_  
Signature of Principal Investigator or Designee

\_\_\_\_\_  
Date

APPENDIX C  
IRB APPLICATION APPROVAL

UNIVERSITY<sup>of</sup>  
NORTH TEXAS  
*Office of Research Services*

September 13, 2005

Tisha Pipes  
School of Library and Information Sciences  
University of North Texas

Re: Human Subjects Application No. 05-262

Dear Ms. Pipes:

As permitted by federal law and regulations governing the use of human subjects in research projects (45 CFR 46), the UNT Institutional Review Board has reviewed your proposed project titled "Information Flow Among Victims of and Responders to the Collapse of Infrastructure in the After-math of Disaster." The risks inherent in this research are minimal, and the potential benefits to the subject outweigh those risks. The submitted protocol and consent form are hereby approved for the use of human subjects in this study. **Federal Policy 45 CFR 46.109(e) stipulates that IRB approval is for one year only.**

Enclosed is the consent document with stamped IRB approval. Please copy and **use this form only** for your study subjects.

It is your responsibility according to U.S. Department of Health and Human Services regulations to submit annual and terminal progress reports to the IRB for this project. Please mark your calendar accordingly. The IRB must also review this project prior to any modifications.

Please contact Shelia Bourns, Research Compliance Administrator, or Boyd Herndon, Director of Research Compliance, at extension 3940, if you wish to make changes or need additional information.

Sincerely,



*For:* Scott Simpkins, Ph.D.  
Chair  
Institutional Review Board

APPENDIX D  
INTERVIEW SCHEDULE

## **Information Technology**

Before the disaster, did you have: Cell phone? Internet service? Phone (hard line)? TV? Radio?

After the disaster, did you have: Cell phone? Internet service? Phone (hard line)? TV? Radio?

## **Disaster Warning Information**

When did you receive information warning of Hurricane Katrina? How did you receive it?

Did you stay or evacuate? If you evacuated, where did you go? What information determined whether you stayed or evacuated? Where did you receive the information that determined whether you stayed or evacuated? (past experience, TV/radio report, Internet, conversation)

## **Information Needs after Disaster**

What types of information did you find that you needed after the Katrina passed? What method did you choose to find the information? (person, phone, cell, email, Internet, other) What barriers did you face in receiving information? (no phone, Internet, other, etc.) If you received the information, how did you receive it? (in-person, phone, cell, email, other) Why did you choose this method to look for the information?

## **Information Sharing with Responders**

Responders include: police, fire fighters, hospitals/physicians/emergency medics, FEMA, Red Cross, insurance agents, governmental authorities (local, state, federal), clean-up crews, appraisers, etc.

Were you able to contact responders? If yes, how did you contact them? (in-person, phone, cell, email, other) Why did you choose this method to contact responders? Did you receive information from responders? If yes, how did you receive it (in-person, phone, cell, email, other)

## **Two months after Hurricane Katrina**

How do you feel your life plans were interrupted after the devastation of Hurricane Katrina?

What information was needed to continue with the life plans following Katrina? How was the information discovered? Why did you decide to choose it? How did you use the information?

For each piece of information, how (what process) and where (what places, people) and why do they look for and use it? Why do they decide to choose it or not to choose it? In what instances and how do you feel you had to settle for information that was not exactly what you needed (satisficing)?

## REFERENCES

- ABCe (2010). Audit Bureau of Circulations. Retrieved from <http://www.accessabc.com/>
- Anderson, W. A. (1964). *Some observations on a disaster subculture: The organizational response of Cincinnati, Ohio, to the 1964 flood*. Newark, DE University of Delaware Library Institutional Repository: Disaster Research Center.
- Anzaldúa, G. (1987). *Borderlands/la frontera: The new mestiza*. San Francisco, CA: Aunt Lute Book Company.
- Auld/Powhatan (2007). Powhatan museum of indigenous arts and culture. Retrieved from [www.powhatanmuseum.com/Hurricane.html](http://www.powhatanmuseum.com/Hurricane.html)
- Bales, R. (1950). *Interaction process analysis: A method for the study of small groups*. Cambridge, MA: Addison-Wesley.
- Barton, A. H. (1970). *Communities in disaster: A sociological analysis of collective stress situations*. Garden City, NY: Doubleday Anchor Book.
- Bates, D. G., & Flog, F. (1990). *Cultural anthropology*. New York: McGraw-Hill.
- Belkin, N. J. (2004). Human information behavior. Retrieved from <http://www.scils.rutgers.edu/~belkin/510-04.html>
- Berkowitz, S. (1997). Analyzing qualitative data. In J. Frechtling & L. Sharp (Eds.), *User-friendly handbook for mixed method evaluations*: Directorate for Education and Human Resources Division of Research, Evaluation and Communication, National Science Foundation.

- Brito, J., & Rothschild, D. M. (2009). Information trickles up. *Caring Communities: The Role of Nonprofits in Rebuilding the Gulf Coast. Special Issue of Local Knowledge*, 2. Retrieved from <http://localknowledge.mercatus.org/category/articles/>
- Bucher, R. (1956-57). Blame and hostility in disaster. *American Journal of Sociology*, 62, 467-475.
- Bunn, T. (2006). Berkeley cosmology group educational outreach activities: Black holes faq. Retrieved from <http://cosmology.lbl.gov/>
- Burnett, G., Besant, M., & Chatman, E. (2001). Small worlds: Normative behavior in virtual communities and feminist bookselling. *Journal of the American Society for Information Science*, 52 (7), 536-547.
- Burnett, G., Jaeger, P. T., & Thompson, K. M. (2008). Normative behavior and information: The social aspects of information access. *Library & Information Science Research*, 30(1), 56-66.
- Calderón, E. M. (2010). The taínos of puerto rico: Rediscovering borinquen (Lecture ed.). New Haven, Connecticut: Yale-New Haven Teachers Institute.
- Carr, L. J. (1932). Disaster and the sequence-pattern concept of social change. *The American Journal of Sociology*, 38(2), 207-218.
- Case, D. O. (2002). *Looking for informaton: A survey of research on information seeking, needs, and behavior*. London: Academic Press.
- Case, D. O. (2007). *Looking for informaton: A survey of research on information seeking, needs, and behavior*. London: Academic Press.

- CCSP (2008). *Impacts of climate change and variability on transportation systems and infrastructure: Gulf Coast study, Phase I*. . Washington, DC, USA: Louisiana State University.
- Chatman, E. A. (1991). Life in a small world: Applicability of gratification theory to information-seeking behavior. *Journal of the American Society for Information Science*, 42(6), 438-449.
- Chatman, E. A. (1996). The impoverished life-world of outsiders. *Journal of the American Society for Information Science*, 47(3), 193.
- Chatman, E. A. (1999). A theory of life in the round. *Journal of the American Society for Information Science*, 50(3), 207-217.
- Chatman, E. A. (2000). Framing social life in theory and research. *New Rev. Inf. Behav. Res.*, 1(January), 3-17.
- Chatman, E. A. (2000). Framing social life in theory and research. *New Review of Information Behaviour Research*, 1(January), 3-17.
- CNN (2005). New Orleans evacuations under way: Health emergency declared; thousands may be dead. *CNN Weather*. Retrieved from <http://www.cnn.com/2005/WEATHER/08/31/katrina.impact/>
- Comfort, L., & Haase, T. (2006). Communication, coherence, and collective action. [ Additional Info: Sage Publications; 20060401]. *Public Works Management & Policy*, 10(4), 328-343.
- Davis, K. (2005). President of St. Tammany parish, Sunday morning, August 28, 2005 Available from [http://www2.stpgov.org/news/2005/SundayAug28\\_8am\\_FirstCallSundayMorning.html](http://www2.stpgov.org/news/2005/SundayAug28_8am_FirstCallSundayMorning.html)



Demographic Profile Highlights: Slidell, L. (2000). *SF1, SF3* (American Fact-Finder ed.): U.S. Census Bureau.

Deutsch, K. W. (1966). *The nerves of government: Models of political communication and control*. New York: The Free Press.

Drabek, T. (1986). *Human systems responses to disaster: An inventory of sociological findings*. New York: Springer-Verlag.

Drabek, T. E., & McEntire, D. A. (2003). Emergent phenomena and the sociology of disaster: Lessons, trends and opportunities from the research literature. *Disaster Prevention and Management: An International Journal* 12, no. 2.

Dynes, R. R., Tierney, K. J., & Fritz, C. E. (1994). Foreward: The emergence and importance of social organization: The contributions of e.L. Quarantelli. In R. R. Dynes & K. J. Tierney (Eds.), *Disasters, collective behavior, and social organization*. Newark: University of Delaware Press.

Emanuel, K. A. (2005). *Divine wind: The history and science of hurricanes*. New York: Oxford University Press.

Feder, L. (2008). Disaster reporting through the ages: In both the galveston and Katrina storms, the news often was the news. *Columbia New Review Web Supplement: Overload! Journalism's battle for relevance in an age of too much information*, (November/December). Retrieved from [http://www.cjr.org/overload/disaster\\_reporting\\_through\\_the.php](http://www.cjr.org/overload/disaster_reporting_through_the.php)

FEMA (2007). *Robert t. Stafford disaster relief and emergency assistance act, as amended, and related authorities: United States code title 42. The public health and welfare, chapter 68. Disaster relief*. Retrieved from [http://www.fema.gov/pdf/about/stafford\\_act.pdf](http://www.fema.gov/pdf/about/stafford_act.pdf)

Fine, G. A., & Kleinman, S. (1979). Rethinking subculture: An interactionist analysis. *The American Journal of Sociology*, 85(1), 1-20.

Frey, L. (Ed.). (1999). *The handbook of group communication theory & research*. Thousand Oaks: SAGE Publications.

Fritz, C. E. (1961). Disaster. In R. K. N. Merton, Robert A (Ed.), *Contemporary social problems* (pp. 651-694). New York: Harcourt.

Fritz, C. E., & Williams, H. B. (1957). The human being in disasters: A research perspective. *Annals of the American Academy of Political and Social Science*, 309, 42-51.

Gill, D. A. (2007). Secondary trauma or secondary disaster? Insights from Hurricane Katrina. *Sociological Spectrum: Mid-South Sociological Association*, 27(6), 613-632.

Glesne, C., & Peshkin, A. (1992). *Becoming qualitative researchers*. White Plains, NY: Logman.

Gordon, R. (1986). Human responses to natural disasters. *The Australian Journal of Emergency Management* 1(2).

Gordon, R. (2002). The social dimension of emergency recovery. In E. M. Australia (Ed.), *Australia emergency management manual series: Recovery*. Canberra, Australia: Emergency Management Australia.

Gordon, R. (2010). Community impact of disaster and community recovery. Retrieved from <http://www.psychology.org.au/>

GPO (2006). *Hurricane Katrina, lessons learned*. Retrieved from

- Granot, H. (1996 ). Disaster subcultures. *Disaster Prevention and Management* 5 (4 ), 36-40.
- Gray, W. M., & Shea, D. (1973). The hurricane's inner-core region. Part II: Thermal stability and dynamic characteristics. *Journal of the Atmospheric Sciences*, 30(8), 1544-1564
- Grow, B. (2005). Finding Katrina's "Forgotten". *Business Week Online*. Retrieved from <http://www.businessweek.com/>
- Handwerk, B. (2005). New Orleans levees not built for worst case events. *National Geographic news: Reporting your world daily*, (September 2). Retrieved from [http://news.nationalgeographic.com/news/2005/09/0902\\_050902\\_katrina\\_levees.html](http://news.nationalgeographic.com/news/2005/09/0902_050902_katrina_levees.html)
- Hare, A. P. (1962). *Handbook of small group research*. New York: Collier Macmillan.
- Harris, T., & Sherblom, J. (2002). *Small group and team communication*. Boston: Allyn & Bacon.
- Hayim, G. (1996). Disaster subcultures. *Disaster Prevention and Management*, 5(4), 36.
- Historical hurricane tracks (2010). Retrieved from NOAA Coastal Services Center: <http://csc-s-maps-q.csc.noaa.gov/>
- Hoetmer, G. J. (1991). Introduction. In T. E. Drabek & G. J. Hoetmer (Eds.), *Emergency management: Principles and practice for local government*. Washington, D.C.: International City Management Association.
- Homeland Security and Appointed Disaster-Related Departments and Organizations (2004). *National response plan*. Retrieved from <http://www.iir.com/global/FusionCenter/NRPbaseplan.pdf>
- Huberman, M., & Miles, M. B. (1998). Data management and analysis methods. In N. K. Denzin & Y. S. Lincoln (Eds.), *Collecting and interpreting qualitative materials* (pp. 179-210). Thousand Oaks, CA: SAGE Publications.

Infoplease.com (2000). Economic statistics: Slidell, Louisiana. Retrieved from

<http://www.infoplease.com/us/census/data/louisiana/slidell/economic.html>

Jaeger, P. T., & Thompson, K. M. (2004). Social information behavior and the democratic process: Information poverty, normative behavior, and electronic government in the United States. *Library & Information Science Research*, 26(1), 94-107.

Johnson, A., Trotter, P., & Zeigler, F. (2003). *Partnership between the greater New Orleans expressway commission and the weather forecast office (WFO) in Slidell, LA*. Retrieved from <http://www.srh.noaa.gov/ssd/techmemo/sr223.pdf>

Johnson, B., & Christensen, L. (2004). *Educational research: Quantitative, qualitative, and mixed approaches*. Boston: Pearson Education.

Jones, Y. P. (2006). *Just the facts ma'am? A contextual approach to the legal information use environment*. Paper presented at the 6th ACM conference on designing interactive systems University Park, PA.

Kaplan, B., & Maxwell, J. A. (1994). Qualitative research methods for evaluating computer information systems. In J. G. Anderson, C. E. Aydin & S. J. Jay (Eds.), *Evaluating health care information systems: Methods and applications* (pp. 45-68). Thousand Oaks, CA: Sage.

Kennedy, M. E. (2004). *Emergent groups and disaster subculture: A university's response to the July 28, 1997 flood*. Unpublished Ph.D., Colorado State University, United States -- Colorado.

Keyton, J. (1999). Relational communication in groups. In L. Frey (Ed.), *The handbook of group communication theory & research* (pp. 192-224). Thousand Oaks, CA: Sage.

- Kreps, G. A., & Bosworth, S. L. (1993). Disaster, organizing, and role enactment: A structural approach. *American Journal of Sociology*, 99(2), 428.
- Krippendorff, K. (2004). *Content analysis: An introduction to its methodology* Thousand Oaks, CA: Sage Publications.
- Kuhlthau, C. C. (1999). The role of experience in the information search process of an early career information worker: Perceptions of uncertainty, complexity, construction, and sources. *Journal of the American Society for Information Science*, 50(5), 399-412.
- Lewin, K., Lippitt, R., & White, R. (1939). Patterns of aggressive behavior in experimentally created "Social climates". *Journal of Social Psychology*, 10, 271-299.
- Lewis, P. (2008). Twitter comes of age with fast reports from the ground. *The Guardian*, (November 28). Retrieved from <http://www.guardian.co.uk/world/2008/nov/28/mumbai-terror-attacks-india-internet-technology-twitter>
- Little, R. G. (2005). *Organizational culture and the performance of critical infrastructure: Modeling and simulation in socio-technological systems*. Paper presented at the 38th International Conference on System Sciences.
- Losing Louisiana. (2008). *Times-Picayune*, Special Edition. Retrieved from <http://www.nola.com/coastal/>
- Luhmann, N. (1986). The autopoiesis of social systems. In F. Geyer & J. V. d. Zeuwen (Eds.), *Sociocybernetic paradoxes: Observation, control and evolution of self-steering systems* (pp. 172-192). London: Sage.
- Luhmann, N. (1995). *Social systems*. Stanford: Stanford University Press.

- Luhmann, N. (2006). System as difference. *Organization, 13*(1), 37-57.
- Mahoney, C. (1997). Common qualitative methods. In L. Sharp & J. Frechtling (Eds.), *User-friendly handbook for mixed method evaluations*. Arlington, VA: National Science Foundation Division of Research Evaluation and Communication.
- Mahoney, D., Koerner, A. F., & Fitzpatrick, M. A. (2007). Constructing reflexive fieldwork relationships: Toward a theory of family communication. [ ]. *Qualitative Inquiry, 13*(4), 573-594.
- Maslow, A. (1943). A theory of human motivation. *Psychological Review, 50*(4), 370-396.
- Maslow, A. (1954). *Motivation and personality*. New York: Harper & Row.
- Maslow, A. (1962). *Toward a psychology of being*. Princeton, New Jersey: D. Van Nostrand Company, inc.
- Maslow, A. (1963). The need to know and the fear of knowing. *Journal of General Psychology, 68*(1), 111.
- Maslow, A. (1971). *The farther reaches of human nature*. New York: The Viking Press.
- Mawson, A. R. (2005). Understanding mass panic and other collective responses to threat and disaster. *Psychiatry: Interpersonal & Biological Processes, 68*(2), 95-113.
- McQuaid, J., & Schleifstein, M. (2002). Tempting fate. *The Times Picayune*. Retrieved from Tempting Fate In 1960, an average of 187 people were living on each square mile of U.S. coast
- Merton, R. K. (1972). Insiders and outsiders: A chapter in the sociology of knowledge *American Journal of Sociology, 78*, 9-47.

- Meyers, Erica M., Fisher, Karena E., & Marcoux, E. (2009). Making sense of an information world: The everyday life information behavior of preteens. *The Library Quarterly*, 79(3), 301-341.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis*. Newbury Park, CA: Sage.
- Miller, G. A., & Miller, G. A. (1951). *The social approach*. New York, NY, US: McGraw-Hill.
- Miller, R. (2007). *Hurricane Katrina: Communications & infrastructure impacts*. Paper presented at the Threats at Our Threshold
- Moore, H. E. (1964). *...And the winds blew*. Austin, TX: The Hogg Foundation for Mental Health: The University of Texas.
- National Governor's Association (1979). *Comprehensive emergency management*. Washington D.C: Defense Civil Preparedness Agency.
- National Hurricane Center, Army Corps of Engineers, & National Oceanic and Atmospheric Administration (2002). Scurge of surge. *Times-Picayune*,
- National Oceanic and Atmospheric Administration (1999). Defining a hurricane. Retrieved from <http://www.aoml.noaa.gov/general/lib/defining.html>
- National Weather Service (2010). National Hurricane Center. Retrieved from <http://www.nhc.noaa.gov/>
- Neal, D. M. (1997). Reconsidering the phases of disaster. *International Journal of Mass Emergencies and Disasters*, 15(2), 239-264.
- Neuman, W. L. (1997). *Social research methods: Qualitative and quantitative methods*. Boston: Allen & Bacon.
- Neumann, P. G. (2005). Anticipating disasters. *Communications of the ACM*, 48, 128.

- Nielsen Ratings Company (2010). Nielsen. Retrieved from <http://www.nielsen.com/>
- Norlander, B. (2005, September 5). Taming the storm: A hurricane's violent winds can ravage coastlines. Can scientists find a way to stop these devastating storms? *Science World*.
- Norwood, G. (2009). Types of information needed to meet maslow's hierarchy of needs.
- NWS Internet Services Team (2008). History of the national weather service. Retrieved from <http://www.nws.noaa.gov>
- O'Brien, M. (Writer) (2006). Katrina six months later; the forgotten city of Slidell. Slidell, LA: CNN.
- O'Connor, E. F. (2006). And the Church still stands! *Vespry Papers*(March/April).
- Park, R. E. (1952). *Human communities*. Illinois: Free Press.
- Patton, M. Q. (2002). *Qualitative research & evaluation methods* Thousand Oaks, CA: Sage.
- Pendelton, S. C. (1998). Rumor research revisited and expanded. *Communication Abstracts*, 21(5).
- Pendleton, V. E., & Chatman, E. (1998). Small world lives: Implications for the public library. *Library Trends*, 46(4), 732-752.
- Perry, R. W. (2006). What is a disaster? *Handbook of disaster research* (pp. 1-15). New York: Springer.
- Presley, J. B., Clery, S. B., & Carroll, C. D. (2001). *Middle income undergraduates: Where they enroll and how they pay for their education*. Washington, DC: U.S. Department of Education National Center for Education Statistics.
- Prince, S. H. (1920). *Catastrophe and social change based upon a sociological study of the halifax disaster*. Columbia, New York.



- Quarantelli, E. L. (1954). The nature and conditions of panic. *The American Journal of Sociology*, 60(3), 267-275.
- Quarantelli, E. L. (1986). *Nsf final report on italian conference*. [Newark]: Disaster Research Center, University of Delaware.
- Quarantelli, E. L. (1989). *Disaster recovery : Comments on the literature and a mostly annotated bibliography*. [Newark]: Disaster Research Center, University of Delaware.
- Quarantelli, E. L. (1995). *Emergent behavior and groups in the crisis time of disasters*: University of Delaware Disaster Research Center.
- Quarantelli, E. L. (1999). *The disaster recovery process: What we know and do not know from research*. Paper presented at the International Forum on Civil Protection.
- Quarantelli, E. L. (2002). *A half century of social science disaster research: Selected major findings and their applicability*. Paper presented at the Hazards 2002 Conference.
- Quarantelli, E. L., & Dynes, R. R. (1977). Response to social crisis and disaster. *Annual Review of Sociology*, 3(1), 23-49.
- Rodriguez, H., Trainor, J., & Quarantelli, E. L. (2006). Rising to the challenges of a catastrophe: The emergent and prosocial behavior following Hurricane Katrina. *The ANNALS of the American Academy of Political and Social Science*, 604(1), 82-101.
- Savolainen, R. (1995). Everyday life information seeking: Approaching information seeking in the context of "Way of life.". *Library & Information Science Research*, 17(3), 259-294.
- Savolainen, R. (2004). Everyday life information seeking. *Encyclopedia of Library and Information Science*, 1(1), 1-9.

- Savolainen, R. (2007). Filtering and withdrawing: Strategies for coping with information overload in everyday contexts. *Journal of Information Science*, 1-11.
- Schensul, J. J., & LeCompte, M. D. (1999). Using ethnography to enhance public programming. In J. Schensul & LeCompte (Eds.), *The ethnographer's toolkit* (pp. 115-178). Walnut Creek, CA: Altamira.
- Schleifstein, M., & McQuaid, J. (2002). Washing away: In harm's way. *The Times-Picayune*. Retrieved from <http://www.nola.com/hurricane/content.ssf?/washingaway/index.html>
- Schleifstein, M., & McQuaid, J. (2002). Washing away: The big one. *The Times-Picayune*. Retrieved from <http://www.nola.com/hurricane/content.ssf?/washingaway/index.html>
- Schostak, J. (2006). *Interviewing and representation in qualitative research projects*. Open University Press.
- Schostak, J. (2010). Qualitative research, research based education and enquiry learning. Retrieved from <http://www.enquirylearning.net/ELU/SubFrame.html>
- Schutz, A. (1976). *The phenomenology of the social world*. London: Heineman.
- Seidl, D. (2004). Luhmann's theory of autopoietic social systems. *Munich Business Research*(2), 28.
- Shannon, C., & Weaver, W. (1948). *The mathematical theory of communication*. Chicago: University of Illinois Press.
- Shaw, B. L. (1992). *Human adjustment to chronic threat: The study of an earthquake disaster subculture*. Unpublished Ph.D., University of California, Los Angeles, United States -- California.

- Slagle-Pipes, T. (2007). Information disasters and disaster information: Where information science meets emergency management In D. A. McEntire (Ed.), *Disciplines, disasters and emergency management: The convergence and divergence of concepts, issues and trends in the research literature*. Springfield, Illinois: Charles C Thomas Publisher · LTD.
- Slagle-Pipes, T., & Knudson, J. (2006). Katrina bankrupts the information-rich: Information poverty in Slidell, Louisiana. In Natural Hazards Center (Ed.), *Learning from catastrophe: Quick response research in the wake of Hurricane Katrina* (pp. 403-428). Boulder City, CO: Natural Hazards Center.
- Smith, D. W. (Ed.) (2008) Stanford Encyclopedia of Philosophy. Center for the Study of Language and Information, Stanford University.
- Stake, R. E. (1995). *The art of case study research*. Thousand Oaks: Sage Publications.
- Star, S. L. (1999). Ethnography of infrastructure. *American Behavioral Scientist*, 43(3), 377-391.
- Stevenson, D. (1997). *Information and communications technology in UK schools: An independent inquiry*. London: The Independent ICT in Schools Commission.
- Taylor, K., Priest, S., Sisco, H. F., Banning, S., & Campbell, K. (2009). Reading Hurricane Katrina: Information sources and decision-making in response to a natural disaster. *Social Epistemology*, 23(3/4), 361-380.
- Tellis, W. (1997). Application of a case study methodology. *The Qualitative Report*, 3(3). Retrieved from <http://www.nova.edu/ssss/QR/QR3-3/tellis2.html>
- Tennant, R. (2001). Coping with disasters. *Library Journal*, 126(19).
- Tremblay, M.-A. (1957). The key informant technique: A nonethnographic application. *American Anthropologist*, 59(4), 688-701.

U.S. Census Bureau (2000). *Median household income, 1999: Louisiana parishes*. Retrieved from <http://factfinder.census.gov>

Walsham, G. (1998). It and changing professional identity: Micro-studies and macro-theory. *Journal of the American Society for Information Science*, 49(12), 1081–1089.

Weather Channel (2005). Hurricane central: Weather.com.

*Weathering the Storm: The Need for a National Hurricane Initiative: Hearing Before the Committee On Commerce, Science, and Transportation of the United States Senate*, 111 Congress, 1st Sess. 1 (2009).

Weller, J. M., & Quarantelli, E. L. (1973). Neglected characteristics of collective behavior. *The American Journal of Sociology*, 79(3), 665-685.

Wenger, D. E. (1978). Community response to disaster: Functional and structural alterations. In E. L. Quarantelli (Ed.), *Disasters : Theory and research* (pp. 282 p.). London ; Beverly Hills, Calif.: Sage Publications.

Wenger, D. E., & Weller, J. M. (1973). *Disaster subcultures: The cultural residues of community disasters* University of Delaware Library Institutional Repository Disaster Research Center.

White, S. (1994). The data network disaster recovery plan: Considerations and concerns. *Information Management and Computer Security*, 2(3), 29.

Whyte, W. F. (1981). *Street corner society*. Chicago: University of Chicago Press

Willoughby, H. E., Jorgensen, D. P., Black, R. A., & Rosenthal, S. L. (1985). Project stormfury, a scientific chronicle, 1962-1983. *Bulletin of the American Meteorological Society*, 66, 505-514.

Wilson, P. (1973). Situational relevance. *Information Storage and Retrieval*, 9(8), 457-471.

Wolensky, R., & Miller, E. (1981). The everyday versus the disaster role of local officials: Citizen and official definitions. *Urban Affairs Quarterly*, 16(4).

Wood, J. T. (2010). *Interpersonal communication: Everyday encounters*. Boston: Wadsworth.

WRAL.com (2006). Six months later, some Katrina victims still wait for FEMA, *Six Months Later, Some Katrina Victims Still Wait For FEMA*: WRAL.

Yin, R. K. (2003). *Case study research: Design and methods*. Thousand Oaks, California: Sage Publications.

Yoon, I. (2005). *A natural disaster and the community rebuilding process: Roles of invisible assets*. Unpublished Ph.D., University of South Carolina, United States -- South Carolina.