UNIVERSITY OF CINCINNATI

Date: May 27, 2008

I, Susan Leigh Strick, hereby submit this work as part of the requirements for the degree of:
Master of Architecture
in:
Architecture

It is entitled:
Out of Disaster: the role of architecture in disaster recovery

This work and its defense approved by:

Chair: Elizabeth Riorden
Michael McInturf
OUT OF DISASTER
the role of architecture in disaster recovery

A thesis submitted to the
Division of Research and Advanced Studies of the
University of Cincinnati

in partial fulfillment of the requirements for the degree of

Master of Architecture

in the
School of Architecture and Interior Design
of the
College of Design, Architecture, Art and Planning

2008

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B.S. Architecture, University of Cincinnati, 2006

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Abstract

Environmental disaster is a worldwide concern, as images of devastation, suffering, and death caused at the hands of Mother Nature appear in the headlines nearly daily. Millions of people are affected by disasters each year. While disasters cannot be stopped, the reaction to and recovery from devastation can be changed to better facilitate the survival and recovery process. This thesis seeks to understand the physical and psychological needs of disaster survivors, as well as personal identity and the community context. With this knowledge, it becomes possible to redefine disaster recovery and approach disaster as a unique opportunity for rebuilding. Using the small town of Greensburg, Kansas as a model, a new approach for disaster architecture is presented through the design of an art therapy center for the community.
GRATITUDE

Dedicated to the many people, without whom, this would not have been possible, especially:

My parents and family, for their unconditional love and support, not only in this endeavor, but in everything I do.

Liz Riorden, for her suggestions, guidance and encouragement.

Michael McInturf, for constantly challenging and questioning my ideas.

My classmates, for providing ideas, opinions, and inspiration, but most of all for their friendship.

And finally, the people of Greensburg, for having faith in their town, courage in its rebuilding, and for providing the motivation for this project.
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Due to the continually changing environment and the apparent increase in devastating natural disasters, cities are constantly preparing for disaster and lives frequently are forced to change course. Natural disasters, however, are just that: natural. Little, if anything, can be done to stop the changes and cycles the environment endures. What can be changed, however, is how one faces loss during and following disaster. In order to understand how disasters affect people long-term and to create a better future for disaster victims, as well as the towns in which they live, recovery policies need to be assessed, including architecture and rebuilding strategies. It is the goal of this document to convey these issues more specifically to its reader, familiarize him with the psychological and social aspects of disaster, offer an understanding of how architecture and disaster are intertwined, and finally demonstrate how design can benefit survivors and their recoveries.

While the occurrence of disasters themselves may not be controllable, the human and environmental reactions to such disasters are something that can be more easily designed and addressed. Current disaster response focuses primarily on physical needs of survivors, and while these needs are obviously of extreme importance, physical devastation is not the sole way in which disasters affect people. In order to gain a thorough understanding of disaster and human tendencies in such situations, this thesis begins by looking at the psychological process one endures following disaster and aims to move beyond the existing state of recovery and incorporate psychological recovery into disaster relief. Understanding the ways in which the mind operates allows one to begin to explicitly address emotional recovery, and ultimately relate this recovery to the community context.

Few people would question that they easily associate themselves with family and friends; that the creation of one’s character is frequently based on those who surround him. Less apparent, however, is the identity
one gains from the building in which he lives and the neighborhood he calls “home.” More specifically, when disaster occurs, the fabric of the community and one’s relation to that community is torn, or altogether destroyed. Gaining an understanding of what makes a community and how residents identify themselves with that community is important not only in the physical recovery of a devastated area but also the psychological recovery of its survivors. With this understanding of community, designers can better understand how architecture and the built environment can spark the necessary physical recovery that is so closely linked to one’s sense of community and personal identity.

Images of disaster areas offer clear evidence that physical loss can be overwhelming on a variety of levels, yet current strategies for rebuilding often fail to see the silver lining in the wake of disaster. Disaster presents opportunities to devastated areas offering a blank canvas for a designed recovery, clean slates for planned growth, and newfound opportunities for design. The Great Fire of London in 1666 destroyed Medieval London and more than 13,000 homes. The fire created the opportunity for London to not only rebuild, but to develop new building codes and standards to make the city safer.1 Similarly, the Great Chicago Fire in 1871 destroyed much the city’s downtown area, but lead to the establishment of America’s first building code and cleared the way for the construction of the first modern skyscrapers.2 More recently, Hurricane Katrina devastated the city of New Orleans, but rebuilding efforts have concentrated on technologies and strategies to safeguard against future disaster. Furthermore, long-standing social issues, many related to economics and race, have been studied following the hurricane. Many have hoped that a new urban design for the city can make New Orleans a stronger and better city.3 Cities, as in the above examples, may be physically “cleared” following disaster; however, memory remains and becomes the new primary context for designers in the rebuilding process.

The intent of this research and understanding of disasters, particularly in terms of human tendency and architecture, is to develop a more proactive solution for the recovery from these devastating situations for survivors, the community, and the environment. Through strengthening the individual and providing assistance to emotionally and physically rebuild, the individual will then work to strengthen the community, thus benefiting all residents. Finally, a city that has the opportunity for total rebuilding can be an example for communities worldwide to understand the various types of context, as well as how sustainable strategies and technologies can be
best utilized to benefit the community and environment.

While acknowledging that architecture and the built environment have the power to influence people, two key considerations emerge: the appropriate design strategies for physically devastated areas and the manner in which to address the context of memory. This thesis first looks to understand these concerns by recognizing and understanding the needs of disaster survivors, both physically and psychologically in addition to the needs of the environment, particularly in terms of sustainability. By understanding such key issues, the architecture of disaster can address this range of needs and change the ways in which people respond to disaster.

2. Ibid., 38-46.
3. Ibid., 201-232.
Each year natural disasters affect the lives of millions worldwide by destroying homes and communities. Images of hurricanes, tornadoes, and wildfires can be seen almost nightly on the evening news, but months, and even years after the disaster, victims’ lives are still drastically affected and many people are unable to return to their pre-disaster lives. The most basic need of shelter is typically met for victims through government-provided trailers or families and friends who generously open their doors to survivors. Disaster relief teams from organizations, such as the Red Cross, frequently provide food and supplies. New solutions to better the lives of those affected by disaster are rarely discussed or implemented, however. Survivors question where to seek help when government funding is exhausted and support is waning. Furthermore, anxiety due to the uncertainty surrounding the rebuilding of homes, communities, and lives runs rampant.

Current disaster relief fails to address the victim and his memory of pre-disaster life. The established strategies that are utilized for the rebuilding of cities, communities and, in turn, individual lives are severely disconnected from the architectural solutions that can benefit and help people affected by disaster. Physical devastation is the most visible issue following any natural disaster and organized efforts typically focus on the built environment. Victims are provided basic shelter and left to cope with the emotional effects of disaster on their own. As exemplified by Hurricane Katrina, temporary housing for victims is inadequate and the lack of appropriate shelter often contributes to the social and psychological devastation of the community, and the lack of timely relief compounds anxiety and stress following disaster. Many problems that face disaster victims are far beyond the scope of basic food and shelter, yet architecture and the built environment have the opportunity to play a key role in the re-building of the cities and lives affected by disaster, as architecture has the power to change the way one looks at the world. While natural disasters often level cities and force victims to start over, disaster can also provide a clean slate.
for one to design the life he wants.

The physical struggle seen in disaster areas can be researched, discussed, and hopefully improved through proactive architectural solutions that seek to understand the past, yet plan for the future. Devastating social issues and overwhelming physical aftermath are nearly inevitable outcomes of natural disaster yet solutions that are founded in psychology, particularly in relation to the context of community and residents’ images of how that community should be defined, are lacking. By understanding the processes one endures following disaster, it is possible to enrich and reinforce the lives of those affected.

**Defining Disaster**

To begin to research and try to understand disaster, one must first define what disaster truly means. While a wide variety of definitions exist and there will never be a universally accepted meaning of disaster, it is necessary to develop a narrowed definition and focus on a specific category of disasters for the purposes of this thesis. Beginning with the dictionary definition, disaster is understood as “a calamitous event, especially one occurring suddenly and causing great loss of life, damage, or hardship, as a flood, airplane crash, or business failure.”

Simply stated, this definition says that disasters are events that cause loss. Another, more narrow, definition states that a disaster is

“an unusual natural or man-made event...which temporarily overwhelms the response capacity of human communities, groups of individuals or natural environments and which causes massive damage, economic loss, disruption, injury, and/or loss of life.”

Here it is clear that disastrous events can be manmade, such as war or terrorism, or can be natural events, such as hurricanes and tornadoes. Personal events are also considered to be disasters. The death of a loved one, terminal illness, and exposure to violence are examples of individual disasters.

While two disasters are never alike, there are several characteristics that can be used to describe disaster and to better understand the human response to it. As discussed, disasters can be understood as either human-caused or natural, yet in reality, some disasters are a hybrid of the two (Figure 2.04). Human reaction or lack of preparedness can influence the damages caused by a natural event, as seen in Hurricane Katrina. In transportation accidents, it is possible that driver or pilot error, when
DISASTER

- natural
  - topographical
  - meteorological/hydrological
  - biological
- hybrid
  - technological
    - transportation
    - structure collapse
    - production failure
- man-made
  - socio-technical
    - structure collapse
  - warfare
    - national
    - international

- beneath the surface
- earthquake
- tsunami
- volcanic eruption
- landslide
- avalanche
- tornado
- hurricane
- flood/drought
- heat/cold wave
- infestation
- epidemic
- fire
- explosion
- toxic release
- pollution
- air
- land
- sea
- structural
- crowd stampede
- fire
- computer
- breakdown
- distribution of defective products
- bomb threat
- terrorist attack
- civil war
- nuclear
- chemical
- siege
- blockade

Figure 2.04 Types of Disaster
combined with poor weather conditions can also cause a disaster, often blurring the line of causation. Furthermore, the survivor response to disaster is often closely tied to the type of disaster experienced. Many people feel a need to place blame following catastrophe and often a natural event, or “act of God,” is easier to accept, and thus recover from, than a disaster based on terrorism or due to human error.\textsuperscript{4}

While this study looks to address many types of disaster, it is focused on understanding the architectural recovery of communities and how one addresses context and memory on an architectural level, after a natural disaster. For the purpose of this study, it is to be understood that a disaster is a catastrophic event that causes significant physical damage to a community, where rebuilding must occur on a large scale. Furthermore, a disaster in this regard impacts survivors not only in their physical context but psychologically and socially as well.

**Understanding Recovery**

Post disaster reactions are based on a multitude of things, but clearly the impact on one’s personal life is most indicative of how he will react to disaster. Disasters of a larger size and scope, that erase entire communities and destroy everything familiar, not only cause more devastating physical distress but emotional trauma as well. Higher levels of stress, anxiety, and depression occur with widespread community destruction when compared with disasters of a smaller scope. Localized disaster that leaves a community fabric intact allows for familiar routines to occur, as well as provides for improved social support for the directly affected members of the community.\textsuperscript{5} Thus, healing can occur faster.

The probability of recurrence, as well as the point of visible impact directly influences the recovery period and consequently the ability to move beyond disaster. Tornadoes and hurricanes, for example, have a clear point of impact and following these, and similar, types of disasters, survivors are able to identify the trauma with a specific point in time and then more quickly begin recovery and rebuilding. Contrarily, floods and earthquakes that have continual threats leave survivors wondering if more devastation is yet to come and in fear that the disaster is not yet over. This uncertainty prohibits survivors from starting the healing process.\textsuperscript{6}

For disaster recovery efforts to truly benefit survivors and the communities in which they live, it is imperative to understand the recovery phases one endures and how to incorporate these phases into disaster responses. The
Center for Mental Health Services of the Department of Health and Human Services outlines the phases of disaster and its subsequent recovery as follows, and as seen in Figure 2.05.

Figure 2.05 Phases of Recovery

Beginning with the warning or threat phase, community and survivor preparedness varies greatly based on type of disaster and the warning systems in place. People in hurricane prone areas frequently have a warning period of several days in order to evacuate and prepare for disaster, while earthquakes often strike without any warning. For those disasters where warning is minimal, survivors may feel more vulnerable or stressed as they have little control over their personal outcome to disaster. They also may feel a constant threat of disaster if their lives are based in a disaster-prone area, like “tornado alley” in the Midwest. Following the warning period, the actual impact of disaster can range from a slow buildup, as in a flood, to a more explosive, destructive disaster, as in a tornado. This phase is typically characterized by disbelief and denial for survivors, as well as confusion and a focus on the immediate physical needs of family and friends.

Recovery begins following impact with the heroism phase, which has an immediate focus on rescue and survival. While this phase is full of activity with a large focus on evacuation and relocation, true productivity and recovery progress is frequently very low. During this phase it is difficult to assess actual risks and needs, as attention is paid to locating survivors and accompanied by anxiety for those not yet located. Depending on the type of disaster, the rescue phase can be quite long, as in the September 11th terrorist attacks, or much shorter as in disasters of a smaller scope. After this stressful phase, one enters the honeymoon phase in which national interest in the disaster is frequently high and support is readily
available. The commonly shared experience of disaster bonds community members together and survivors are often recipients of great generosity and encouragement from people both near and far. As reality sets in, an inventory or assessment of needs and resources occurs. Survivors can get discouraged in their recovery, which leads to the disillusionment phase where national interest is waning and assistance agencies and volunteer efforts begin to pull their support. During this time, survivors become resentful and feel abandoned. Stress continues to increase while additional health problems may emerge from environmental hazards, recovery fatigue, and unrelenting stress. Personal and psychological needs escalate during the disillusionment phase, precisely as interest wanes and recovery resources and assistance become less available to the general public.

As survivors progress through these phases, they are continually working toward recovery and reconstruction, which is an ongoing process of incorporating the disaster or life-changing event into one’s daily life. While survivors must integrate new surroundings and adjust to changes within the community, they also continue to grieve for their losses. Eventually, survivors begin to recognize personal strengths and triumphs from their experiences with disaster and are able to re-examine priorities in life and eventually fully integrate the disaster, as well as its meaning and opportunities, into their lives.  

**Psychological Considerations**

Disaster disrupts the survivor’s entire sense of self and place, as well as his understanding of needs. Disaster strips one of his ability to fulfill basic human needs, let alone allow one to concern himself with others or the community as a whole. Using Abraham Maslow’s well-known and widely accepted hierarchy of basic human needs, it is possible to assess and prioritize the physical rebuilding process required to facilitate psychological recovery. With this understanding, time and resources can be utilized in the best way possible, giving disaster survivors recovery opportunities in a time-appropriate fashion.

Maslow suggests that all humans, regardless of culture, have five basic needs that can be arranged hierarchically to understand their importance and necessary order of fulfillment. As Figure 2.06 shows, physiological needs are followed, in order, by safety, belongingness and love, esteem, and self-actualization. Physiological needs include the need for food, water, oxygen, optimal temperature, and sleep. With the fulfillment of these needs, humans become focused on the next level, which includes
the need for protection, stability, and a freedom from fear and constant anxiety. The need for belonging relates to the need to belong to and feel loved by a group, such as one’s family, religious group, or work group. A fulfillment of belonging makes one strive to fulfill the need for esteem, or recognition for one’s accomplishments, achievements, or status. Finally, self-actualization involves the need to develop one’s potential and talent at the highest-level possible.8

Understanding Maslow’s hierarchy allows one to better design recovery for disaster victims. While few would argue that a need for food is more important than recognition for an accomplishment, the hierarchy offers cues for physical rebuilding in that perhaps a marketplace to secure food, for example, would exceed the need for a school.

While each need is important in it’s context of human life, following disaster, the second need of safety becomes of utmost importance for survivors. Living in a disaster prone area, like tornado alley, fear is chronic, as survivors often fear recurrence of disaster. It is imperative that this legitimate fear be addressed in design and architecture, not only to lessen the severity of future disasters, but to aid survivors in their psychological recovery.

Though recovery from disaster is a long, difficult, and uncertain road, it will always happen, though with varying degrees of success. “Doomsdays are incremental endings, but they are also beginnings. They begin the next part of the cycle. We mourn our losses, learn from our mistakes, improve how
we plan and design, and we move on. No matter how great the tragedy, we move on. Such is the human condition: mourn, pick up, continue.” In order to gain the most from the recovery process, disaster must be thought of as an opportunity to learn and improve, and thus is the foundation of this thesis.

5. Ibid., 7.
6. Ibid., 8.
7. Ibid., 9-12.
Enduring a disaster, of any kind, is something no one can truly understand without having experienced it. Disasters that affect one’s physical surroundings create further problems for one’s psychological recovery. Disaster may render survivors homeless with few, if any belongings, and also strip one of his identity in relation to home and frequently the surrounding community. Looking toward design for community recovery, it becomes necessary to understand how loss of place and memory of place affect survivors. Furthermore, overlaying the memories of “what was” with an idealized concept of “community,” allows for a more informed, responsible design.

Loss of Place
“The environments one inhabits remain as a testament to one’s life,” and “skin is not the only boundary around the self and...the home we live in and the people to whom we are attached are in some sense, ours – they are parts of ourselves.” Understanding this concept of community and self is crucial to the recovery and rebuilding of place. It must be understood that individual homes rest within a larger context, a community that helps to shape one’s identity and sense of self. This personal sense of self is made up of three components: place attachment, place identity, and place dependence. “Place identity is one aspect of cognitive self-identification in relation to the environment, whereas attachment involves individuals’ emotional or affective linkages with the environment, and place dependence describes the perceived strength of connection with specific places and their behaviors.” Following disaster, survivors’ sense of self is shattered in each of these ways. For example, one’s ties to a neighborhood park may be much deeper than the presence of a green space in the community, but may remind the survivor of playing there as a child with parents or friends. To this person, the park is symbolic of childhood, growing up, and spending time with loved ones, not just the park one sees on the surface.
Loss of identity in relation to place is not a phenomenon unique to disaster prone areas, however, and can perhaps be best understood in the context of home. Nearly all humans will deal with loss of place in some way during their lifetime, yet one of the most frequent and devastating losses in this regard is the relocation one experiences late in life as he ages and requires assistance in performing necessary daily functions. Many elderly people move to assisted living facilities unwillingly, and leaving behind their homes often threatens their sense of self. Feelings of insecurity and loss abound, frequently causing physical, emotional, and social signs of stress. In one study on loss, an elderly man went as far to say it was as if “the heart went out of me…I felt that part of me was gone.” Leaving behind a beloved garden, life-long friends, or simply the place where memories were made, is a distressing situation that requires grieving and bereavement. It has been found that “place grief” has very similar expressions, both physical and emotional, to the grief one feels following the death of a loved one, including “sadness, anger, searching behavior, somatic distress, and a tendency to idealize the lost place.” Because of this, recognition of loss becomes crucial to the recovery and growth of the disaster survivor. Additionally, an understanding of the emotional identity and loss that one experiences must be acknowledged.

Although loss of place as discussed above is devastating, the rate of change in disaster related grief compounds its effects even further. Not only do survivors lose homes, but frequently their belongings and community as well. The loss of all things familiar threatens their complete identity. Furthermore, losing all of these things at once, and often unexpectedly, creates additional stress and anguish. Disasters are devastating not only on a physical level, but an emotional one as well. “Disasters awaken people to the meaning of home at its deepest level because it forces them to confront what has been lost – not just in a material sense, but in terms of the idea of home as secure – as sacrosanct, as an inalienable right.” “It’s not housing, it’s homes,” and it is vital that disaster relief efforts address one’s identity as associated with place for it to be beneficial in the recovery process.

Interpreting Memory

In a situation where disaster has erased the built or architectural history, it becomes necessary to consider whether it is appropriate to rebuild what once existed, or to look to the future to prepare for what is yet to come. Place grief has been discussed in that it is necessary to recognize what
existed, and was lost but also the extent to which a community should remember the past. It has been said that “we erect monuments so that we shall always remember and build memorials so that we shall never forget,” but perhaps memorials and monuments are not necessary for remembrance. An interesting argument, seemingly against monuments, says, “the less memory is experienced from the inside, the more it exists through its exterior scaffolding and outward signs.” Assuming the inverse, this argument suggests that the more one recognizes a person or event in built form, the less he remembers internally. Simply, the monument remembers so the person does not have to.

This discouraging concept of monuments and memorials then questions, why memorials are scattered across the nation and around the world. Is this so-called forgetting, that memorials generate, a necessary part of recovery? “In order to function effectively, the mind has to find ways of limiting and selecting memory within the parameters of too much or too little memory...Being able to forget is as important for mental functioning as being able to remember.” Following disaster, then, it appears necessary that a built memorial be included in recovery design to honor an event and respect those affected, as well as to allow survivors to remember the past when necessary or desired. The “daily remembering,” however, is then left to the memorial. In relation to the recovery diagram discussed in the previous section, the ability to “move on” is part of the reconstruction and recovery phase. It is important to recognize and address loss, as discussed, as well as to progress through the recovery phases, but daily functioning requires one to move on from the past, and the ability to let go, or forget, devastation is necessary for this to occur.

In terms of a city devastated by disaster, memorializing a town by replacing what was there, without looking to the future, is irresponsible. However, small indicators of the past may be appropriate and help survivors face their psychological recovery. Cultural elements that bond community members together, such as a church, community center, or theater, offer important opportunities for socialization that aid in disaster recovery. Additionally, landmarks within the community, whether an event or building, should be restored in reference to the past, as well as to revive community pride. For example, following Hurricanes Katrina and Rita, the celebration of Mardi Gras was in question. Mardi Gras is an important cultural event in New Orleans and across Louisiana, and many worked hard to ensure that the festivities would take place, just six months after the hurricanes. This event was of utmost importance to citizens and its presence helped to remind...
residents and visitors alike that New Orleans would recover. Similarly, following the September 11th terrorist attacks, the outlook in New York City was bleak, as the “city that never sleeps” had, in fact, stopped. The restoration of baseball, a national pastime, just a week after the attacks offered a group therapy session of sorts, and helped New Yorkers move towards recovery and the healing process.12

Historically, memories have been kept alive through word of mouth and written narratives, passed from generation to generation. Because many disaster locations lie in disaster prone areas, with a continual threat of recurrence, narrative memories may provide the best, or most sustainable, historical reference for future generations. Designs in rebuilding should offer places to share stories and histories, in addition to a place to secure photos and documentation from future disaster. By having spoken histories and memories, survivors of disaster may not feel the great loss of identity as discussed and will still have a community history in tact. Furthermore, disasters influence both individual and collective memories. While memory and emotional attachment to a place are typically very individualized, the creation of a collective memory allows survivors to discover shared experiences, learn of others’ personal stories, and to share their own. Ultimately, recognition of these memories offers a great opportunity for therapy and recovery.

Creating a City
While trying to address recovery in a devastated city, one must consider and understand the components that actually comprise a city, as well as what is needed in order for a town to sustain itself so that one can best design for future needs. The basic daily needs of “live,” “work,” and “play” allow one to understand and address the city in three, relatively simple, components. Referring to Maslow’s Hierarchy of Needs, it is clear that the element of “live” must be fulfilled before one is able to concentrate on “work” and “play.” The following looks to understand successful design of a city that fulfills each of these needs and how such needs translate to urban design and architecture, thus creating an approach for rebuilding.

As in human life, cities have needs, functions, and services that must be fulfilled for their success and longevity. While Maslow created his hierarchy based on human life, as discussed, the needs of a human can easily be translated to the needs of a city, as a viable city must provide places to fulfill human needs in order to sustain life. Ultimately, the ability to sustain human life is vital for the creation and survival of the city. Using the physiological
needs basis as an example, shelter, food, and water translate to an urban requirement of a residential area, space to grow food, and a source and place to store of water. Further design implications based on these needs are shown in Figure 3.05. An understanding of this new urban hierarchy of needs allows an informed approach to disaster recovery for the successful recovery of a city.

Figure 3.05 Design Implications

Delving further into the concept of a “sustainable city,” Ken Yeang’s model for a vertical urban design, or new skyscraper, becomes relevant to defining the city. In his book Reinventing the Skyscraper, A Vertical Theory of Urban Design, Yeang discusses ways in which the successes of traditional urban design can be translated to skyscraper design, or taking horizontal design strategies to develop vertical design. Furthermore, he uses this understanding of successful cities and urban areas to identify the key components that make a city successful. “The city is first and foremost a meeting place for people. This is the fundamental premise and framework that holds together many institutions, schools, hospitals and work places that form part of our everyday lives.”

Following disaster, it is the establishment of this concept of community that is fundamental in order to fulfill the need to meet and communicate with people. Yeang argues that greater spatial diversity will provide new meanings and satisfaction in daily life. “In addition, residential neighbourhoods need to comprise a mix of uses that can work together to encourage formal and informal transactions, sustaining activity throughout the day...The mixing of different activities...should also serve to strength social integration and civic life.”

Using this concept, it is possible to reassess spatial arrangements within a community, and in the wake of disaster redefine use patterns and urban planning to better serve this concept of sustaining activity. Furthermore, Yeang dictates the need for a walk-able community and the fulfillment of this will allow for “the local pub, the launderette, the newsagent, the chemist, the DIY shop, the stationer” to all be within walking distance of the community residences. Another key element in a city is the importance
of destinations and a feeling of having “arrived.” These destinations
“must become evocative places (as against ‘non-places’) that remind us
of who we are (our sense of identity), where we are (our sense of genius
loci) and when we are (our sense of reality). These aspects are the essential
settings for the public and cultural activities that make a place memorable
so that users return to visit.”¹⁶

The links in Yeang’s concept of successful cities to the previously discussed
need for identity, interaction, and community are clear. One of the proven
methods to create these places and opportunities for interaction is in the
incorporation of public spaces.

“Generally stated, public spaces can help nurture a sense of cultural
belonging and at the same time acknowledge and respect diversity. Even
ordinary urban landscapes have the power to nurture the public’s memory
and this power remains untapped for most people’s working neighborhoods
in the traditional cities. These urban landscapes are potential storehouses for
individual and collective memories.”¹⁷

With Yeang’s identification of the necessary components in creating a
city, it becomes possible to understand and prioritize the development
and rebuilding of a devastated city using these same concepts. Yeang’s
understanding of the habitability of an urban environment relates to a
city’s ability to fulfill the “need for health, employment, income, education,
housing, leisure activities, accessibility, design quality, and community”,
but ultimately it is the connection to and identity with place that becomes
central in recovery following disaster. It is essential that rebuilding strategies
incorporate the opportunity to create and enrich this development of
community and identity at the onset of community restoration.


4. Irene Renzenbrink, “Home is Where the Heart is: Relocation in Later Years,” Illness, Crisis & Loss. 12, No.1 (2004): 69

5. Ibid., 68

6. Ibid., 70


10. Ibid., 5


14. Ibid., 96

15. Ibid., 96

16. Ibid., 108

17. Ibid., 116
In the south central area of Kansas lies Greensburg, a town of fewer than 1,500 people where residents are deeply rooted in the landscape. Established in 1886, Greensburg was named for D.R. Green, a local stagecoach driver who owned and operated “The Cannonball Stageline,” and later became the first county representative to the Kansas legislature. Across Kiowa County, of which Greensburg is the county seat, residents settled in small towns. Before the railroads took over, Green’s stage line brought stability and prosperity to the prairie. More recently, Greensburg has struggled as a small “town with a dwindling population, built on agriculture, oil, gas, and trucking.”

On the surface, Greensburg is a stereotypical, small Midwestern town, yet the community is very proud of several distinguishing attractions that provide the basis for tourism to the area. The world’s largest hand-dug well, know as “the Big Well” has anchored the downtown area as a tourist attraction since it opened to the public in 1939. As seen in Figure 4.02 the well is constructed of wood and native stone and is an impressive 109 feet deep and thirty-two feet in diameter. Built to supply water for steam locomotives of the Rock Island and Santa Fe Railroads, the Big Well is seemingly the basis of Greensburg’s existence as it was the only reliable water source at the time. Completed in 1888, the Big Well provided water for the city until 1932. Since it’s opening as an attraction, more than three million people have visited the Big Well and Greensburg.

For visitors to the Big Well Gift Shop, another attraction, seen in Figure 4.03, can be found in the Celestial Museum where, the Space Wanderer meteorite, the largest of its kind, is displayed. Made of half iron and half stone, the thousand pound Pallasite Meteorite was found on a farm east of Greensburg in 1948. It is speculated that the meteorite came from far beyond Earth’s solar system and it continues to awe Greensburg’s visitors.
While attractions like the Big Well and the Pallasite Meteorite attract visitors to the town, places like the Twilight Theatre are points of interest for tourists and locals alike. This theater, which got its start showing silent films in 1915, is not particularly elaborate or ornate, but it’s a true gem to the town. At one time the Twilight Theatre was even home to one of the largest movie screens in Kansas. While each of these things is interesting and unique, the old-fashioned soda fountain and lunch counter is the true social center of the town. In the local drug store, the soda jerk has worked the counter since 1952 (Figure 4.04). Greensburg is the epitome of a pleasant small town, where it seems that built surroundings mean little and the people of the community mean everything.

Though photos and descriptions of life in Kansas are helpful in understanding the history and culture of Greensburg, resident Anita Hohl recently summarized what makes Greensburg special to her and gives great insight to the type of people living in the town.

“Kansas is special to me, for one reason, because of its history. Kansas was built by extremely strong, and strong-willed, people. They braved a lot of hardships to settle here, on the open prairie, and they tamed it and made it theirs. Their blood still runs in Kansans veins, I think. We are a strong, moral people, and we don’t let anything get us down for long. We pick up and go on and live life more, and more aware than most.

Another reason is the land. So many people have told me they thought Kansas was flat and boring, until I show them pictures that I have taken right here in Kiowa County. There is nothing like being able to stand in one spot, turn completely around, and see absolutely nothing but grass and sky. I tried living in northeast Kansas for a while, but all the trees made me claustrophobic. I love the open land.”

Ms. Hohl’s comments reinforce the idea that Greensburg is about people and community, not buildings and belongings, as well give insight to the ways in which this small town might approach disaster and recovery.

**Disaster**

On May 4, 2007, a tornado of the highest possible rating, an EF-5, estimated to be 1.7 miles wide with winds of 205 miles per hour destroyed the town of Greensburg, Kansas as well as much of Kiowa County. Residents not only lost homes and jobs, but the community in which they live. In essence, Greensburg was wiped off the map (Figure 4.08). The tornado killed twelve people and injured more than fifty residents. Though the prized meteorite was found, and the Big Well remained beneath the debris, their buildings
were destroyed (Figure 4.05). In fact, just two buildings, a bank (Figure 4.06) and the Kiowa County Courthouse (Figure 4.07) were left standing following the tornado. All others in the community were damaged beyond repair. Even trees that survived the storm had to be removed, as they lacked the leaves necessary for their nourishment. In a matter of minutes, an entire town was destroyed and its people were forced to dig out from the rubble and pick up what the tornado had blown away. For most, the outlook would be bleak, yet the community has embraced the disaster, believing it has been “blessed with a unique opportunity to create a strong community devoted to family, fostering businesses, working together for future growth.” With this in mind, the residents of Greensburg are working to build a better town for their families and future generations.

Recovery Plan

One of the key components in the selection of the town of Greensburg as a site for this thesis is the community’s dedication to rebuilding, in addition to the efforts the people of Greensburg are making to ensure a responsible future for their homes. The Long-Term Recovery Plan (Appendix 09A), developed by hundreds of citizens, civic groups, business owners, and officials, looks to the future of Greensburg and expresses the vision for recovery in the tornado’s aftermath. Budgets, community programs and initiatives, as well as overall plans, are presented in this document for the planning of the new Greensburg. The plan addresses the specifics of buildings while maintaining perspective on the overall recovery value of each project. It expresses the desire to become a model community for sustainable living and to truly benefit from the devastation caused by the tornado. To promote their devotion to the environment and sustainability, the city of Greensburg became “the first city to adopt a resolution for city-owned buildings to be built to the LEED Platinum level, on December 17th, 2007.”
Sustainability

While disasters create an unfortunate situation of devastated buildings and communities, the chance to rebuild in an environmentally conscious way is presented. Because of Greensburg’s exceptional initiative to rebuild their town to be sustainable, it is necessary to understand what this means, involves, and how to incorporate it into design.

Like disaster, sustainability is another word of which it is difficult to pinpoint a meaning. The general population understands sustainability to indicate a minimized impact on the environment, or to “tread lightly on the land.” Similarly, green building and sustainable design typically refer to the energy efficiency of a building and a use of “ecological” materials. A sustainable community, however, may mean that a community can function independently, or that it does not rely on outside resources, services, and help. Offering further insight, the well known and widely accepted, The Hannover Principles: Design for Sustainability, have become a benchmark and guiding force for sustainable design and inspire an environmentally conscious and informed approach to design. “Designing for sustainability requires awareness of the full short and long-term consequences of any transformation of the environment. Sustainable design is the conception and realization of environmentally sensitive and responsible expression as part of the evolving matrix of nature.”

With these guiding principles in mind, one of the ways Greensburg has vowed to become sustainable is through the Leadership in Energy and Environmental Design (LEED) program, developed by the United States Green Building Council (USGBC). The program’s goal is to encourage and promote sustainable design and “is the nationally accepted benchmark for the design, construction and operation of high performance green buildings.” As previously stated, Greensburg has vowed that all public buildings will be constructed to meet the requirements for the highest rating, LEED Platinum, and a complete awareness and understanding of the LEED requirements is imperative in the creation of a design in the community. Though one can design a sustainable building without gaining LEED certification, the accreditation can, and should, be used as a marketing tool, as many designers look to LEED buildings to better understand green technology and for design inspiration in their own work. Furthermore, a town with a large number of LEED certified buildings, as Greensburg will be, will certainly make its mark as an ecological, environmentally-conscious place, thus sparking interest and drawing visitors.
While green building is a primary focus in Greensburg, becoming a sustainable community is the ultimate goal and certain lifestyle changes must also occur to do so. Sustainability is much more than building technology and design. Simple changes also contribute to sustainable living, as summarized by one Greensburg Resident:

“‘Green’ is intimidating to so many people. Green doesn’t have to mean spending thousands on high tech equipment. Green also means small things like: recycling; reusing; compact fluorescent bulbs; buying used when you can; low-flow showerheads and shorter showers; composting food waste for your own garden, a neighbor’s garden, or a community garden; buying and eating local, and in season; lowering the thermostat in the winter, raising it in the summer; turning off lights when not needed; turning off the tap when brushing your teeth; growing edible plants instead of grass and ornamental plants in their yard, or at least using native plants; even just using a clothesline. Every little bit not only saves the environment, it saves money in the long run. How about playing a board game or going for a bike ride with [the] kids instead of all sitting zoned out in front of the television, or in separate rooms doing separate things with half a dozen lights on? That is green, too.”

By understanding the various concepts and components of sustainability, communities like Greensburg that are facing disaster recovery can not only better the lives of its residents, but also ensure long-lasting communities for future generations. Although disaster offers communities important opportunities for sustainable design and building, communicating simple lifestyle changes, like those above, to residents of any community, not just those that are disaster stricken, is clearly an important step in the creation of a globally green community. Not only is Greensburg’s sustainable initiative changing the environmental impact of their community, but it is also publicizing the benefits of a green lifestyle and impacting other communities as well. Further, by seeing and capitalizing on the opportunities following a devastating disaster, like the May 4 tornado, Greensburg is helping to defend the earth against future environmental disasters related to global warming.

One Year Later

While the residents of Greensburg are reminded daily of what they’ve lost and are still living in the devastation of the tornado that destroyed their community, the commitment to “go green,” has changed the outlook of the town, and greatly influenced the ways in which it is rebuilding. As previously discussed, and shown in the actions in Greensburg, recognizing memory following disaster is not synonymous with recreation.

“The city of Greensburg has taken the extraordinary step of committing to
rebuild their community to a new vision, not settling for simply recreating what had gone before. By committing to a recovery plan based on green building, the community’s leadership has set a path that will result in a healthier, more livable city for its citizens, turning a crisis into an opportunity that is an example for us all."

In order to achieve these goals, Greensburg enlisted the services of BNIM Architects from Kansas City to help develop the recovery from its inception, and BNIM has continued to work with the city to create a comprehensive plan, and to educate residents on how sustainable building can be incorporated into their homes. The recovery and master plans have presented design suggestions, desired view corridors, reorganized transportation patterns, and changes in property use that will help the town be more functional and a better community in which to live (Figures 4.09-4.11). Further, the recovery plan has helped to guide building and development and is helping the community to realize the dreams of being a sustainable city.

With the “green” decision, Greensburg has not only put itself back on the map, but has done so in a bigger and, arguably, better way than before. “It’s a tragedy what happened, but we do have a blank slate, and you have to see your opportunities and take advantage of those opportunities.” As this prairie town turns green and becomes a model for other communities, it continues to attract international attention, create the opportunity for new businesses to take root, and now has the foundation to thrive based on ecotourism alone, as visitors are drawn to Greensburg more than ever before. As declared by President Bush in his address to Greensburg’s class of 2008, “Greensburg, Kansas, is back and its best days are ahead.”

Figure 4.09 Greensburg Plan
Figure 4.10 Mainstreet Rendering
Figure 4.11 Mainstreet Rendering
4. Ibid.
5. Ibid.
When approaching design inspired out of disaster, it becomes necessary to not only investigate disasters, psychological trauma, and the meaning of place, but also past responses to disaster. By understanding solutions for different types of disaster, as well as relevant non-disaster design, it becomes possible to identify positive and negative considerations for design. The following analyzes a variety of projects, including disaster architecture, memorial design, and community projects, in order to draw inspiration for the design in Greensburg.

As previously discussed, some cases of disaster do not require immediate shelter as much as a place to honor and remember victims of the disaster. Recognition and remembrance are fundamental in the healing process and memorials help survivors confront what they have experienced and offer a place of solace for reflection and remembrance. Typically, memorials are most commonly seen in the wake of man-made disasters or those in which many lives are lost, as seen in war the Oklahoma City bombing and the September 11th attacks on the World Trade Center. Frequently, less is more, as seen in memorial design, and memorials offer sensitive responses to emotional trauma.

**Oklahoma City National Memorial**

Designed by Hans and Torrey Butzer of the Butzer Design Partnership, the Oklahoma City National Memorial incorporates several key components to create an outdoor symbolic memorial where the Alfred P. Murrah Federal Building once stood.

Located in what was once the footprint of the building, a field of empty chairs represents the 168 lives lost in the bombing. Standing in rows that represent the nine floors of the building, the chairs are made of handcrafted bronze and stone, each sitting on a glass base that is etched with the name of the victim it represents (Figure 5.01). One commonly seen memorial element, the reflecting pool, was not overlooked in the Oklahoma City design.

![Oklahoma City Memorial](image)
Adjacent to the field of chairs, the reflecting pool represents Fifth Street’s location before the bombing (Figure 5.02). Finally, a unique component of the Oklahoma City National Memorial is the children’s area where a wall of ceramic tiles hand-painted with messages from students and teachers is a focus honoring the children killed in the bombing (Figure 5.03).¹

As seen in memorials of all kinds throughout the country, visitors often feel the need for interaction or to leave memorial items to commemorate victims, family members, and the disaster itself. At the memorial in Oklahoma City, two unique features allow and encourage visitors to do this in an organized way. First, children are able to continue the healing process and share their feelings at the memorial through the use of chalkboards that create an oversized art display. Additionally, a fence that surrounded the site following the bombing became an integral symbol of support and hope for visitors. The outdoor symbolic memorial now incorporates a section of this original fence where visitors still leave items on a daily basis, more than ten years later (Figure 5.04).²

World War II Memorial

Another extremely prominent memorial, honoring World War II, sits on the National Mall between the Lincoln Memorial and Washington Monument (Figures 5.05, 5.06, and 5.07). While all memorial designers must remain sensitive to the many users and groups that their design will influence, designing for the National Mall involves an even greater level of sensitivity and consideration. In the concept design for the memorial, it was a necessity to “…sort out the difference between a memorial and a battle monument. The battle monument is very specific and is usually about individual heroism…Memorials are involved with ideas of a much larger scope.”³ This distinction is important not only in the final design, but for others looking to the memorial for design inspiration. An understanding of the people being honored, or memorialized, is imperative in the creation
of an appropriate design, in addition to understanding the users and visitors. The World War II Memorial, designed by Friedrich St. Florian, has been praised for this sensitivity; “…the scale of the memorial is modest, respectful, and sensitive to its historic surroundings. The architecture is a contemporary interpretation in granite and bronze of the spare Art Deco classicism of the 1930s and 1940s found throughout Washington. It is a memorial evocative of its time.”

As in many other memorials, the World War II Memorial incorporates the element of water in fountains as well as reflecting pools. This element is important not only as a reminder of the importance water played in World War II, but because of the calming effects of water and serenity it brings to the atmosphere. Arguably a long overdue memorial, the design for the World War II Memorial was intended to inspire, as opposed to a museum meant for teaching. Its millions of visitors have found this inspiration, but are also continually reminded of The Greatest Generation through the inspired, informed, and thoughtful design of the project.

While memorials clearly have their place amongst disaster architecture, they are not always appropriate for the community at large. Particularly in disasters of a larger scope, hope and progress are two things that disaster victims need to see represented in a physical way. As in the following projects, active architectural responses and rebuilding of the community are frequently a way to accomplish both these things.

The Porch: Community Garden
Built in response to Hurricane Katrina, a shade structure and community garden were created for the Seventh Ward neighborhood in New Orleans (Figure 5.08). In conjunction with CITYbuild, a consortium of schools looking to rebuild New Orleans, the Kansas University School of Architecture designed and constructed the garden as a “target project” intended to inspire rebuilding.
of the community.\textsuperscript{6} Used as a gathering place and social space, the garden is maintained and kept by residents as they return to New Orleans and rebuild their homes. Although a small project, the garden is a prime example of providing a space needed by the community and one that the culture respects. While herbs may not seem to be an important focus in the wake of a catastrophic disaster like Hurricane Katrina, the therapeutic aspects of gardening are apparent as residents take pride in and care for the garden. Furthermore, visible signs of hope and progress are seen in the growth of plants, while residents can take pride in the beautification of their neighborhood. \textsuperscript{7}

The Rural Studio

Though not a response to a natural disaster, as in the other studied projects, projects of the Rural Studio address a sort of social disaster in the most impoverished communities of rural Alabama. The design-build studio, run by Auburn University, seeks to teach through experience and works to find architectural solutions to fulfill the needs of the communities, whether it be housing, churches, or community centers. By drawing inspiration from “within the community’s own context, not from outside it,”\textsuperscript{8} projects from the Rural Studio are architecturally unique and innovative. With poor clients, and limited funding, designers of the projects seek donations, reuse salvaged materials, and focus on environmental sustainability. As seen in the Mason’s Bend Glass Chapel (Figure 5.09), car windshields are used to create the glass façade of the building, while aluminum sheets and rammed earth walls containing local clay comprise the remainder of the project. Because of this project’s central site within the community, it fulfills a variety of needs, as it serves as a chapel, health center, and community center, among other things.

Though a distinct aesthetic and innovative architecture are intriguing components of the Rural Studio, the ability of the students to seek out the true needs of the community and create architectural solutions to solve these issues are of utmost importance. The influence of architecture and the positive effect it can have, whether its following a natural disaster or in a terminally impoverished community, is clear in the many projects of the Rural Studio, and is inspirational and worth study to any designer.

Make it Right, NOLA

In the aftermath of Hurricane Katrina, worldwide attention was focused on the plight of New Orleans and the millions of people affected by the disaster. People worldwide offered their money, belongings, and services to help residents regain some semblance of their lives, but none perhaps more visibly than Angelina Jolie and Brad Pitt, one of Hollywood’s most philanthropic
Jolie and Pitt became involved with New Orleans relief efforts following Hurricane Katrina when many celebrities worked to bring attention to the enormous need for aid, yet Pitt has taken awareness to a new level with Make It Right, NOLA, a foundation looking to restore New Orleans through architecture, design, and sustainable rebuilding. The foundation’s first project, The Pink Project, is located in the Lower Ninth ward and has a large awareness and fundraising component, largely capitalizing on the celebrity of Brad Pitt (Figure 5.10). In a competition, local, national and international architects were hired to design homes based on local, cultural influences while keeping the four basic design ideas of safety, affordability, sustainability and high design quality in mind.

Architects were given a typology study of traditional New Orleans housing types, such as the Shotgun and Creole Cottage, to drive their designs, as seen in Figures 5.11 and 5.12. New materials, technologies, and aesthetic signatures of the chosen architects can be seen in the designs, as well as the efforts taken to ensure environmental sustainability. While the success of the integration of the cultural influences is uncertain, the underlying concept that the project “does not dwell on the past, but enables the future” makes this an important precedent for recovery following disaster. Furthermore, the goal of Make It Right and the development of The Pink Project “is to be a catalyst for redevelopment of the Lower Ninth Ward,” as well as the remainder of New Orleans; another important component, as any building project can be targeted to serve as an inspiration for its devastated surroundings.

Rockhill + Associates
The work of Dan Rockhill and his firm, Rockhill and Associates, has been researched as a form of regional architecture, with similar in concept to the cultural intentions of The Pink Project, as previously discussed. Rockhill’s use of vernacular forms that are inspired by regional buildings, as well as the use of materials commonly found in the vernacular architecture brings a new and fresh approach to design in Kansas. While many of the projects are on rural sites, the strong emphasis on the horizontal (Figure 5.13), capitalization on sunlight and views (Figure 5.14), as well as the previously mentioned use of materials makes the Rockhill aesthetic unique and worth studying. Furthermore, Rockhill’s work has been described as “visceral rather than cerebral, as well as socially conscious,” which is of extreme importance when approaching disaster responsive architecture.

While each of the studied precedents are not appropriate for the design in
Greensburg, they offer necessary insight into what elements of memorial and disaster design are crucial and in need of consideration. The importance of material and sensitivity in design are apparent, but even more important is the understanding for whom disaster architecture is designed, the community in which it is located, and the people it represents.

1. Oklahoma City National Memorial and Museum. www.oklahomacitynationalmemorial.org
2. Ibid.
4. Ibid., 23
5. Ibid., 66.
8. Rural Studio. www.cadc.auburn.edu/soa/rural%2Dstudio/home.htm
9. Make It Right, NOLA. www.makeitrightnola.org
10. Ibid.
11. Ibid.
12. Ibid.
The research and information outlined in this thesis improves understanding of the processes one endures following disaster. With this knowledge it is possible to reassess recovery strategies and design a more survivor-focused approach to rebuilding. The following design for the city of Greensburg, Kansas incorporates the discussed information.

**Art as Therapy**

While short-term mental health services are currently offered for survivors of disaster by organizations like the Red Cross, most people do not see themselves as needing such services. If they accept any assistance, survivors look to practical, visible help, such as financial assistance or physical aid for rebuilding. Because survivors tend to overlook their own mental health needs in favor of physical needs, traditional assistance and methods need to be set aside in favor of focused outreach that survivors can understand and use.

Art therapy has been used during and after traumatic experiences, frequently with children; and many of its uses and benefits can be logically applied to disaster recovery. For the purposes of this thesis, art therapy should be understood as outlined by the American Art Therapy Association:

> “Art therapy is a mental health profession that uses the creative process of art making to improve and enhance the physical, mental, and emotional well-being of individuals of all ages. It is based on the belief that the creative process involved in artistic self-expression helps people to resolve conflicts and problems, develop interpersonal skills, manage behavior, reduce stress, increase self-esteem and self-awareness, and achieve insight.”

More simply, art therapy focuses on the creation of art to help people address emotional and psychological distress. Disaster survivors often find themselves reliving the trauma of disaster as they discuss their experiences.
in words or discussion. This re-experiencing can present itself in the form of dreams, nightmares, and flashbacks, and can be disruptive to one's life and can certainly slow, or even prevent the recovery from the disaster.\textsuperscript{2} With this insight, it can be reasonably understood that traditional therapy methods may actually cause disaster survivors further traumatization because of verbal discussion and the subsequent “reliving” of the disaster. In contrast, art therapy offers a visual, as opposed to verbal, form of expression, to survivors.

“Art can offer...an alternative means of communication which does not involve sophisticated speech...the art process can offer...another language, nonverbal and symbolic through which feelings, wishes, fears, and phantasies [sic], can be expressed.”\textsuperscript{3}

Several components make the art therapy process beneficial to the artist including two major themes of creation and exhibition.

“Creating art after a disaster offers a way [for people] to make sense of their experiences, to express grief and loss, and to become active participants in their own process of healing, beginning the process of seeing themselves as survivors rather than as “victims.”\textsuperscript{4}

In a recent study of women using art therapy during their battle with breast cancer, it was found that for some, the act of creation was important because it allowed for the expression of feelings. For others, the physical movement that happened during the creation allowed for a “release” and was satisfying for the artist.\textsuperscript{5} The study continued to find that art therapy allows for an expression of emotion that may not, or cannot, be achieved in words. Even more, the creation of art not only allowed for this emotional expression, but also had an energizing effect for the artists and gave the women a sense of excitement in their lives.\textsuperscript{6}

Following art creation, therapy involves reflection on one’s artwork. Art bridges the gap between the inner self and the public persona and this questioning or reflection on the artwork is another way in which artists can understand their experiences and how to incorporate them into daily life. Reflection, and eventually exhibition, of artwork also allows an artist to see patterns and growth in their work. Therapists are able to question certain elements seen in the work, and progress in recovery is made through this understanding of what the artistic expression may indicate. The exhibition of artwork can also allow for artists to find others who may have similar or shared experiences as the display of art can open a dialogue about disaster and, in essence, normalizes one’s trauma and personal devastation.
Art therapy does not provide a quick fix for any trauma, especially where fear of recurrence is common. Art does, however, provide a lasting benefit to the community, as citizens of all ages and abilities are able to work through issues personally, at different levels, and at their own pace. For the above-mentioned reasons, the incorporation of art therapy in disaster recovery is essential in helping survivors to take control of their recovery and futures.

**Program + Design**

The design of an art therapy center has been chosen as the culminating project for this thesis not only because of the benefits in disaster recovery as described above, but also because an art center has been proposed by Greensburg in their long-term recovery plan to serve the town and surrounding areas. The opportunity to capitalize on the community’s commitment to the arts is important, as well as the ability for the art therapy center to shift its focus towards a traditional art center that can serve future generations. Although the community has recognized the need for an arts center, the recovery plan has indicated it is of low recovery value and is little more than cultural addition to the community. While the proposed programs for the art center may not intentionally enhance recovery, the facility could be designed to provide art therapy opportunities to the community, thus benefiting and speeding recovery.

The art therapy center’s only design requirement, beyond a traditional art center, is private space for breakout therapy and reflection. Because of this great similarity, the center will offer opportunities for citizens of all ages to participate in therapy sessions while maintaining the option for future conventional programming. This change in programming creates an opportunity to offer far more than a traditional arts center would in terms of the recovery value, and shifts the focus and timeframe on its design and construction to the forefront. It is for these reasons this thesis proposes an art therapy center, along with a memorial, as a fundamental element for the recovery of Greensburg.

Locating the art therapy center on a prominent site within the community was not only desired, but also important for the creation of a public space to be shared by the people of Greensburg. The site - at Main and Wisconsin Streets - is bound by the “civic block” on the South, where the library, historical society, and city hall are located (Figure 6.03). The art center serves as an anchor to the business district as well as a cornerstone for the park square. The proximity to many community amenities reinforces the importance of the art center as well. The location within the community also makes the
site a preferable location for the tornado memorial. Furthermore, the art therapy process is benefited by the inclusion of a memorial, or reflection space, and it has been included in the program for these reasons.

Organization of the site is driven by several elements, derived from both the site in Greensburg and the research presented in this document. The community master plan by BNIM Architects sets up three main view corridors (Figure 6.05) in the downtown area, all of which intersect the art center’s site. It is important to maintain and preserve all of these views for the project’s integration into the community plan, but the North-South view corridor along Main Street is especially influential as it indicates the site’s interaction with the business district. In addition to these view corridors, the path that the May 4th, 2007 tornado took through Greensburg (Figure 6.04) is another guiding principle for design. The juxtaposition of this line against the existing street grid (Figure 6.02) further dictates both large-scale and small-scale organization of the site. Buildings that relate to recovery are oriented on the tornado’s path while buildings relating to Greensburg’s history or a survivor’s complete recovery are based on the city grid. Finally, the art therapy center’s circulation patterns and organization across the site are based on both the recovery diagram (Figure 2.05) discussed in Section 02, as well as the sequence of the art therapy process. It is this circulation that is the basis of the design and symbolic of the recovery process.

Art Therapy Center

The procession through the art therapy center begins with the memorial, which serves as a reminder of where one has been and as a starting launching point for psychological recovery. Survivors then enter through the building Narrative History Center where community members have recorded their memories and recollections of life in Greensburg for the education and reflection of future generations. Circulation then moves down a steep ramp with a forced path, symbolic of the tornado. From this point, recovery begins with the creation of art and the art therapy process. A series of four art studios are situated along a long, shallow ramp that is representative of the long recovery process one endures following disaster. The studios progress from the abstract arts to literal arts. Beginning with sculpture, artists are able to confront raw emotion with the creation of abstract forms and the rather physical process one experiences when working with clay and metals. Following the sculpture studio, two-dimensional art, such as drawing or painting, is used to help artists transition from the abstract to more literal pictorial art. After this transition,
photography and film frequently offer a very realistic, creative outlet to record events or the passage of time. This takes place in the third studio, which is for digital media. This medium is important not only for relevance in the world of advancing technology, but as a way for artists to preserve their work. With a continued threat of future disasters, many may fear the loss of their work and memories. The digital art studio is a way in which survivors can make art that can be stored digitally off-site to ensure its continued preservation. The last studio in the progression is the grassroots studio in which local crafts or arts can take place. Quilting and basket making, or arts that involve a process that is based on group interaction, take place in this studio. The final step in the art therapy process, which is conveyed through the design, is the exhibition of and reflection on one’s work. As the recovery ramp emerges at ground level, an art gallery and gift shop represent one’s progression through the stages of recovery and assimilation back into traditional society. The gallery and store also integrate the art center with the business corridor and help support the town’s economy.

Memorial

The memorial’s location within the project is meant to create secluded meditative space that serves as an extension of the civic, or community, programming on the adjacent block. It is also the start of a long progression through the center, as described. The memorial is designed not only to remember the victims of the tornado but also to honor the strength of the citizens of Greensburg in their rebuilding. The design is simple, yet monumental. Nine stone pillars stand together in a reflecting pool to
support twelve chimes. The chimes, each representing a victim, form the main symbolic elements of the memorials. The heights of the chimes are dictated by the ages of the victims and can be seen in the reflection pool where the names of the twelve victims (Figure 6.XX) are inlaid in the stone beneath them. With the blowing winds, the solemn chimes are heard throughout the town and are a reminder of the tornado, but also serve as a warning for future tornados. As the chimes get louder or more intense, one is reminded to seek shelter or be cautious in the event of unfavorable weather. Tall prairie grasses surround the memorial and are meant to be evocative of the community’s rural roots. The grasses were chosen as an all-season landscape treatment that would contribute to the solemn environment and complement the verticality of memorial’s design.

The overall design of the art therapy center is intended to bring together the variety of functions surrounding the site, as well as create a center that is reflective of the recovery process in its design. By incorporating existing elements from pre-tornado Greensburg, the design is reflective of the site’s history as well as its future in the town’s plan.

**Greensburg Victims**
Robert “Tim” Buckman, 46
Richard J. Fry, 62
Alex Giles, 84
Claude Hopkins, 79
Larry Hoskins, 51
Evelyn Kelly, 75
David Lyon, 48
Colleen Panzer, 77
Ron Rediger, 57
Harold Schmidt, 77
Sarah Tackett, 72
Beverly Volz, 52

**Figure 6.08** Memorial Design Sketch

**Figures 6.09** Physical Model
My interest in disaster architecture began following Hurricane Katrina, as seemingly endless images of a ravished New Orleans and desperate Americans headlined the news for months. The extensive devastation of a city like New Orleans was incomprehensible to me, and I became interested in the process of rebuilding and the power of architecture. Using design to help survivors cope with their personal, as well as collective, losses thus became the foundation of my thesis. The psychological and recovery process became the focus of my research, as I hoped to truly understand how people are affected by disaster beyond physical losses. Furthermore, the concept of memory and an approach for designing on a site where the only context is the survivors' memory intrigued me. The direction my research eventually took has not only kept my interest, but also truly awakened me to the many components of disaster relief that never make the nightly news.

Learning about the town of Greensburg and their commitment to rebuilding was a great turning point in my project and allowed me to look beyond the political side of disaster to develop my ideas as they related to the survivor. I feel the small scale of the project was an asset, and gave me a freedom I may not have found with a different site. I am pleased with the aesthetic appearance of project has taken; and the underlying symbolism found in the project reflects my precedent studies as well as much of my research about disaster and the subsequent recovery.

Given the chance to continue the design process and develop my project even further, I would pursue the sustainability component that was briefly discussed, but did not become a driving factor in the project. The importance of sustainability for the town of Greensburg was not apparent at the start of this project, and therefore not incorporated as it may have been otherwise. Because of the commitment to rebuild “green,” it would be imperative to develop the project further and pursue a LEED Platinum rating in order to truly make the art therapy center a realistic project for the community. Environmental sustainability is a very important area of interest to me both personally and professionally, and the opportunity to integrate this into a project such as this would prove to be both rewarding and educational. The town of Greensburg has provided immeasurable inspiration, as they have not only committed to their rebuilding following the catastrophic tornado, but they have done so in such a way that they are an example for people worldwide. I will continue to follow this community’s progress for years to come and hope that I can somehow become further involved in their recovery and rebuilding progress.
I am astounded when I reflect on where my research began and the directions it led. As devastating natural disasters plague people worldwide, I remain interested in the subject of disaster and hope that architecture will continue to find a way to successfully mediate between the natural environment and the developed world.

6. Ibid. 769.
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Rhodes, Patrick, and Jared Hueter. “CITYbuild” Personal Interview at Tulane University, September 11, 2007.


### 01 Introduction

**Fig. 1.01 Hurricane Katrina**  
Jez Coulson, Panos Pictures

### 02 Disaster

**Fig. 2.01 Hurricane**  
http://www.medtogo.com/assets/images/hurricane.jpg

**Fig. 2.02 Wildfire**  
John McCollan, BLM Alaska Fire Service

**Fig. 2.03 Tornado**  

**Fig. 2.04 Types of Disaster**  
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Recreated by author

**Fig. 2.05 Phases of Recovery**  
The Department of Health and Human Services  
modified by author

**Fig. 2.06 Hierarchy of Needs**  
Abraham Maslow  
Recreated by author

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**Fig. 3.02 Korean War Memorial**  
Author

**Fig. 3.03 Mardi Gras Beads**  
http://www.asergeev.com/

**Fig. 3.04 9/11 Unity**  
Shannon Stapleton, Reuters

**Fig. 3.05 Design Implications**  
Author

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**Fig. 4.02 The Big Well**  
www.bigwell.org/bigwell

**Fig. 4.03 Space Wanderer Meteorite**  
http://www.thelope.com/2007/05/remembering-greensburg.html

**Fig. 4.04 Lunch Counter + Soda Fountain**  
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Fig. 5.01 Oklahoma City Memorial
G. Jill Evans, Oklahoma City National Memorial Foundation, 2001

Fig. 5.02 Gate + Reflecting Pool

Fig. 5.03 Children’s Area

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Fig. 5.06 Field of Stars
Richard Latoff, American Battle Monuments Commission

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Richard Latoff, American Battle Monuments Commission

Fig. 5.08 The Porch: Community Garden + Shade Structure
Eric Stear

Fig. 5.09 Mason’s Bend Glass Chapel

Fig. 5.10 The Pink Project
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Constructs LLC for Make it Right, NOLA

Fig. 5.12 Housing by Morphosis
Morphosis for Make it Right, NOLA

Fig. 5.13 Kansas Longhouse

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06 Design

Images by Author
APPENDICES

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Executive Summary
Greensburg Long-Term Recovery Plan

09_B
Project Calendar
Author
On May 4, 2007, an EF-5 tornado estimated to be 1.7 miles wide with 205 mph winds struck the City of Greensburg and Kiowa County, Kansas. Damage to Greensburg was significant, with more than 90% of the structures in the community severely damaged or destroyed. The Federal Emergency Management Agency (FEMA) activated the Long-Term Community Recovery (LTCR) program, which integrated assistance from the State of Kansas and federal agencies focused on the community’s long-term recovery goals. The program provides coordination of resources and planning services in support of the area’s recovery effort.

This Long-Term Community Recovery Plan expresses the Greensburg and Kiowa County community vision for recovery in the aftermath of the tornado. This Recovery Plan is the result of an intensive 12-week process involving many meetings and discussions among the citizens, civic groups, business owners, local, state, and federal officials, and the long-term recovery planning team. Hundreds of your neighbors turned out for the community meetings to share their ideas on how to rebuild Greensburg and Kiowa County. Community participation provided an invaluable source of input and feedback that was used to refine and prioritize the projects contained in this Recovery Plan.

A community spirit and resolve to build back better, safer, and in a more sustainable manner will serve you well as you move forward with implementation of the Recovery Plan. At the heart of the Recovery Plan is a simple guiding principle - keep the things that have made Greensburg and Kiowa County a good place to live, work, and own a business, and then suggest ways to build upon strengths of the community to make it prosperous, appealing, livable, and sustainable.

Unlike a traditional planning document that presents general guidance to a community, the Long-Term Community Recovery Plan is an action-oriented menu of key projects intended to be used for making critical funding and resource allocation decisions. The City and County have been given a Technical Appendix CD that contains an electronic version of the Recovery Plan, a list of contacts, and other useful reference materials.

**GREENSBURG + KIOWA COUNTY**

Blessed with a unique opportunity to create a strong community devoted to family, fostering businesses, working together for future growth

The above Vision Statement reflects the overall perspective of the community, as developed by the Public Square Steering Committee at a Vision Retreat held August 1, 2007.
INTRODUCTION

HOW TO USE THIS PLAN

The Greensburg + Kiowa County Long-Term Community Recovery Plan serves as a guide to decisions related to community recovery. The governing bodies of Greensburg and Kiowa County should coordinate the Recovery Plan implementation and identify implementation priorities.

The projects recommended in this plan have recovery values identified. These recovery values should be considered when determining priorities. Project implementation priorities should be based on two general principles:

- Focus on projects that will have the most impact on recovery when completed. Obviously, the High Recovery Value projects should have priority. These should be the major focus of the governing bodies.
- Move forward on projects that can be completed quickly, have significant public support, or have available funding. Completion of these types of projects creates significant visibility for the Recovery Plan and helps solidify community and political support for continued emphasis on Recovery Plan implementation. In some cases, these projects may not have a high recovery value, but their completion will help hold the community’s interest in the program.

The Recovery Plan should be viewed as a guide, not specific instructions. Specifics of the projects in the plan may change and evolve as designs are undertaken or as more details become known. It is important to be flexible and assess changes based on the community recovery vision and the overall principles of the Recovery Plan. Evaluation and feedback are key components of the LTCR planning process. In addition to helping to improve the overall effort, progress that is evaluated and tracked can be used to communicate success to stakeholders and the general public.

Greensburg and Kiowa County should consider identifying someone as the Implementation Coordinator – someone to manage and lead implementation of the Recovery Plan. It is important to have someone charged with plan implementation in order for the projects to move forward.

In addition to an overall leader and Implementation Coordinator, each of the projects will require someone who will take the project and move it forward – a project champion. In some cases that may be the Implementation Coordinator, but in most instances it would be beneficial to have someone who is familiar with the project and able to work with appropriate entities to accomplish the project. A project champion can be an individual or an agency, although one person should be the designated contact if it is an agency or organization.

While Greensburg and Kiowa County will be the primary users of this Recovery Plan, state and federal partners in the long-term recovery effort can also use this document to assist in community recovery. Various state and federal agencies may be key to acquiring needed funding for project implementation, and the project write-ups can be instrumental in determining the appropriate agency and funding eligibility.

The Greensburg + Kiowa County Long-Term Community Recovery Plan is a guide for recovery from the May 4th tornado that may have destroyed a majority of the physical features of Greensburg, but did not destroy the spirit and sense of community of the residents and officials. This Recovery Plan, along with strong community support, can provide the road map to community recovery. Not all projects can be implemented immediately; some may be implemented within the next 12 months while others may take several years. Community recovery will take time, but the end result will be a stronger, more resilient community.
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