THE DAY AFTER: A CRITICAL ANALYSIS OF SALT LAKE CITY'S PLANS FOR RECONSTRUCTION FOLLOWING A NATURAL DISASTER

by

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ABSTRACT

Salt Lake City, Utah sits atop an active geologic fault that produces one major earthquake roughly every 300 years. It has been 350 years since the Wasatch Fault has produced its last major quake. Utah officials have taken steps to ensure Salt Lake City and the surrounding vulnerable communities are prepared to respond when the disaster happens.

New Orleans, Louisiana is built on lands largely below sea level. This hazardous geologic reality is exacerbated by the fact that the waters of the Mississippi River, Lake Pontchartrain, and the Gulf of Mexico surround the city. New Orleans is annually vulnerable to hurricanes generated by the warm gulf waters. Hurricane Katrina made landfall near the city in 2005 causing historic levels of flooding, property damage and loss of life. It is widely agreed that New Orleans was neither prepared for the storm nor able to deliver most services for a long period after the disaster.

Why did New Orleans fail in its response to the disaster? Will Salt Lake City have a different result when the earthquake strikes?

This paper begins with an examination of existing literature on natural disasters and recovery. It analyzes post-Katrina New Orleans as a negative case study in recovery planning. The paper concludes with a critical analysis of the
Salt Lake City disaster recovery plan. Since the plan is currently being revised and updated, ideally the sound planning principles reviewed here can serve to aid the update and other communities developing such plans.
INTRODUCTION

Hurricanes, floods and earthquakes alter the physical landscape of a community with obvious destruction. The impact on the future functioning of a community is less obvious. When a natural disaster strikes, daily life is thrown into chaos. Citizens are left in a state of shock, grieving their losses, longing for a return to normalcy. At these times they look to their government for reassurance and to restore the lost sense of order and security.

Public officials are charged with restoring order through managing reconstruction. They face the tension of reconciling the citizens' desire for swift action and the need for deliberation required to improve the community through rebuilding. An established recovery plan prior to a disaster assists in the management of this tension. If the plan is carefully constructed, well balanced, specific and developed with adequate community input, the post disaster chaos can be reduced substantially.

An examination of the aftermath of Hurricane Katrina in New Orleans, Louisiana provides proof of the need for such a recovery plan. Although the impact of the storm was unprecedented in scale, it was not unexpected. Pre-storm estimates were that such an event would occur at least once every 100
years. In spite of this prediction, the pre-storm planning was so inadequate, it left the community paralyzed and lacking direction for months after the storm ended.

Similarly, Salt Lake City is vulnerable to a large-scale natural disaster. The Wasatch fault line runs directly through the most populated area of the State of Utah. The most active segment of this fault produces a significant earthquake every three hundred years (Utah Seismic Safety Commission, 2008, p. 7). This segment of the Wasatch fault has not produced a major quake in over 350 years. Government officials are keenly aware of this hazard and have spent decades planning to respond to a devastating earthquake. Salt Lake City is no exception; it has developed a Disaster Recovery Plan.

This paper reviews the literature on natural disasters and recovery planning. It then examines the effects of Hurricane Katrina on New Orleans, Louisiana as a case study of pre-planning lapses and inadequate post disaster service delivery. Finally, it compares the current state of the Salt Lake City Disaster Recovery Plan to sound planning principles established in earlier sections of the paper.

1 The Army Corps of Engineers—the governmental entity that manages the complex flood protection system—has been criticized for referring to hurricanes of this scale as “100 year storms.” This wording connotes an unintended sense of certitude when describing a statistical uncertainty. To remedy this issue, the government currently describes meteorological events as having a certain percent chance of occurring in a given year.
Prior to 1977, research in the field of community disaster-recovery was limited to case studies of individual communities and their responses to disasters. As such, the findings of these case studies are difficult to generalize. *Reconstruction Following Disaster* was a seminal book edited and written by Haas, Kates and Bowden. These researchers were unique from their predecessors by articulating general principles of recovery and establishing four distinct periods that follow a disaster in all communities.  

The first phase that occurs after a disaster is the emergency period. During this phase, daily life in the community is drastically changed. Primary actions at this time are focused on providing for the basic needs of the survivors, and caring for the injured. Activities that respond damaged built environment are geared towards aiding search and rescue. Typically this period ends as search and rescue efforts cease and debris begins to be cleared.

The second phase of recovery is the restoration period. At this time, structures capable of being salvaged are assessed, almost all the debris is cleared, and the reconstruction of capitol stock begins. Daily life and economic activity begin to return to normal in the community. This period concludes with

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*Reconstruction Following Disaster* is cited in several sources (R. B. Olshansky, Johnson, & Topping, 2006; Schwab, Topping, Eadie, Deyle, & Smith, 1998; William Spangle and Associates, 1991) found in the bibliography of this thesis.
the resumption of municipal services, repair of utilities, final clearing of rubble, and the return of the population displaced by the disaster.

Typically the third period, the replacement reconstruction period, begins with the reestablishment of the daily routine in a community. During this period most of the community is rebuilt except for large-scale reconstruction projects. The replacement reconstruction periods ends with the replacement of most jobs, housing, and capitol stock lost in the natural disaster.

The final period in the disaster recovery process is the commemorative, betterment, and redevelopment period. In this period typically large-scale, government funded projects are in construction. These projects memorialize the natural disaster and symbolize a communal shift from the traditional path of development. A large-scale downtown revitalization effort initiated by the disaster would be an example of such a project typically seen in this period of recovery. All four periods may occur simultaneously and occur more rapidly in certain areas depending on the their individual circumstances and access to economic resources or social networks (Kates & Pijawka, 1977, pp. 2-3). Correspondingly, individuals who have inadequate financial resources can become isolated from an organized community and have a more difficult, slower recovery process.

The definition of terms such as—recovery, reconstruction, and redevelopment used in this literature is confusing, inconsistent and often nuanced. Although efforts will be made to explain any nuance to the meaning of such terms as they occur throughout this study, this context is aimed at providing
further insight into their intended meaning. For example “recovery” can refer to
different time periods (short or long term) or refer to the entire process of
recovery (i.e. after the emergency phase ends the community begins the process
of recovery). Short-term recovery refers to the period ending with the resumption
of municipal services to pre-disaster levels. Long-term recovery is used with the
term reconstruction as they both refer to a community-wide return to pre-disaster
levels of functionality. “Redevelopment” refers to land-use changes in an area
and/or the creation of new economic opportunity in an attempt to improve the
community beyond what existed before the disaster. For the purposes of this
examination the use of definitions for recovery, reconstruction, and
redevelopment will be that used by land-use planners, local government officials

Theory of Community Recovery

In 2005 Olshansky produced an important resource to the study of
community disaster recovery. Titled Toward a Theory of Community Recovery
from Disaster: A Review of Existing Literature, the paper was presented at the
First International Conference of Urban Disaster Reduction. In it, Olshansky
provides a comparative analysis of significant work in the field of community
recovery and identifies shared principles among this collection of publications.
Many of these common elements involve the pace and quality of recovery.

The recovery process directly relates to the political climate, existing social
and economic realities within a community and to the broader geographic
context. In a recovery, these realities exert significant influence on “speed and quality [which] are the measures of a successful recovery process” (qtd. in R. B. Olshansky, et al., 2006, p. 357). In the recovery process, community involvement in decision making is essential to maintain public support of the recovery plan. Similarly, having strong local leadership that promotes collaboration and provides vision is essential to a successful recovery process. Disasters often trigger the creation of new community-based organizations. These organizations can play an essential role in recovery and local governments should be prepared to collaborate with them. Finally, the establishment of an organization specifically tasked with spearheading the recovery process is critical. This recovery organization can both collaborate with the newly created groups and provide vital information to the community (qtd. in R. B. Olshansky, et al., 2006).

Planning for the post-disaster reconstruction is an essential task that communities must undertake because decisions made hastily can have long-term negative repercussions. The post-disaster process must be efficiently run or else the community will view it as an impediment to rebuilding. An active community planning process before the disaster can greatly improve the quality and speed of a recovery plan. Through this process of planning, the working relationships, lines of communication, goals, and frameworks are established that can strengthen and inform a recovery plan. Community education enhances the participatory process by providing ready access to quality information and informing planning decisions (qtd. in R. B. Olshansky, et al., 2006). In essence, a post-disaster recovery plan is much like any community plan except there is
increased time focus and pressure from the community as a whole. The post-disaster plan may be given inadequate attention because of the community desire to quickly "return to normal".

Social and economic networks that existed prior to the disaster act as the glue that holds a community together. Individuals rebuilding after a disaster will naturally attempt to reestablish these connections. Large-scale land-use changes therefore are rare "because of timing and logistical challenges as well as citizen resistance" (qtd. in R. B. Olshansky, et al., 2006, p. 356). Such changes are only feasible in small-scale settings such as redevelopment areas. Proposals that suggest relocating residential areas are unlikely to succeed without significant public involvement and support during the decision making process. Negative trends in community growth, community relations, and the local economy that existed prior to the disaster will usually accelerate during the recovery process. A citizen's ability to individually recover and speed with which they receive aid is directly related to their socioeconomic level (qtd. in R. B. Olshansky, et al., 2006). Knowledge of these common realities facing cities is important to understanding the recovery process as it occurred in New Orleans and to anticipate what could occur in Salt Lake City after a natural disaster.
Model Recovery Plan

The American Planning Association (APA) and the Federal Emergency Management Agency (FEMA) jointly published a foundational document in the field of recovery planning. Titled, *Planning for Post-Disaster Recovery and Reconstruction* it underpins much of the analysis contained in this work. Of particular interest is a section of the book that presents “A Model Recovery and Reconstruction Ordinance” (Topping, 2005). This example forms a template for municipal and other governmental officials to consider when drafting such an ordinance. The author defines a “recovery plan” as “a pre-event plan for post-disaster recovery and reconstruction, composed of policies, plans, implementation actions, and designated responsibilities related to expeditious and orderly post-disaster recovery and rebuilding, with an emphasis on mitigation” (Topping, 2005, p. 152). Key structural elements that should be included in a post disaster plan are highlighted. A recovery plan should at least be comprised of: policy, implementation steps, and defined designated responsibilities for recovery.

According to Topping, policy is a stated course of action that can lead to regulatory intervention. Hence, having a stated method to achieve those regulations in the form of implementation steps are an important means of achieving those objectives. Indeed, policy should form a core part of a recovery plan, as it is a common element in almost every community plan.

The final element in a recovery plan, having defined designated roles and delegated tasks, is of particular importance because it seeks to provide a
framework for government to operate in the chaotic aftermath of a natural disaster. By assigning role and tasks in the recovery plan, the municipality is capable of efficient and effective action in a unified form.

In addition to providing the general means toward the implementation of a recovery plan, Topping highlights other specific elements of recovery that a plan should include:

The recovery plan shall address [...] such subjects as business resumption, damage assessment, demolitions, debris removal and storage, expedited repair permitting, fiscal reserves, hazards evaluation, hazard mitigation, historical buildings, illegal buildings and uses, moratorium procedures, nonconforming buildings and uses, rebuilding plans, redevelopment procedures, relation to emergency response plan and comprehensive general plan, restoration of infrastructure, restoration of standard operating procedure, temporary and replacement housing, and such other subjects as may be appropriate to expeditious and wise recovery. (2005, p. 154)

It is noteworthy that at the end of a rather specific list, the author suggests that although extensive, the list is not all inclusive and can expand to include other specific issues. This clause ensures that although this template provides a guide, it remains intentionally open for maximum relevance to a diversity of governmental entities.

It is not enough that a recovery plan be specific, but also that it be coordinated with other plans at different levels of government and with neighboring communities (Topping, 2005, p. 154). This step can eliminate
duplication, overlap and conflicting sections that would have to be resolved after a disaster occurred. Relief funds from the federal government, primarily through FEMA, go to the state for local allocation depending on the scale of the disaster. Furthermore, federal level agencies such as Housing and Urban Development (HUD), Environmental Protection Agency (EPA), Department of Transportation (DOT), and Small Business Administration (SBA) are other entities which can provide resources, given that the requesting entity meets certain requirements.

Funding is the lifeblood of a recovery effort. A natural disaster recovery plan should be clear and succinct and minimize administrative steps that an assistance funds applicant must take to receive help. Governmental funds typically have restrictions and regulations to be fulfilled before they can be accessed. An ill-informed applicant could lose valuable time and resources applying for funding for a project for which he or she is ineligible. A strong recovery plan should form a metaphorical map of potential funding avenues, their corresponding guidelines, restrictions.

Next, Topping addresses the importance of coordination between governmental entities below the federal level. A natural disaster's impact is not confined by administrative boundary. Issues facing one community might be the same as those facing a neighboring community or the whole region. Thus, in the chaos of recovery and reconstruction there is an opportunity for conflict or collaboration between governments. Conflict can occur when a small local decision proves to negatively affects a neighboring community. Poor communication can lead to a plan that is incompatible the protocol of a body that
has a larger scope of authority. Collaboration could take the form of sharing resources or coordinating reconstruction plans to mutually benefit both communities. Hence, a recovery plan should include coordination with other governments to ensure a comprehensive and harmonious response to a natural disaster.

Formal commitment to a plan by key decision makers such as a mayor or city council is essential. A plan will fail unless adopted by the local legislative body. Plans must make the transition from policy to regulation if they are to be realized. Specifically, key decision makers in local governments must “become comfortable with the concept of pre-event plan [...] in order to be supportive of greater than normal delegation of decisions to staff, which may be necessary during post-disaster recovery operations” (Topping, 2005, p. 155). Submitting a plan for adoption by a city council opens the process up to scrutiny and consideration by individuals whose support is essential for implementation. Adoption of a plan by the local legislative body can serve as a means of strengthening it by revealing weak or neglected elements of the plan.

In addition to ensuring coordination between governments, a recovery plan should also “be prepared in coordination with related elements of the comprehensive plan and emergency operations plan” or other relevant plans (Topping, 2005, p. 155). Coordinating the recovery plan with the emergency operations plan helps ensure a smooth transition between the emergency and recovery phases following a natural disaster.
Involvement of the public and other stakeholders in developing the recovery plan is another essential element in a strong recovery plan (Topping, 2005, p. 155). Elected officials, whose support is necessary for enacting the plan, are accountable to their constituents. Nelson, et al. also points out “planning processes need community members to help set priorities and devise projects” (2007, p.45). After a disaster, time is a precious resource. Hence, a pre-disaster plan should encourage citizen involvement through different avenues be it direct contact, or indirectly through community or grass-roots organizations.

As mentioned earlier, having the public’s involvement strengthens the plan as a whole by providing additional perspective. Involvement of the public also generates confidence in the recovery process. When the public is confident in the nature of the recovery plan, generalized anxiety about recovery is greatly reduced. With diminished anxiety, the public may be more patient with a deliberative, albeit slower, recovery and be more able to consider the long-term impact of decisions made during recovery. It is also conceivable that a popular recovery plan could serve as a unifying element in a community seeking to reestablish its identity and possibly redefine itself. It should be noted, however, that these assumptions are simply a logical extension of the facts and have not been tested in research.
Rebuilding New Orleans after Hurricane Katrina has been and continues to be a monumental task. The response and recovery after Katrina highlighted chronic pre-storm needs of a community and revealed missteps in the recovery process. Despite being vulnerable to a unique set of natural hazards and unique as the city itself, New Orleans provides valuable lessons that are applicable to cities everywhere.

The Unified New Orleans Plan (UNOP) is the comprehensive plan for the recovery of the city that was finalized over a year after Hurricane Katrina. It is unfortunate that it was so long in development and was so fraught with suspicion by the public. Observations of the city’s actions and missteps after the floodwaters were drained can easily be correlated with elements that should have been accounted for and incorporated into an effective recovery plan prior to the disaster. Furthermore, the severe difficulties of rebuilding Lower 9th Ward neighborhood serve as a case study of challenges that any socioeconomically disadvantaged area would face in any city in the country. Hurricane Katrina caused a series of events that were closely connected to the unique geography of the area.
Geography and Hurricane Katrina

New Orleans rests on the deltaic plain of the Mississippi River surrounded by the river to the south and Lake Pontchartrain to the north. The lake functions as an estuary of the Gulf of Mexico. The city protects itself from floodwaters through a system of floodwalls, levees, and canals. Through the process of sedimentation, the 'muddy Mississippi' deposits silt at its mouth on the gulf coastline; forming a delta and the landmass on which New Orleans and neighboring communities are located. Floods are necessary to replenish deltas by depositing a new layer of sediment over the flooded areas. Thus, the soil of the Mississippi Delta region is entirely comprised of extremely fine silt, which is very vulnerable to erosion and subsidence.

The flood management system itself prevents floods from replenishing the landmass on which the city is built. Although New Orleans was originally constructed at or above sea level in the early 18th century, areas not adjacent to the river have lost elevation. Paradoxically, the system of levees and flood walls is directly responsible for making the city even more vulnerable to floods and hurricane storm surges (Giegengack & Foster, 2006, pp. 13-23). Knowledge of this unique geography is essential in understanding the many ways in which Hurricane Katrina was particularly devastating.

Hurricane Katrina flooded 80% of the city of New Orleans for nearly 6 weeks in the worst hit areas. The winds of the hurricane did significant damage,
but the most widespread devastation came from the storm surge that damaged protective levees that surround the city. As noted above, New Orleans is a basin, surrounded by water. Any significant increase in the level of Lake Pontchartrain or the Mississippi River is cause for concern. Water in the basin is pumped into canals that drain into Lake Pontchartrain. River levels naturally fluctuate, but increasing or decreasing the estuary-lake levels is more difficult to achieve. Lake water is only able to be moved by a complex system of pumps given its direct connection to the Gulf of Mexico.

Hurricane Katrina was a Category 5 storm with winds exceeding 150 mph when it made landfall on August 29, 2005. The wind produced massive storm surges exceeding twenty feet battered and destroyed many of the pumps, outer protective levees and floodwalls around the city. Since levees and floodwalls are useless with a gap, they are only as strong as their weakest section. Finally, much of the city is below sea level and extremely flat, so any breach in the levee floods large tracts of land.

The hurricane made landfall on the coastline near Lake Pontchartrain's connection to the Gulf of Mexico. The storm surge caused the water level in the lake to rise and rendered the canals useless. So not only did the swollen lake overtop some levees on the lakeshore it used the city's drainage system against itself by pushing water into the interior of the city. The level of water in the lake of Hurricane Katrina on a map of the city. It has been extremely helpful in explaining the process of flooding within this geographically complex city. (Swenson, n.d.) in the bibliography provides necessary access information to this resource.
did not return to normal for four days, so any attempt to drain the city was impossible (Swenson, n.d.). As the waters slowly receded from the city, the community began to grapple with the scale of the devastation and loss of life.

**Post-Katrina Recovery**

There has been an abundance of criticism and blame for lack of preparation before the storm and inadequate response after it, assigned to all levels of government from the city to the federal level. This paper does not seek to tread this well-worn path, but rather to focus on elements that have prevented an efficient recovery. Nelson, Ehrenfeucht, and Laska articulated New Orleans’ difficulty in recovering to two main challenges:

1. how to enable all residents, including those with the fewest resources, to return to the city without recreating pre-Hurricane Katrina vulnerabilities and the inequities they represent; and
2. how to prioritize limited redevelopment resources." (2007, p. 23)

Although not responsible for creating these conditions, actions by the city exacerbated an already difficult situation. These actions inadvertently delayed and heightened tensions and cast doubt on the worth of the planning process. First and foremost, the mayor waited over a year to establish the Office of Recovery Management. Before the creation of this office, there was virtually no coordination in recovery actions. Valuable resources were wasted on jurisdictional struggles and redundant actions. Four different recovery plans were produced, each with its own supporters and detractors, before the city combined...
them to produce the Unified New Orleans Plan (Nelson, et al., 2007, pp. 34-35). In the development of these four separate plans, the community was involved in seemingly endless public participation meetings. Through the preparation of these plans, the public invested time and energy only to see that investment squandered on a plan that was not adopted. These events only heightened "the confusion and anxiety common in postdisaster recovery and cast doubt that planning would actually accomplish anything" (Nelson, et al., 2007, pp. 44-45).

If the city had had an established process for the creation of a recovery plan and designated an entity to manage the entire process, much time and effort could have been saved. Efforts could have been directed towards developing a single, viable recovery plan instead.

Any recovery planning process must be properly funded, staffed, and have the support of key elected officials. Before and after Katrina, the City Planning Commission was limited in their functioning by a severe lack of funding and staff. Furthermore, the commission was often ignored in developing the recovery plans through the inconsistent support of the mayor and city council (Nelson, et al., 2007, p. 45; New Orleans Planning Assessment Team, 2005).

Existing regulations and established master plan objectives are also tools that enrich a recovery plan. The New Orleans Planning Assessment Team observed that public pressure on city officials unintentionally encouraged those officials to disregard planning tools at their disposal, such as elements of the existing master plan or historic preservation regulations (2005, p. 6). A personal experience highlights such an instance.
My colleagues and I assisted the owner of a home in an historic district with an application for a zoning variance. We specifically followed the directions on the New Orleans Historic District and Landmark's Commission website for which documents to include in an application packet and the number of packets to be submitted. After preparing the required eleven packets, we submitted the application only to find out that we needed one packet. We had wasted the better part of a day following wrong directions from an official city website. This small example is one of a litany of inefficiencies that drain time and resources from the recovery process. To avoid such inefficiency, a pre-disaster plan should clearly specify the individuals or entities involved in assisting with the implementation of the recovery plan.

A pre-disaster plan should be codified by the city council into a Recovery and Reconstruction Ordinance. The New Orleans Planning Assessment Team emphasized that the creation of such an ordinance would have strengthened the entire recovery process. An ordinance should include the following sections: "Recovery organization, recovery plan, general provisions, temporary regulations, temporary and permanent housing," and a hazard mitigation program (2005, p. 10). The creation of such legislation has the benefit of both raising public awareness and demonstrating a commitment on the part of elected officials to prepare for recovery. The public can also be involved in developing the process by placing recovery in the public process spotlight. With prior public involvement, accusations that the recovery process does not reflect the will of the people are minimized.
The absence of established regulations in New Orleans meant that in the eyes of the public, the recovery process was simply a series of ad hoc decisions by city officials. Naturally, this did not inspire faith in the city’s actions. Many residents of the Lower 9th Ward expressed frustration with the process of obtaining reconstruction permits. Immediately after the storm, the city issued “repair permits.” Eligibility requirements for these permits were poorly explained to the public. Many thought it was permission to rebuild. As a result, property owners were caught off guard when they received an order from the city to cease reconstruction. Many clients of the Design Studio at NENA needed assistance obtaining architectural documents for reconstruction permits after receiving such desist orders. Residents of the Lower 9th Ward explained that before the storm, there was poor code enforcement by the city. This lack of enforcement led to two options for people wishing to build: 1) pay application fees and wait several months for permit approval; or 2) rush construction and take a chance on not being caught by the understaffed enforcement office. The post-disaster response by the city confirmed the preexisting belief that the city was inefficient and a cumbersome bureaucracy.

Unfortunately the city did not anticipate the cumulative mistrust of the public. The “local government should have anticipated residents’ negative reaction and responded to their concerns in a way that would have encouraged conversations about the most contentious issues” (Nelson, et al., 2007, p. 44). When residents reacted negatively, the mayor was caught off guard and withdrew his support from one of the several planning processes and avoided necessary
yet controversial discussions. If a plan is to have the support of the public, they must be involved in the development of it.

New Orleans serves as a perfect case study as to what occurs when difficult decisions are made without a collaborative approach and the resulting conflict is not managed. Carpenter and Kennedy describe this as the spiral of unmanaged conflict. Once a disagreement emerges, sides naturally form around different solutions. If unchecked, these positions harden and communication between the factions ceases. Once communication ceases, the dispute begins to spiral out of control through commitment of resources, calling in higher authorities to gain credence of a particular position, perceptions about the position of the ‘other’ become distorted, and ultimately a sense of crisis emerges. Depending on the nature of the conflict, the next step may be litigation, legislation, or people simply resisting out of spite (2001, pp. 11-17). As noted, many victims of Hurricane Katrina did not feel involved in decisions that affected their neighborhood. This spawned ill will, the dispute spiraled out of control and recovery progress was further impeded.

*The Urban Land Institute Plan*

Planners and mediators can be helpful in managing conflict as well as playing a valuable role in developing a recovery plan. It is important, however, to articulate the role these professionals will play in developing the recovery plan. The need for such clarification is illustrated in the distrust of the government and
professionals by the citizens of New Orleans. This tension was particularly seen in the now infamous Urban Land Institute (ULI) plan.

In 2005, shortly after the hurricane, the ULI was invited to develop recommendations for a reconstruction plan. In its final report, the ULI recommended shrinking the footprint of the city and discouraging reconstruction in heavily damaged areas that were particularly vulnerable to future natural disasters. Although this was a completely rational recommendation to help reduce future risk, the lack of citizen input effectively made the ULI recommendations a political lightning rod (R. Olshansky, Johnson, Horne, & Nee, 2008, p. 275). Residents of New Orleans explained to me that the presentational style used by the ULI exacerbated preexisting distrust of outsiders and professionals. The ULI produced maps with green dots on city blocks that should not be rebuilt. These now infamous green dots gave the unintentional impression that a decision had already been made. Furthermore, these maps were given negative socioeconomic and racial interpretations. Many of the worst damaged areas in New Orleans happened to be poor, predominantly African-American neighborhoods (Green, Bates, & Smyth, 2007). Many New Orleanians saw these maps as an attempt to purge the city of these groups, further inflaming preexisting tensions. Post disaster circumstances often exacerbate preexisting divisions within a community (Nelson, et al., 2007, p. 46). Hence, pre-disaster recovery plans should be cognizant of these divisions and promote the involvement of the whole community and not just outspoken segments of it. In addition, clearly defining the role of parties involved in developing the plan—
particularly government officials and professionals—can avert the appearance that a plan is advancing a covert agenda.

In conclusion, government inefficiency was the primary source of slowing in the recovery process in New Orleans. The lack of a designated recovery agency has led to redundant planning processes and wasted resources. Lack of an established recovery framework with designated roles and procedures further degraded the already limited trust in government. Poor explanation of the roles and responsibilities of local government, planners and outside consultants caused heightened anxiety in residents. Inadequate involvement of the public in developing the recovery framework heightened the confusion. This pressure on the recovery process ultimately undermined its effectiveness.
CRITICAL ANALYSIS: SALT LAKE CITY, UTAH

Unlike New Orleans, which had its recovery planning functions put to the test, Salt Lake City has yet to be similarly tested. The current version of the Salt Lake City Disaster Recovery Plan is dated November 2007 and is currently undergoing a revision by the Emergency Management Program of the Salt Lake City Division of Management Services. A personal interview with the Director of Emergency Management Cory Lyman provided valuable insight into the current status of the planned Salt Lake City recovery process. Since the plan is being updated, the analysis contained in this section will strive to highlight strengths, weaknesses and areas of concern in the current plan and recommend possible solutions where needed.

Geographic Context

Situated in the mountain valleys of northern Utah, Salt Lake City sits at the center of a string of valleys that run north to south. This metropolitan region is called the Wasatch Front after the mountain range forming the eastern border of these valleys and runs almost the entire length of this mountain range. The central portion of the Wasatch Fault is slightly to the east of Salt Lake City. This

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4 Hurricane Katrina struck New Orleans in August 2005. Chronologically, it is possible that the Salt Lake City plan was influenced by the recovery challenges that New Orleans faced.
fault is capable of producing a magnitude 7.5 earthquake on the Richter scale. A magnitude 6.5 earthquake occurs once every 300 years (Machette & Brown, 1995). Meteorological events such as hurricanes and floods are predicted with a probability system estimating that an event of a certain size has a given percent chance of occurring every year. Simply because a major storm happened one year does not mean that the chance is reduced the following year. Earthquakes on the other hand, operate in the opposite fashion. They are generated when pressure is built up between two different pieces of the earth's crust and subsequently released. The resulting shockwaves produce the ground movement experienced during an earthquake. Since the pressure is cumulative, the only question is when, not if, the pressure will overcome the physical friction of the fault line. The Wasatch Front forms the eastern edge of the Basin and Range Province with the Sierra Nevada mountain range forming the western edge. The entire area is being stretched towards the two edges due to upwelling of magma below the earth's crust. This action builds pressure along the Wasatch Fault until it is released in the form of an earthquake. This mechanism of generating earthquakes is unlike the notorious fault lines along the California coast. These earthquakes are produces when two tectonic plates laterally scrape against each other (Utah Seismic Safety Commission, 2008, p. 2). The resulting surface shaking and property damage are similar however.

Mormon pioneers settled in the Salt Lake valley in the mid-nineteenth century. Since then, there has been no major earthquake activity along the Wasatch Front. This lack of community experience with earthquakes breeds
The Salt Lake Metropolitan area is largely constructed on the floor of a prehistoric inland sea, called Lake Bonneville. Thus large portions of the valleys in this area have sandy soil which causes massive structural damage when subjected to earthquakes. This process is called "liquefaction." By examining the geologic record, experts have determined that the region is 'overdue' for an earthquake by several decades (Machette & Brown, 1995). It is therefore imperative that communities along the Wasatch Front take steps to prepare for both the impending disaster and recovery.

Salt Lake City Recovery Plan Structure

The Salt Lake City recovery plan is comprised of three interrelated sections: Recovery Basic Plan, Recovery Functions, and Recovery Taskforce SOP [Standard Operating Procedure]. The Basic Plan establishes a framework for the recovery activities by identifying goals, establishing phases, identifying responsibilities, and explaining the various elements and players involved in the recovery process. The recovery functions are specific needs that any given community has after a natural disaster. For example, damage assessment, continuation of government, public information, volunteers and donations, debris management, public health, safety and risk management, repair and restoration of infrastructure, temporary housing, economic restoration, mitigation, and

\footnote{The Salt Lake Metropolitan area is largely constructed on the floor of a prehistoric inland sea, called Lake Bonneville. Thus large portions of the valleys in this area have sandy soil which causes massive structural damage when subjected to earthquakes. This process is called "liquefaction."}
redevelopment are just a sampling of the twenty-one recovery functions contained within the Disaster Recovery Plan.

Finally, the plan describes the Recovery Taskforce SOP. The task force is the administrative body overseeing and coordinating between each recovery function. Centering authority in a single body allows a clearly defined chain of command and provides focus and unity of action that can speed the administrative decision making process during the recovery.

Recovery Goals

The pre-disaster plan's stated purpose "is to anticipate what will be needed to restore the community to full functioning as rapidly as possible through pre-event planning and cooperation between citizens, businesses and government" (Salt Lake City Emergency Management Program, 2007, p. 3). Through this statement the city identifies the end of the recovery process as "full functioning" of the city. It does not define what “full functioning” specifically connotes. As mentioned previously, after a disaster occurs, victims want the relative stability that existed prior to the event. Based on personal experience, residents will measure the level of recovery by how easily daily tasks are completed relative to their ease beforehand. For example, if a disaster victim was accustomed to a fifteen-minute commute to work before the event, he/she will consider a complete recovery as a return to a commute time of the same length. The pre-disaster status quo can limit the thinking of the individual to the possibility that improvement could occur from disaster. Salt Lake City's goal for
the product of the recovery is a return to how things were before. This is not fully realizing the potential that emerges from destruction wrought by a disaster. Logically, a community would desire to avoid rebuilding the inequities and shortcomings that existed prior to a disaster. A slight rewording of the plan would be sufficient to direct the recovery process towards redevelopment in lieu of simple rebuilding.

Leadership and Coordination

Leadership is an essential element for directing and coordinating recovery actions among involved entities. A single body which directs recovery efforts increases public confidence by having an established chain of command to manage recovery actions. As noted earlier, New Orleans lacked this element which resulted in much confusion among government officials, the business community, and the public. The Salt Lake City plan avoids this by including provisions for the establishment of a Recovery Task Force. The task force is comprised of all relevant officials as well as citizen and business representatives (Salt Lake City Emergency Management Program, 2007, pp. 109-110). After a natural disaster declaration, the task force is immediately activated to coordinate the recovery and develop the Recovery Plan. The inclusion of such a provision is an important element by establishing the administrative framework and procedures for organizing a recovery.

The structure of the Response Functions (RF) is another positive element in the Salt Lake City plan. They establish both leadership and coordination
among recovery actions. Each Response Function specifies primary and support departments. These are clearly stated at the beginning of each RF section as well as in a Primary/Support Matrix at the beginning of the plan (Salt Lake City Emergency Management Program, 2007, p. 11). For example, the Building Inspection & Permit section specifies the Department of Community Development as the primary department. The City Council, City Attorney, Management Services, Police, and Public Services are all designated to support the Community Development Department (Salt Lake City Emergency Management Program, 2007, p. 61). The Response Functions provide needed authority to specific departments that are best equipped to manage a portion of the recovery. By granting this authority, the possibility for jurisdictional conflicts among city entities is reduced. Director Cory Lyman mentioned that all department heads are currently reviewing the Response Function leadership and support bodies (personal communication, March 30, 2009). Such reviews are an important step to ensure that departments are aware of their recovery responsibilities after a natural disaster and that channels of communication between departments remain open.

Changes to the organization of a city are common during a transition between administrations. The current draft of the Salt Lake City Disaster Recovery Plan was prepared during the previous administration (Rocky Anderson 2000-2008). In January 2008, Ralph Becker began his mayoral term of office. The current plan has yet to be adapted to function within the new administrative structure. For example, the current plan refers to the Division of Economic
Development and the Division of Community Development as two separate entities. The new administration has combined these two bodies to form the Division of Community and Economic Development. Maintaining regular updates of plans is essential to ensure that they are applicable and relevant at the time of a disaster.

Roles and Responsibilities

The points contained in the Recovery Plan Overview section provide valuable insight into the conceptual framework of the plan as a whole. In this section, the term “recovery plan” refers to a post-disaster plan. The section describes the need for a recovery plan:

If the city is going to move forward in a unified manner, there must be a clear understanding of what goals are being pursued, what timeframe is being used and how individual city departments, business and industry, community organizations and individual efforts are part of the overall recovery effort. (Salt Lake City Emergency Management Program, 2007, p. 113)

This provides an essential tool that was lacking in New Orleans: a clear description of the roles and responsibilities of all entities involved in the process. The plan is further strengthened through specifying that a liaison should be established with the Chamber of Commerce, homeowners associations, business organizations, civic organizations, and new groups (Salt Lake City Emergency Management Program, 2007, pp. 25-26). The inclusion of community
organizations and other non-governmental entities is an additional positive element in this plan. New Orleans was not well equipped to effectively interact with and utilize community organizations. The Salt Lake City plan acknowledges the importance of their roles and attempts to involve community organizations.

The structure of the Response Functions is another positive element that currently works well and would become stronger with further revisions. The Response Functions provide a comprehensive approach to the needs of a community after a disaster by specifying each function's purpose, plan, and tasks both before and after the disaster has struck. The result of having these elements is that each Recovery Function operates as a plan unto itself. The Purpose portion provides an overarching vision for the specific action. The Plan portion provides goals for each function. The Tasks portion provides a further holistic approach to the functions by both outlining pre-disaster preparations and necessary tasks after the event. This level of specificity for each Recovery Function helps reduce any possible ambiguity for what is needed after a disaster. It helps the responding entity act more quickly by minimizing the amount of planning required. This clear delineation of tasks and responsibilities eliminates any possible confusion, which was shown to slow recovery in New Orleans through jurisdictional disputes or redundant actions. The Salt Lake City plan ensures both focus and departmental ability in responding to a particular need.

One chronic problem in New Orleans was the under utilization of tools such as the comprehensive plan and trained staff who were well versed in planning within the community. The Salt Lake City plan instructs that the
Recovery Task force should "review relevant recovery plans and documents" (Salt Lake City Emergency Management Program, 2007, p. 112). This illustrates how the plan promotes the use of these tools. The plan does not, however, require consistency with previous plans and ordinances by using the word "review." Perhaps requiring "adherence whenever feasible" would reduce the type of ad hoc decisions that plagued New Orleans. Consistency is essential as it ensures that the post-disaster recovery plan reflects the goals already elucidated in the community's master plan. If the master plan is up to date, it can serve as the foundation for the recovery plan, saving time which can be put to more productive uses.

While the Salt Lake City plan defines the roles of the government, business, community organizations, and the individual in recovery, it does not include a discussion of outside professionals in the process. New Orleans did not clarify the roles of professionals to the public. As a result, the community began to assume that the professional recommendations were being given more credibility than their own opinions. The community mistrusted the professionals and became hostile toward their opinions. Salt Lake City should strive to avoid this by including provisions further outlining the roles of the parties involved in the recovery process, particularly outside professionals.

Citizen and Private-Sector Involvement

The Salt Lake City Disaster Recovery plans acknowledge the unique needs of various segments of the population. This encouraging element is
included in the Public Information and Community Relations Response Function. It specifies that outreach to special groups such as the elderly, people with disabilities, other special needs populations and non-English speaking groups should be ensured (Salt Lake City Emergency Management Program, 2007, p. 24). This is an important element to include, as it acknowledges that disasters do not uniformly impact all members of society.

The “purpose” section in the Recovery Plan states that the citizens, business and the government should cooperate in order to reconstruct the community (Salt Lake City Emergency Management Program, 2007, p. 3). Indeed, a harmonious recovery is an admirable goal. However, it may not be the best descriptor in this context. “Cooperation” here may be interpreted as a mandate, a requirement that individuals stifle objections or concerns in order to keep the process advancing. Using a term such as “collaboration” may have clearer meaning over current language as it connotes more direct procedural involvement, communication and problem solving among all parties.

The specific nature of involvement of the general public and the private sector in developing the post-disaster plan is not clear in the current draft of the Disaster Recovery Plan. As discussed earlier, private sector and public participation is a vital element of any planning process. The lack of specificity is a weakness within this plan. Although the plan does establish important elements to be included in a post-disaster recovery plan, the vagueness of the plan makes the provisions seem more like guidelines than protocol. For example, the plan should “ensure community participation in the recovery
process" (Salt Lake City Emergency Management Program, 2007, p. 113). However the plan does not specify how it should be done. Including specific processes reduces uncertainty and having less uncertainty helps individuals make decisions based in reason.

One particularly troubling element in the current plan is that it appears to establish a hierarchical relationship between the public and the government. In this regard, recovery planning is portrayed as something that is done for the public and not with the public. Although not explicitly stated, subtle hints such as the use of the word “cooperation” and having a stated goal to “establish and maintain communications to and from citizens” (Salt Lake City Emergency Management Program, 2007, pp. 3-4) further reinforces the appearance of a hierarchical relationship. The public is presented as a customer in the current plan and not as an essential colleague in planning the recovery. Director Lyman echoed this concern in our interview and mentioned that more direct input from the public and the business community is being included in the forthcoming update. Furthermore, he explained that involvement of the private sector will become a new Emergency Support Function in the update (personal communication, March 30, 2009). This will be an important addition to the plan as it emphasizes collaboration between the public and private sectors and provides greatly needed specificity.
Public Education

Although government does play an essential role in post-disaster recovery, the individual plays an equally important role. Director Lyman emphasized that people should not expect FEMA to fix everything after a natural disaster (Utah Seismic Safety Commission, 2008, p. 31; personal communication, March 30, 2009). Recovery from natural disaster begins with each individual. Individual preparations for natural disasters should contain two elements: emergency and recovery plans. Emergency preparation is much more commonly promoted. Emergency preparations focus more on surviving the actual event and being well provisioned to survive until outside assistance is available. Recovery preparations seek to address individual issues related to housing, public services, employment, and personal resources.

Effective public education provides a more holistic approach to disaster preparation. An excellent example is the *Putting Down Roots in Earthquake Country* booklet that was recently circulated as an insert in the Salt Lake newspapers. This pamphlet explains the earthquake hazard in detail, provides instructions for how to survive the emergency, and how an individual can prepare to recover. It places particular emphasis on being prepared for the financial impact wrought by the disaster (Utah Seismic Safety Commission, 2008). One of the best means of financial preparation is buying earthquake insurance. It is a common misconception that basic homeowners and renters insurance policies covers earthquake damage. Emergency Manager Cory Lyman stressed emphatically, “Cory Lyman is buying earthquake insurance” (personal
communication, March 30, 2009). He urges all residents to do the same. In New Orleans homeowners were distraught to discover that the hurricane and flooding damage was not covered by their insurance. To this day there remains a stark contrast between areas where homeowners were and were not insured. Properly insured neighborhoods in New Orleans generally appear to be completely recovered, however, other areas remain largely uninhabited and boarded up. Earthquake insurance covers both property losses as well as provides financial compensation for expenses such as rent of a temporary residence while repairs are made. More public education is needed to ensure that the least number of people rely on the government for recovery.

The primary goal of education is to reduce the likelihood that the public will be caught off guard by any recovery functions. The Salt Lake City Disaster Recovery Plan does strive to educate the public on recovery. The plan states that the Director of Communications for the Mayor’s Office should “coordinate with the appropriate agencies to conduct annual seminars and workshops with business and community leader groups to publicize the goals, objectives and policies contained in the city’s Disaster Recovery Plan” (Salt Lake City Emergency Management Program, 2007, p. 22). This is an important provision that should be implemented upon completion of the update. Preparation of the business community and community leader groups is another important element to establish an understanding of the city’s plans for action after a disaster. Seminars open to the general public provide an opportunity for public input that would further strengthen this element.
CONCLUSION

Ultimately there are two different types of recovery plans: pre-disaster and post-disaster. A pre-disaster plan establishes the administrative process for developing a post-disaster recovery plan. The post-disaster plan is much like any other community master plan: it frames the current conditions, explores goals, and establishes means to achieve them. Unlike other plans a post-disaster recovery plan is subjected to intense public scrutiny through demand for a rapid yet beneficial recovery. An effective pre-disaster plan removes doubt and uncertainty about procedure and planning after the event. Adherence to a quality pre-disaster plan will ensure the production of a quality recovery plan.

The recovery after Hurricane Katrina in New Orleans has been painfully slow. Actions by the city made it more difficult to have an inclusive, deliberative planning process. The lack of a designated department in New Orleans with the authority to coordinate recovery efforts led to redundant planning processes. A pre-disaster plan should clearly direct a host of city actions both of the largest scale and the smallest scale amidst the chaos of a natural disaster. New Orleans lacked specific procedures that confused residents and wasted valuable time and resources. As a result, many residents lost faith in the practicality of recovery planning and became even more mistrusting of subsequent governmental action. To fill this void in community planning, non-profit, neighborhood organizations...
such as the Lower 9th Ward Neighborhood Empowerment Network Association emerged to represent the interests of their displaced populations. Many outside professional planners were brought in to facilitate the development of the recovery plan. Unfortunately, the city did not define the scope of each party's involvement in the recovery process and the citizens began to believe that their input was not being given equal weight. New Orleans lacked established regulations for developing a post-disaster recovery plan. In the eyes of the residents, city officials were engaging in the recovery process in an ad hoc fashion.

In many ways the Salt Lake City Recovery Plan addresses important areas that New Orleans did not. For example, the Salt Lake plan clearly defines administrative roles and duties pertaining to specific recovery actions. It also creates a single authority to coordinate the recovery. Importantly, the plan outlines processes that involve the public in the decision-making process. Despite this, the Salt Lake City plan includes language that may undermine this goal. In several instances, the plan articulates a hierarchical structure between the citizens and their government. This may repel rather than engage the public. Similarly, the current plan does not seek to promote renewal and redevelopment as its goal of recovery. Salt Lake City could miss the opportunity to realize goals laid out in the comprehensive plan by unintentionally rebuilding inequities of the past. Lack of specificity throughout the recovery plan is another element that could be strengthened. This plan is filled with many important concepts,
however, many of these concepts will remain ideas unless there are attached to implementation strategies.

Salt Lake City’s recovery plan is currently being revised. Interaction with the private sector and the public will become a new recovery function. This is an excellent first step in viewing the public as partners and not as clients in the recovery process. In addition, greater emphasis will be placed on promoting redevelopment over simple reconstruction. The plan itself will be a truly effective means towards achieving many of these goals when it is expanded further.

Ultimately, recovery depends on two parties: the individual and the community. The community cannot recover without individuals recovering and the individual cannot recover without the community recovering. Hence, it is of utmost importance that both the community and the individual develop a partnership to recover from a natural disaster. Planning is the process of articulating the community’s narrative through its built environment, hopes, and goals. Recovery and renewal planning seeks to heal injuries to that narrative caused by a natural disaster. Having an established process to quickly build an inclusive narrative can facilitate the healing of new and old wounds in a community.

It appears that by building on its current plan with revisions and additions, Salt Lake City is well on its way to being soundly and holistically prepared for an impending natural disaster.
BIBLIOGRAPHY


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