May 2007

Learning from the Pass

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Learning From The Pass
Investigating the Role of Architecture in Temporary Places

by
Kylee M Anderson

A Terminal Project
Presented to the Faculty of
The College of Architecture
at the University of Nebraska
In Partial Fulfillment of Requirements
For the Degree of Master of Architecture

Major
Architecture

Under the Supervision of Professor Ted Ertl

Lincoln, Nebraska
May, 2007
This terminal project investigates the practicality of permanence in an inherently unstable environment. Pass Christian, a small town along the Mississippi Gulf Coast, is the site of one such environment. Natural forces inundate the landscape with dramatic amounts of wind and water each year. While the town has a strong historical presence, it is struggling to achieve permanence amid its natural instability. Most recently, in 2005, Hurricane Katrina physically washed away much of the identity which the people of Pass Christian cling to. It is clear that those living with this kind of recurring disaster need to explore alternative solutions for inhabiting the landscape.

The process guiding the project began with two givens based on human nature and natural history: the town will rebuild, and nature will destroy it again. Conceptual design began with the understanding that nothing is really “hurricane-proof”, and survival of a part enables survival of the whole. In today’s terms, importance is synonymous with permanence, and cities often use architecture as a way to announce this. However, only by embracing the role of nature within the built form will architecture achieve permanence for Pass Christian.

Schematically, this project rethinks the town’s built environment and landscape. I developed a series of new surfaces which act as an active narrative or timeline. While the surfaces are a constant, the zones between them openly admit uncertainty and instability. Anything built on the surfaces is done so with the understanding that it is temporary. The project investigates the themes of permanence versus ephemeral and necessary versus superfluous. The project should not be viewed as a concrete solution to the aftermath of Hurricane Katrina. It addresses underlying architectural issues and ultimately will achieve the following:

- Enable Pass Christian to physically sustain itself in the environs of the Gulf Coast.
- Embed Pass Christian’s identity within the landscape, so it may remain even when other built forms have gone.
- Generate discussion concerning the societal norms of materialistic possession and the architectural designs which enable them.

Abstract
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My project is not one which can be presented simply as a design issue and an appropriate architectural solution. There are many architectural issues raised throughout the project and the goal is not to wholly solve them but to bring the issues to light and to analyze and interpret them in hopes of reaching some greater understanding of architecture’s role in a physically unstable environment.

I first became interested in the topic of architecture and natural disaster in the year following Hurricane Katrina. There seemed to be a lot of ideas on how to rebuild the gulf coast and repair what was lost. The Mississippi Renewal Forum, for example, was a massive planning and design charrette which aimed to create new master plans for eleven Gulf Coast towns. Also, the Gulf Coast Pattern Book was created as a reference of building types for the destroyed region. While I understand these steps as necessary in order to tackle the enormous job of replacing the built environments of the entire coast, I wondered if simply replacing what was lost in the “right” style was the solution.

As the controversy over whether or not to rebuild in certain areas of New Orleans arose, and the longer residents remained in temporary FEMA trailers with no signs of change, I realized that the emotional scars of the situation were beginning to out rank the physical ones. I wanted to know if architecture could act dually as necessary shelter and a means to heal a scarred landscape. This was the point of departure for my thesis project. From here I there I began extensively researching how natural disasters have affected architecture and specifically how one small town, Pass Christian, MS, could restore its identity through architecture in the face of recurring disaster threats.
Research

Staging of Topic
Site Identification
Site Analysis
Along with natural disasters come long lists of statistics. News reports update us on the number of casualties, the number of homes destroyed, people displaced, and the total cost (usually in the millions of dollars) of all the damage caused. Overall, these numbers can be very powerful. They help determine the type and amount of federal relief aid that an area may receive. The numbers also appeal to humanitarian groups wishing to help. There is a danger, however, in defining a disaster and all of its devastation with statistical numbers. Statistics can generalize a situation. They are sterile, in a way, and have no intimate relationship with the people and places they describe. There is no statistic for emotional loss. There is no statistic to describe a place's character. There is no statistic to describe the feeling of not being able to ever return home. These are measured in qualities, not quantities. Qualities are particular and essential characteristics. Most importantly, they are attributes which are irreplaceable and unable to be simply copied. A quantitative statistical report can not begin to describe the actual result of a natural disaster. Through the combining of these quantity driven statistical reports, which will inevitably define a disaster in the history books, I hope to determine a more relatable and personal way to define a disaster; a way to qualify the events surrounding the disaster.

Those charged with describing the intensity of a particular disaster types have, in a way, started to qualify disasters for us. In order to create a more reliable way to rate how destructive a hurricane was or will be, forecasters implemented the Saffir-Simpson Scale in 1969. The scale assists in gauging the likely damage and flooding a hurricane will cause upon landfall. A category, one through five, is assigned based on wind speed and the effects of storm surge and flooding. When the National Weather Service warns that a Category 5 hurricane is approaching the United States, residents in the soon to be affected area know what to expect. They know because they have lived through, or seen reports on, similarly rated storms in the past. People automatically, and subconsciously take the statistically driven storm rating and assign qualities to it in order to understand what could happen to them and their surroundings.

What the Saffir-Sampson scale does for hurricanes, the Fujita scale does for tornadoes. In fact, the Fujita scale, which was implemented in 1971, provides an even more qualitative analysis of quantitative data than the Saffir-Sampson scale does. The F-scale rates a tornado's intensity by analyzing the damage to human-built structures and vegetation after it has passed. Meteorologists examine damage, ground-swirl patterns, radar tracking, eyewitness testimonies, media reports, and even damage imagery in order to identify the proper ranking. Qualitative descriptions are used to further classify each F ranking. For example, an F2 tornado is said to have caused...
“considerable damage, roofs were torn off houses, mobile homes were demolished, boxcars overturned, large trees snapped or uprooted, and light-object missiles were generated”. This makes the ranking of tornado intensities extremely subjective to interpretation. Because of this, an updated scale, known as the Enhanced F Scale, is being implemented as of February, 2007 in the United States. The new scale will better take into account degrees of damage which occur with different types of structures, as well as damage to things other than structures.

Other quantitative scales which qualify disasters in some way include the Richter scale used for earthquakes and the "alarm" rankings used by fire stations to determine what sort of response is necessary for a fire. All of these scales are based on numbers and quantities. However, they have worked their way into popular vernacular and we have assigned qualities to them almost subconsciously. If someone uses the phrase “five alarm fire”, even if we don’t understand the specifics of determining this, we know that it is a very intense and destructive fire. Property is certainly destroyed and lives may have been lost. We understand the character of the quality without witnessing it and without knowing its temperature or the rate at which it is spreading. In order to identify an earthquake as “a 6.9 on the Richter” a complicated logarithmic formula is applied. We do not need to know that formula, however. We have no doubt seen images of previous similar earthquakes and we know the qualities which accompany a ranking of that magnitude. This study investigates the discovery of these “known qualities”, and specifically the affects accumulation of these qualities have on people and places over time.

In this project I have analyzed four major U.S. cities which have experienced a significant disaster at some point in their histories. The cities analyzed in the following pages are San Francisco, St. Louis, Chicago, and Galveston. I have used linear, factual time lines to describe each city as a starting point. These first time lines are simply a history of important events. A running total of each city’s population can be found along the bottom of the time lines and the totals correlate with the year and event in history found above it.

The main disasters in question have been omitted in each historical time line. This is done to reinforce the idea that the disaster itself, as an event, has created a break in the history of each city. After a disaster of a certain scale affects a place, the place’s history will inevitably be split into two categories: the before and the after. Thus, the historical time lines are split as well. At the point in history when the natural disaster occurred, the background color of the page changes, visually denoting a crossover from the before to the after. These first time lines are a way to begin to understand the character of each city.
San Francisco, CA was one of the first cities of the West to really establish itself as a dense and flourishing American city. With the Gold Rush of 1849 came thousands of new residents. Within the year the Bay City’s population had increased exponentially from around 1,000 people to nearly 25,000. Because of the enormous influx of people, new housing was built quickly and cheaply. Row houses were crammed onto neighborhood streets. The density of housing, combined with the heavy use of wood as a building material, was a disaster in the making, a disaster which would be realized at a peak in San Francisco’s growth. The city was growing rapidly in area and
The San Francisco Railroad is open for service.
The Dramatic Chronicle (later, The Chronicle) and The Examiner are first published.
An earthquake measuring 7.0 magnitude is felt along the Hayward fault.
Golden Gate Park is established.
San Francisco Railroad combines with Central Pacific Railroad to form Southern Pacific Railroad.
Andrew Hallidie opens the first cable car system to the public.
The Pacific Stock Exchange is opened.
The California Electric Light Company is established. They have the first central generating station in the world.
The California Midwinter International Exposition is held.

1864 1865 1868 1870 1871 1873 1875 1879 1893

149,473 233,959 298,997

SAN FRANCISCO EARTHQUAKE AND FIRE SAN FRANCISCO EARTHQUAKE AND FIRE

Research
Staging of Topic
Site Identification
Site Analysis

population in the years leading up to the turn of the century. Finished railroad lines brought visitors and new residents starting in 1864. Grand hotels were built, such as the Palace Hotel, which was famously thought to be not only earthquake resistant, but fire proof as well. These claims would be tested and proved tragically wrong. The turning point for San Francisco’s Historical Time Line came in 1906 at 5:12 AM. An

Population growth trend for San Francisco from 1840 to 2000.
1906 earthquake denoted by line.
The earthquake measuring at a magnitude of 7.8, rocked the city. Due to a combination of broken gas lines and cramped housing, fires soon broke out all over the already destroyed city. The fires soon combined into one giant fire and spread faster than anyone could have imagined. It lasted for a horrifying 74 hours. Once all the flames had been put out, the enormous task of reconstruction loomed ahead. The earthquake caused a sharp decline in population at the time. Many people died, and others left to find work.
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>Candlestick Park is established.</td>
</tr>
<tr>
<td>1967</td>
<td>Declared the Summer of Love, it was the height of the Hippie counter culture centered in the Haight-Ashbury district.</td>
</tr>
<tr>
<td>1968</td>
<td>The Zodiac Killer strikes the Bay area.</td>
</tr>
<tr>
<td>1969</td>
<td>Thousands march at anti-Vietnam protest.</td>
</tr>
<tr>
<td>1972</td>
<td>The Bay Area Rapid Transit (BART) carries its first passengers.</td>
</tr>
<tr>
<td>1979</td>
<td>The White Night Riots take place.</td>
</tr>
<tr>
<td>1989</td>
<td>An earthquake measured at 7.1 magnitude shakes the city and surrounding areas crippling the transportation systems.</td>
</tr>
<tr>
<td>1998</td>
<td>A massive power outage causes a blackout for the city.</td>
</tr>
<tr>
<td>2006</td>
<td>The 100th anniversary of the 1906 earthquake and fires.</td>
</tr>
</tbody>
</table>

SAN FRANCISCO EARTHQUAKE AND FIRE SAN FRANCISCO EARTHQUAKE AND FIRE

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1906</td>
<td>740,316</td>
</tr>
<tr>
<td>1915</td>
<td>715,674</td>
</tr>
<tr>
<td>1925</td>
<td>678,974</td>
</tr>
<tr>
<td>1935</td>
<td>723,959</td>
</tr>
<tr>
<td>1945</td>
<td>776,733</td>
</tr>
</tbody>
</table>

and a place to stay. Of those that remained, few had a place to live. The people of San Francisco did not give up, however. Many lived in small shacks provided by the Army in Golden Gate Park until they could afford to rebuild what they had lost. Almost 10 years later, in 1915, a world’s fair was celebrated in San Francisco, and it was a sure sign of recovery and transformation for the city. In 1989 another serious earthquake struck the city, crippling their transportation systems. Despite these two major disasters, the city has continued to grow, as shown in the population growth diagram on page six, and is one of the most important American cities today.
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1541</td>
<td>Spanish explorers discover the Mississippi River Valley.</td>
</tr>
<tr>
<td>1764</td>
<td>St. Louis is founded and named for French King Louis IX’s patron saint.</td>
</tr>
<tr>
<td>1780</td>
<td>The Revolutionary War’s Battle of Fort San Carlos takes place.</td>
</tr>
<tr>
<td>1779</td>
<td>The city’s farmers market, Soulard Market, is founded.</td>
</tr>
<tr>
<td>1803</td>
<td>Jefferson buys the Louisiana Territory from France, which doubles the size of the country.</td>
</tr>
<tr>
<td>1808</td>
<td>The first newspaper west of the Mississippi, the Missouri Gazette, is published.</td>
</tr>
<tr>
<td>1809</td>
<td>St. Louis becomes an incorporated town.</td>
</tr>
<tr>
<td>1811</td>
<td>A severe earthquake originating in New Madrid rocks the Mid-west and changes the course of the Missouri River.</td>
</tr>
<tr>
<td>1816</td>
<td>St. Louis opens its first banking institution.</td>
</tr>
<tr>
<td>1820</td>
<td>The Missouri Compromise, regarding the ownership of slaves, is passed.</td>
</tr>
</tbody>
</table>

St. Louis, MO was one of America’s first attempts at establishing city life in the West. At first it was only a center for fur trade and a U.S. Army post. Then the railroad came, and almost overnight St. Louis was bursting with people. In 1849, the Pacific Railroad was officially incorporated in St. Louis, an event which is easily noted by the almost 500 percent population increase between the 1840 census and the 1850 census. But the city’s success didn’t stop there. Over the following 30 years the population nearly doubled with each decade. Due to its increase in size, St. Louis was notably the “first city west of the Mississippi” to achieve many important milestones.
These achievements were not without struggle. Flooding was common due to its geographic location, and an outbreak of cholera killed more than 4,000 citizens of St. Louis in 1894. These disasters did not compare, however, to the destruction which came to St. Louis during a tornado outbreak in 1896. Storms such as these are common for that area of the country. Luckily, much of the land is...
Research
Staging of Topic
Site Identification
Site Analysis

James Eads designs and builds the Eads Bridge which is the first to cross the Mississippi River.
The first telephone system is in use.
Electric street cars are introduced.
Louis Sullivan designs one of the first skyscrapers, the Wainwright building.
Union Station opens. It is the largest in the U.S.

1874 1877 1887 1891 1894

1904 1906 1914 1916 1926

The Louisiana Purchase Exposition is held. 19.5 million people attend.
St. Louis becomes the first American city to host the Olympics.
Ford Motor's begins production in St. Louis.
The Railway Exchange building is built; it's the world's largest office building.
The Democratic Convention is held in St. Louis.
The St. Louis Zoo is open.

350,518 451,770 575,238 687,029 772,897

rural and when a tornado touches down, it only affects a small group of people and structures. This tornado, on this day, was different. It touched down right in the urban center of the densely populated city of St. Louis. This event would mark an important break in St. Louis' Historical Time Line. The city recovered, and similarly to San
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1929</td>
<td>The Great Depression causes unemployment and business closures in the city.</td>
</tr>
<tr>
<td>1950</td>
<td>The city’s population is at its peak.</td>
</tr>
<tr>
<td>1951</td>
<td>A major flood sweeps through the city.</td>
</tr>
<tr>
<td>1956</td>
<td>Construction begins on the nation’s first interstate highway.</td>
</tr>
<tr>
<td>1965</td>
<td>The Gateway Arch is complete and stands as a symbol of America’s Westward movement.</td>
</tr>
<tr>
<td>1970</td>
<td>78 million people are living in a 500 mile radius of St. Louis.</td>
</tr>
<tr>
<td>1993</td>
<td>St. Louis light rail system, Metro Link, opens.</td>
</tr>
<tr>
<td>2003</td>
<td>The Mississippi River has a “500 year” flood causing billions in damages.</td>
</tr>
<tr>
<td>2004</td>
<td>The Eads Bridge reopens 129 years after its original ribbon cutting.</td>
</tr>
<tr>
<td>2003</td>
<td>St. Louis celebrates a list of historical events such as the Lewis and Clark expedition and Louisiana Purchase.</td>
</tr>
</tbody>
</table>

Francisco, hosted a world’s fair, eight years later. 19.5 million people attended the Louisiana Purchase Exposition in St. Louis and saw for themselves the great recovery that had been achieved. The population continued to rise for many years, peaking in the 1950s. In the recent decades, however, the population has been in a downward trend. This trend is illustrated in the population growth diagram on page ten. It is possible that this is related to the fact that St. Louis has the distinction of being labeled the city which has most often been destroyed by tornadoes. In fact, four of the tornadoes to hit St. Louis hold records for the deadliest and costliest tornadoes in U.S. history.
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1673</td>
<td>Father Jacques Marquette and Louis Jolliet become the first to explore the area now known as Chicago.</td>
</tr>
<tr>
<td>1683</td>
<td>French Jesuits establish &quot;Fort de Chicago,&quot; the area's first European settlement. It was abandoned 13 years later.</td>
</tr>
<tr>
<td>1779</td>
<td>Jean-Baptiste Point du Sable establishes the first permanent settlement near the mouth of the Chicago River.</td>
</tr>
<tr>
<td>1803</td>
<td>Fort Dearborn is constructed at the mouth of the Chicago River as per the War Department's orders.</td>
</tr>
<tr>
<td>1818</td>
<td>Illinois is admitted to statehood.</td>
</tr>
<tr>
<td>1833</td>
<td>Chicago is incorporated as a town of 350 people.</td>
</tr>
<tr>
<td>1837</td>
<td>A charter is approved to incorporate Chicago as a city, and William B. Ogden is elected its first mayor.</td>
</tr>
<tr>
<td>1844</td>
<td>The city's first public school is built on Madison Street.</td>
</tr>
<tr>
<td>1848</td>
<td>The Illinois and Michigan Canal is completed at a cost of $6,170,226.</td>
</tr>
</tbody>
</table>

Chicago, IL is another Midwestern city which gave new meaning to the phrase, "west of the Mississippi". By 1870, Chicago's population was ten times the population of 1850. As we have seen, large population increases in short periods of time results in quickly built, dense, urban neighborhoods. Chicago was no exception, and when one particularly dry summer came in 1871, the city was a disaster waiting happen.

One October evening in 1871, an event famously known as the Great Conflagration, began. The fire, which lasted a total of 27 hours, is the event in Chicago from which all time is measured. Architecture,
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1851</td>
<td>Chicago’s first university, Northwestern, is founded.</td>
</tr>
<tr>
<td>1860</td>
<td>Chicago hosts its first political convention.</td>
</tr>
<tr>
<td>1863</td>
<td>Mercy Hospital becomes the first hospital in Illinois.</td>
</tr>
<tr>
<td>1867</td>
<td>Chicago’s first water tunnel under the lake, considered a feat of engineering, is completed.</td>
</tr>
<tr>
<td>1869</td>
<td>The Chicago Water Tower is completed.</td>
</tr>
<tr>
<td>1873</td>
<td>The Chicago Public Library opens with the donation of 8,000 books from city residents.</td>
</tr>
<tr>
<td>1885</td>
<td>The nine-story Home Insurance Building, one of the first skyscrapers, is erected on LaSalle Street.</td>
</tr>
<tr>
<td>1892</td>
<td>The first elevated trains begin operation.</td>
</tr>
<tr>
<td>1893</td>
<td>The World’s Colombian Exposition opens in Chicago. The exposition attracted 27,539,000 visitors.</td>
</tr>
<tr>
<td>1900</td>
<td>The flow of the Chicago River is reversed to control the waste waters entering Lake Michigan.</td>
</tr>
<tr>
<td>1903</td>
<td>More than 600 people die in a fire at the Iroquois Theater, which was believed to be fireproof.</td>
</tr>
</tbody>
</table>

Chicago, however, was not done growing, especially as noted as “pre-fire” or “post-fire,” “post-fire” being largely steel framed. Chicago, however, was not done growing, especially as noted as “pre-fire” or “post-fire,” “post-fire” being largely steel framed. The transformation the city underwent was unprecedented and for transformation. The transformation the city underwent was unprecedented and
The present Chicago City Hall is dedicated.

Chicago's first airport, the Chicago Municipal Airport, later known as Midway airport, is completed.

Work starts on the straightening of the south branch of the Chicago River between Polk and 18th Streets.

John G. Shedd presents the Shedd Aquarium to the city as "a gift to the people of Chicago."

The "Century of Progress" World's Fair opens.

Chicago's first subway opens.

The Chicago Transit Authority (CTA) begins local transit operations.

O'Hare International Airport opens.

A fire breaks out at the Our Lady of the Angels School, killing 90 students and three nuns.

McCormick Place is destroyed by fire.

The world's first commuter rail service on an expressway median opens.


2,185,283 2,701,705 3,376,438 3,396,808 3,620,962 3,550,404

CHICAGO FIRE CHICAGO FIRE CHICAGO FIRE CHICAGO FIRE CHICAGO FIRE CHICAGO FIRE CHICAGO FIRE CHICAGO FIRE

The break created in Chicago's Historical Time Line, may be the most dramatic of any city. While the city was large in comparison to other American cities at the time, Chicago itself was not close to reaching its peak in growth. During and after the recovery of "post-fire" Chicago,
and by the time Chicago hosted the World’s Colombian Exposition in 1893, its population showed an increase of almost five times its “pre-fire” state. And Chicago continued to grow and prosper. Perhaps the type of disaster has something to do with this phenomenon. Fires are most commonly caused by human’s, and there is so much which can be done today to prevent them. It is safe to say that a fire this extreme and long lasting is very rare in today’s cities. We have less control over the other three natural disasters chronicled here. Chicago today, more than any other place, is the positive reaction to a very negative disaster.
Cabeza de Vaca shipwrecked on what is believed today to be Galveston Island.

The island was named in honor of Bernardo de Gálvez, who charted the Gulf Coast.

The first permanent settlement on the island were constructed by the pirate Louis-Michel Aury.

Galveston, Texas, was the first post office established in what is now Texas.

The pirate Jean Laffite occupied Galveston Island and used it as a base for his smuggling operation.

The Texas Declaration of Independence was adopted.

The first naval base in Texas is established in Galveston.

The Texas Congress made Galveston a port of entry.

The first recorded hurricane strikes near Galveston.

1785

The Texas Declaration of Independence was adopted.

1766

Galveston, Texas, was an example of a city whose Historical Time Line was completely sent off course by natural disaster. If you look at population alone, which is illustrated in the diagram on page 17, it becomes very apparent that something stunted Galveston's growth.

The years leading up to the Hurricane of 1900, which all but wiped Galveston from the Texas map, show an average increase in population of 50 percent per decade. Had this trend continued at a similar rate, Galveston's population would have been near 700,000 by the 1970s. The population in 1970 was instead only 61,809. Galveston was a flourishing Southern American city around the

1528

Cabeza de Vaca shipwrecked on what is believed to be Galveston Island.

1836

The first naval base in Texas is established in Galveston.

1817

The Texas Declaration of Independence was adopted.

1816

The first permanent settlement on the island were constructed by the pirate Louis-Michel Aury.

1837

The Texas Congress made Galveston a port of entry.
Research
Staging of Topic
Site Identification
Site Analysis

Several prefabricated houses arrived from Maine.

Galveston was officially incorporated as a city.

The Strand was known as the “Wall Street of the Southwest” and was the center of commerce for the thriving port.

The Galveston County Daily News is first published.

Texas becomes a U.S. state.

Galveston becomes the first Texas city to have gas powered lights.

The causeway linking the island with the mainland is complete.

Texas seceded from the Federal Union

A proclamation of peace between the United States and Texas was issued.

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1839</td>
<td>Galveston was officially incorporated as a city.</td>
</tr>
<tr>
<td>1840</td>
<td>The Strand was known as the “Wall Street of the Southwest” and was the center of commerce for the thriving port.</td>
</tr>
<tr>
<td>1842</td>
<td>The Galveston County Daily News is first published.</td>
</tr>
<tr>
<td>1845</td>
<td>Texas becomes a U.S. state.</td>
</tr>
<tr>
<td>1856</td>
<td>Galveston becomes the first Texas city to have gas powered lights.</td>
</tr>
<tr>
<td>1860</td>
<td>The causeway linking the island with the mainland is complete.</td>
</tr>
<tr>
<td>1861</td>
<td>Texas seceded from the Federal Union</td>
</tr>
<tr>
<td>1865</td>
<td>A proclamation of peace between the United States and Texas was issued.</td>
</tr>
</tbody>
</table>

GALVESTON HURRICANE

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1900</td>
<td>4,177</td>
</tr>
<tr>
<td>1919</td>
<td>7,307</td>
</tr>
</tbody>
</table>

turn of the century. It was even larger than Houston at one point. It was affluent and well established. Many came to visit and even more stayed to make Galveston their home. Galveston’s port was the port of call for the southern states at the time. Business was booming and Galveston was on course to become the “New York City” of the South. A hurricane, which caused unprecedented
A hurricane damaged or destroyed every house in the port of Indiana, causing Galveston to become the main port for the area. Galveston's position on the natural harbor made it the center of trade in Texas and the largest cotton port in the nation.

1902
- Construction begins on the Galveston Seawall in order to protect the island from future storms.
- Nearby Houston dredges a channel and creates a deep-water port to compete with Galveston’s.

1903
- Galveston actively solicits immigration through an immigration plan called the Galveston Movement.

1907
- The University of Texas Medical Branch is founded.

1870
- The United States Congress readmitted Texas into the Union.

1878
- The first telephone in Texas is installed in Galveston.

1886
- A hurricane damaged or destroyed every house in the port of Indiana, causing Galveston to become the main port for the area.

1900
- Galveston’s position on the natural harbor made it the center of trade in Texas and the largest cotton port in the nation.

1878
- 13,818

1878
- 22,248

1886
- 29,084

1900
- 42,847

In the aftermath of the storm, Galveston was in ruins. This was not the first time historically...
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1910</td>
<td>Galveston gets the state’s first electric lights, 1883</td>
</tr>
<tr>
<td>1914</td>
<td>Galveston becomes a top resort city for the country, Houston</td>
</tr>
<tr>
<td>1920</td>
<td>Democratic National Convention is held in nearby Houston</td>
</tr>
<tr>
<td>1928</td>
<td>One of its greatest attractions at the time was the annual Pulchritude of Beauty Pageants.</td>
</tr>
<tr>
<td>1930s</td>
<td>Sam Maceo’s famous nightclubs, the Balinese Room and the Hollywood Dinner Club, were host to many famous performers of the time.</td>
</tr>
<tr>
<td>1940s</td>
<td>People continue to build along the coastline despite the constant threat of hurricanes.</td>
</tr>
<tr>
<td>1950s</td>
<td>The Seawall is completed. It stands 17 feet high and seven miles long.</td>
</tr>
<tr>
<td>1962</td>
<td>Galveston is home to over 1,500 historic buildings on the National Register of Historic Places.</td>
</tr>
<tr>
<td>2006</td>
<td>People continue to build along the coastline despite the constant threat of hurricanes.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1910</td>
<td>36,981</td>
</tr>
<tr>
<td>1914</td>
<td>44,550</td>
</tr>
<tr>
<td>1920</td>
<td>52,938</td>
</tr>
<tr>
<td>1928</td>
<td>60,862</td>
</tr>
<tr>
<td>1940s</td>
<td>66,568</td>
</tr>
<tr>
<td>1950s</td>
<td>67,175</td>
</tr>
<tr>
<td>1962</td>
<td>61,902</td>
</tr>
<tr>
<td>2006</td>
<td>57,247</td>
</tr>
</tbody>
</table>

Research

Staging of Topic

Site Identification

Site Analysis

that Galveston had experienced a disastrous hurricane. As I will illustrate in the next set of diagrams, Galveston was, and continues to be, repeatedly affected by hurricanes. If Chicago was made to grow because of disaster, Galveston’s case was the opposite. There is no doubt that the image of Galveston was changed forever by this event. The island was, in fact, raised 17 feet in elevation above sea level and a massive seawall was constructed as a protector. Galveston recovered in many ways, but the city’s bustling character was never restored. Today, Galveston is a resort town and frequented vacation spot.
The following diagrams are disaster profiles for each of the cities described in this study. As with the previous set, these diagrams are presented in time line fashion. Each begins with the earliest recorded and significant natural disaster of a specific type: earthquakes in San Francisco, tornadoes in St. Louis, fires in Chicago, and hurricanes in Galveston.

The shaded portion of each Disaster Profile highlights the period of time in which the major disaster, the disaster which caused the before and after split for each city, occurred. Below each time line, along the bottom of each page, there is a string of images from each disaster combined with statistics and information of note on the major disasters and the city’s disastrous nature in general.

These time lines are a way to take the quantitative information on the frequency and intensity of disasters in each city, and begin to apply qualitative characteristics to them. As a result, one can understand the overall disastrous nature of these cities. In some cases disaster comes in isolated instances, in others it is more of a way of life.

Other information noted in this set of diagrams includes events which led up to the major disaster, for example warnings the city may have had in advance. Also, information regarding the time line of recovery is given throughout the records of similar disasters. For some of these cities who repeatedly experience natural disaster, recovery is often an ongoing process.
A 7.8 magnitude earthquake hits San Francisco. The epicenter is 2 miles outside of the city, and the quake affects 296 miles along the San Andreas Fault.

1,700 soldiers are mobilized, in a poorly coordinated effort, from Presidio, an army post just outside the city.

A aftershock continues to shake the city. Due to broken gas lines many fires begin to spread quickly, further destroying the city.

Mayor issues a "shoot-to-kill" order for looters.

The fire is out of control. The army uses dynamite to blow a massive fire break to stop it. Dozens of blocks are destroyed close to Van Ness Ave.

### Apr 18, 1906

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:12 AM</td>
<td>A 7.8 magnitude earthquake hits San Francisco.</td>
</tr>
<tr>
<td>6:30 AM</td>
<td>The fires take downtown and advance on Union Square on Powell street.</td>
</tr>
<tr>
<td>8:14 AM</td>
<td>The fires are out of control. The army uses dynamite to blow a massive fire break to stop it. Dozens of blocks are destroyed close to Van Ness Ave.</td>
</tr>
</tbody>
</table>

### Apr 19

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:00 PM</td>
<td>Mayor issues a &quot;shoot-to-kill&quot; order for looters.</td>
</tr>
<tr>
<td>8:00 PM</td>
<td>The fires are out of control. The army uses dynamite to blow a massive fire break to stop it. Dozens of blocks are destroyed close to Van Ness Ave.</td>
</tr>
<tr>
<td>6:00 PM</td>
<td>Mayor issues a &quot;shoot-to-kill&quot; order for looters.</td>
</tr>
</tbody>
</table>

**Research**

- **Cost of Damage:** $5 billion (adjusted for inflation, 2005)
- **Area Damaged:** 80% of the city, or 4 mi²
- **Fatalities:** as many as 27,000
- **Homeless:** 75% of the population, or around 300,000 people
- **Population Before:** 410,000
- **Population After:** 305,000

San Francisco experiences seismic activity on a daily basis in small doses. In the past 100 years there have been two earthquakes which caused enormous injury and destruction. The former stands out not only because of a higher recorded magnitude, but as a result of the ensuing fires which engulfed the city.
Panama-Pacific Exposition opens and celebrates the city’s reconstruction and rise from the ashes.

An earthquake of 7.1 magnitude strikes the San Francisco area. The epicenter is recorded as ten miles southeast of Santa Cruz, CA. 63 people are dead and thousands injured. San Francisco’s transportation systems sustained significant damage, including a 50 foot section of the San Francisco-Oakland Bay Bridge which collapsed.

The army builds 5,610 relief houses out of redwood and fir. They were set up in eleven different camps and housed 20,000 displaced citizens.

74 hours since they began, all fires have been put out. The mayor declares victory over the “Great Fire". The fire accounted for over 90% of the damage and consumed more than 500 city blocks.

San Francisco Earthquake and Fire, Feb 20, 1906

Oct 17, 1989

Feb 20, 1915

Apr 22

Apr 21

7:15 AM
An F3 tornado touches down in St. Louis and East St. Louis. Nine people die.

An F1 tornado hits downtown St. Louis killing one.

An unseasonable F2 tornado kills four.

Temperatures drop rapidly and dark black and greenish clouds approach the city from the west.

A tornado touches down near Bellflower, MO

The same storm spawns two more tornadoes. One hits New Minden, Hoyleton, Richview, and Irvington, IL. The other, an F4, strikes St. Louis leaving a mile wide, continuous path of destroyed area. It then crosses the Mississippi River to East St. Louis and causes more damage. 255 are dead making this tornado the costliest and 3rd deadliest in the US on record.
The cyclone dissipates and heavy rain pelts the destroyed city as the storm leaves St. Louis.

A successfully recovered St. Louis celebrates the 100th anniversary of the Louisiana Purchase by hosting the World’s Fair and Olympics simultaneously.

An F2 tornado leaves 3 dead in St. Louis.

An F4 tornado kills 79 people. It is the 2nd costliest and 24th deadliest on record in the US.

An F1 tornado touches down in the city. No fatalities are reported.

An unseasonable storm produces an F4 tornado which kills 21 people. It is the 66th deadliest tornado on record in the US.

An F2 tornado strikes St. Louis. No fatalities are reported.
### The Great Chicago Fire

**Cost of Damage:** $2.75 billion (adjusted for inflation, 2005)

**Area Damaged:** 60% of the city, 17,500 buildings, or 3 mi²

**Fatalities:** as many as 300

**Homeless:** 35% of the population, or 105,000 people

**Population Before:** 300,000

**Population After:** 290,000

The Great Chicago Fire was one of unprecedented destruction. The city had experienced fires previously and have experienced more deadly ones since, but none has had the affect on Chicago as the Great Fire did. After the fire, the city provided free rail passes to all citizens because so many were left homeless. This, rather than deaths, is most likely the reason for the dramatic drop in population. The practice was stopped when the city realized it was losing the labor force it would require to rebuild.
<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov 3</td>
<td>Conventional law is restored to the city. The Post Office is temporarily set up in a Methodist church at Wabash and Harrison Streets.</td>
</tr>
<tr>
<td>Dec</td>
<td>Work had already begun on 212 stone and brick buildings in the South Division.</td>
</tr>
<tr>
<td>Jan 1, 1872</td>
<td>A Temporary City Hall is established in the Public Library at LaSalle and Adams Streets.</td>
</tr>
<tr>
<td>1873</td>
<td>Angry protesters demonstrate at a meeting of the Common Council. They feel they are being discriminated against because they are poor and can only afford to build with wood, a material the Council sought to ban due to its flammable nature.</td>
</tr>
<tr>
<td>July 1874</td>
<td>Chicago's Inter-State Exposition opens and declares that the rebuilding was a triumph.</td>
</tr>
<tr>
<td>Nov 3</td>
<td>A fire breaks out at the Our Lady of the Angels School, killing 90 students and three nuns.</td>
</tr>
<tr>
<td>Dec</td>
<td>More than 600 people die in a fire at the Iroquois Theater, which was believed to be fireproof.</td>
</tr>
<tr>
<td>Jan 1, 1872</td>
<td>A second fire destroys 50 acres and 800 buildings in the downtown area. Insurers threaten to boycott and the city adopts stricter safety rules and improves the fire department.</td>
</tr>
<tr>
<td>1903</td>
<td>A fire breaks out at the Our Lady of the Angels School, killing 90 students and three nuns.</td>
</tr>
<tr>
<td>1958</td>
<td>A second fire destroys 50 acres and 800 buildings in the downtown area. Insurers threaten to boycott and the city adopts stricter safety rules and improves the fire department.</td>
</tr>
</tbody>
</table>
When you consider the size of Galveston, it becomes apparent that with this single disaster, the life of a once prospering city was completely taken. The Disaster Profile also shows the repeated beatings the city has received over the course of its existence: 19 major hurricanes of record before the storm of 1900 and 23 between then and now.

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug 27, 1900</td>
<td>Storm clouds move in over Galveston.</td>
</tr>
<tr>
<td>Aug 30</td>
<td>A ship reports an area of “unsettled weather” about 1,000 miles east of the lesser Antilles in the Caribbean.</td>
</tr>
<tr>
<td>Sept 1</td>
<td>The Caribbean island Antigua reports a severe thunderstorm with tropical cyclone characteristics.</td>
</tr>
<tr>
<td>Sept 4</td>
<td>The U.S. Weather Bureau reports a “storm of moderate intensity southeast of Cuba.</td>
</tr>
<tr>
<td>Sept 6</td>
<td>The U.S. Weather Bureau receives reports from the central D.C. office that a Tropical Storm is moving north of Cuba. They have no way of knowing where it is or where it’s headed.</td>
</tr>
<tr>
<td>Sept 7</td>
<td>The New Orleans Weather Bureau office reports heavy damage along the Louisiana and Mississippi coasts. Damaged telegraphs limit communication, however. D.C. office orders warnings from Pensacola to Galveston. Few heeded these warnings.</td>
</tr>
<tr>
<td>Sept 8</td>
<td>The storm is reported northwest of Key West.</td>
</tr>
</tbody>
</table>

Earliest recorded hurricane strikes Galveston.

A total of 19 significant tropical storms and hurricanes strike Galveston during this period causing flooding, wind damage, and deaths.

<table>
<thead>
<tr>
<th>Cost of Damage</th>
<th>$1 billion (adjusted for inflation, 2005)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area Damaged</td>
<td>99% of the city, or 3,600 homes</td>
</tr>
<tr>
<td>Fatalities</td>
<td>as many as 12,000, or 15% of the population</td>
</tr>
<tr>
<td>Homeless</td>
<td>80% of the population, or 34,000 people</td>
</tr>
<tr>
<td>Population Before</td>
<td>42,000</td>
</tr>
<tr>
<td>Population After</td>
<td>28,000</td>
</tr>
</tbody>
</table>
The last telegraph is received before the lines go down. It said, "Gulf rising, water covers streets of about half the city".

The storm's eye passes over the city. The wind begins to diminish.

A telegram is sent to Texas' governor and President McKinley regarding the damage.

The first mail is received after the storm.

Basic water service is restored and minimal telegraph service is available.

Cotton was once again shipping out of the Galveston port.

Three miles of a 17 foot high seawall is built. An all weather bridge is built to mainland Texas. Dredged sand was used to raise the city and over 2,100 buildings 17 feet higher above sea level.

A total of 23 significant hurricanes make landfall at, or near, Galveston including a destructive 1915 category 3 hurricane and the most recent, Hurricane Rita, which struck in September of 2005.

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Research
Staging of Topic
Site Identification
Site Analysis
The previous Disaster Profiles laid the statistical foundation for the following diagrams. In a set of four diagrams, I have illustrated the major statistical information which usually quantifies a disaster: Homelessness, the Area Damaged, Fatalities, and the Cost of Damages. Through analysis of these diagrams individually and comparisons between them, one can identify the character of each disaster.

The diagrams are read vertically. Each disaster has been reduced to a single dot on the time line. The meaning of each dot’s size is explained at each new diagram. In each diagram the major disasters are lined up along a central axis in order to allow for easier comparison. The other disasters, listed in the Disaster Profiles for each city, are arranged lower or higher on the time line based on an absolute value of the number of years they occurred before (lower) or after (higher) the major, central disaster. In this way, the variable of definite time is eliminated and replaced with time that is relative to a specific datum line. Relative time is a quality and product of definite time.

In this set of diagrams, quantities fade and qualities are illuminated.
This diagram compares homelessness statistics from each of the cities. The size of the dot representing each disaster on the time line depends on the percentage of the city’s population who were left homeless as a result of the particular disaster.

Looking only at the central disasters, San Francisco and Galveston stand out far above the other two. As you consider the remaining similar disasters, the homeless trend continues and is relative to the magnitudes of the earthquakes and categories of the hurricanes.

The amount of people left homeless in St. Louis is fairly consistent for each tornado. The overall amount of homelessness in St. Louis is significantly less because of the nature of the disaster. Tornadoes are short in length and therefore affect a smaller area in proportion to the other disasters. The statistic of homelessness can be related directly to location of storm rather than intensity, as with other disasters. If an F5 tornado touches down in a rural area, less people will be left homeless than if an F2 tornado touches down in an urban center, as is the case in all of the St. Louis tornadoes.

Overall frequency of disaster plays a huge role in defining the quality of the homeless statistic. For Galveston, alleviating homelessness in the wake of a disaster is a key factor in preserving character.
This diagram compares the amount of city which was destroyed in each disaster. The percentages which determine the dots’ sizes are based on the ratio of total area to area destroyed in each city.

Galveston wins this competition hands down. Due to the geographic location and topographic qualities of the city, the large water surges which accompany the strong winds of hurricanes have the potential to overtake the city. Even a storm that is categorically small can cause significant damage. This shows that the quantity of area damaged in earthquakes and hurricanes can be directly related to the qualities of location and type of area.

In the cases of tornadoes in St. Louis and fires in Chicago, the qualities are more related to the specific disaster than the site of it. In St. Louis, as with the homelessness, the damaged area is tied to the nature of tornadoes. Smaller areas are destroyed because tornadoes affect isolated paths. In Chicago, the damaged area is also related to the fire. Intensity and location are two qualities which affect damages due to fire.

Frequency is a factor here as well. Earthquakes and hurricanes seem to share damage characteristics, however the shear number of major hurricanes compared with earthquakes makes Galveston’s disasters quite a bit more overwhelming.
This diagram compares the fatality statistics of each disaster. The dots’ sizes are determined based on the ratio of total population size compared with the total number of deaths in each case.

The deadliness of hurricanes is undeniable in this diagram. It is true that in San Francisco’s major earthquake just as many, if not more, lives were lost as were in the Galveston hurricane. This diagram, however, emphasizes the fact that one out of every six residents died as a result of the hurricane. At that rate, there was not a person in the city who was left unaffected by the disaster. This comparison speaks more to the character of the city of Galveston after this disaster than one of absolute totals would. Not to say that the deaths in San Francisco had no affect, they certainly did. However, in San Francisco there were significantly more residents left, albeit homeless, to rebuild and recover.

The trends which appear in Galveston’s time line are also of note. Two of the earliest recorded hurricanes produced the largest number of deaths for the city. I believe this to be a direct result of a lack of warning. Settlers of early Galveston had no idea what was in store for them, and they had no way of knowing it was coming even when they figured out what it was. Today, hurricane prediction, tracking, and preparation has vastly improved. The increasingly lower number of fatalities is a direct result of this.
This diagram compares the total cost of property damages for each disaster. The size of each dot is larger or smaller based on the actual dollar amount associated with the destruction of each disaster. It is the only diagram of the set which compares total values, as opposed to ratios. Cost is a quantity which means the same in each city. If fact, you can think of cost as being relative to time only. Since the disaster happened within a broad range of years, each amount has been adjusted for current inflation rates. By looking at a current reflection of the cost of each disaster, you can begin to make qualitative judgements for each since they are on a level field.

Each city and type of disaster has suffered significant monetary loss throughout the time lines. Every major earthquake and almost every tornado bring some of the costliest reconstruction. Earthquakes affect a large area surrounding their epicenter and tornados in St. Louis are specifically costly due to the dense urban area that is destroyed.

An interesting trend is that the cost of hurricanes seems to be increasing while the cost of fires decreases. This can be related to advancing technology. Buildings are bigger and more expensive than ever today, thus destruction from natural disaster costs more. On the other hand, with the added expense of buildings comes advanced fire protection, limiting the amount of damage and costs possible in fires.
With a greater understanding of the effect disasters have on a place, I began the site analysis of Pass Christian and the Mississippi gulf coast with two truths in mind: hurricanes will continue to destroy built environments and people will continue to return to these dangerous areas and rebuild after each disaster.

Pass Christian, Mississippi, or the Pass as it is know to locals, was completely destroyed due to its close proximity to Hurricane Katrina’s landfall. Since then, This close knit community has struggled to recover.
Pass Christian has a strong sense of place the town has. Mainly this is a result of the town’s historical past and specifically its physical architectural history, which has proven a difficult thing to cling to given the town’s simultaneous disaster history. The Pass is home to the region’s largest historical district. Out of 130 historically significant buildings, only 50 will be salvageable in the wake of Katrina. This great physical loss can be directly translated to the loss of identity.
In this timeline, events which aided in town growth and development are recorded in white tabs. The brown tabs are disaster events which had a significant effect on the Pass. The modern years show an increase in destructive hurricanes on such a level that town development events are becoming fewer and far between the disaster events.

Hurricanes are literally squeezing the life out of Pass Christian.
In order to further illustrate the massive affect hurricanes have had on the Pass, the diagramming technique used in the initial project case study is employed in three categories based on Pass Christian hurricane data.

Percentages are relative to the town’s total population or area at the time of each disaster.

Each dot represents one disaster. Each tick mark represents five years before Hurricane Katrina.

The diagrams show overwhelmingly that the issues of homelessness and damaged areas have not been adequately addressed over the town’s history.
These before and after images depict the devastating affect hurricanes have had on Pass Christian’s historical landmarks. The destruction seen here was a result of Hurricane Camille in 1969. The yellow overlays highlight pieces of architectural information which survived in each case. These pieces are all that allows the sites to be recognizable.
In order to better understand the extent to which hurricanes affect the site, the physical conditions of the area were analyzed. These five maps illustrate the consistently present danger of weather patterns over the Gulf of Mexico from June through October.
The highest point in the Pass is only 35 feet above sea level. Much of the low-lying areas along the northern edge of the town are wetlands.
As this map shows, flooding is a constant concern for Pass Christian residents. Many homes are built on piling foundations in accordance with local codes. The flood conditions also cause insurance rates to be at a premium.
The town is centered around the harbor. All of Pass Christian's original residences are located nearest to the beach. Highway 90 runs parallel to the coast through the town and Henderson Avenue carries traffic north out of the town.
Community space is a hallmark of Pass Christian’s identity. The War Memorial Park, where many residents lived in relief camps after Katrina, is especially a source of pride for the residents.
As illustrated here, it is desirable to live in historically unsafe areas within the town. This combined with the natural geography creates an explosive relationship.
Post-Katrina Built Environment as of December, 2006
Coastal Conditions on August 30, 2005
one day after Katrina made landfall
Research

Staging of Topic
Site Identification
Site Analysis
Research

Staging of Topic
Site Identification
Site Analysis
Research

Staging of Topic
Site Identification
Site Analysis
Research

Staging of Topic
Site Identification
Site Analysis
Concept
Record | Anchor
Necessary vs. Superfluous
Surface Remnants
Early on I was interested in identifying marks which record time. The following diagrams juxtapose two kinds of marks which capture an event in time and space.
Concept
Record | Anchor
Necessary vs. Superfluous
Surface Remnants

measuring a boy's height on a door

measuring Katrina's water height on a fence
evidence of a hopscotch game on a sidewalk

Evidence of a police inspection on a sidewalk (zero dead found)
<table>
<thead>
<tr>
<th>Concept</th>
<th>Record</th>
<th>Anchor</th>
<th>Necessary vs. Superfluous</th>
<th>Surface Remnants</th>
</tr>
</thead>
</table>

This chart is an idea matrix used as a concept generator. Six big ideas are narrowed down through conceptual filters based on the ideas of Anchor and Record. The anchor is something static which holds a place. The record is more flexible and allows one to experience the narrative which has led up to the present. The results of the idea matrix are compiled into three categories of scale: Town, Neighborhood, and Human.
Stan Allen states, regarding the Urban Drawing Machine by Michael Silver, that “while constitutionally disinclined to the temporal, architecture nonetheless desires time.” This project was conceived as a public space for Oakland, CA following the 1989 earthquake. It embeds California’s identity as an unstable landscape into a dynamic object which responds to the earth’s seismic activity. As the styli move with the earth they leave behind marks, creating a record of events passed. By doing so, the Machine defines the city as inseparable from its site.
Using site conditions as a starting point, these conceptual models help generate ideas regarding physically anchoring the town.

Materials: foam core board, water color paper, piano and chicken wire.
This prominent community gathering spot was built with a sturdy foundation and a weak top structure as a design feature. Since the hurricanes are inevitable, the town designed the gazebo with nature in mind. In order to achieve longevity, care was taken to create a strong foundation as an anchor. The top portion, however, was considered temporary from the start. Replacement pieces are kept on hand for quick recovery after storm damage occurs.
The indestructible cores of each structure make up an array of points across the site. When the rest of the site is destroyed, the core pieces show the previous density, organization, and pattern of the town.

When cores are exposed during a disaster their organization and relationships can be seen. They are in a field like condition, as they become exposed they are a map for rebuilding.

When cores are exposed during a disaster their organization and relationships can be seen. They are in a field like condition, as they become exposed they are a map for rebuilding.

The individual connects at the smallest rib. The spine sends out ribs which divide over a field like condition, as they become exposed they are a map for rebuilding.

Materials: foam core board, water color paper, and museum board

Solid Core Study Models

This is the main concept taken from the original idea matrix. It stems from the notion that survival of the parts enables the survival of the whole. One piece is considered necessary and permanent (the blue cube). The rest is thought of as superfluous and temporary (the white material). When the superfluous is removed, or destroyed as in a hurricane, a mark is left on the permanent piece as a record of the event.

Although the permanent piece has been altered, it remains in tact and therefore the whole object (blue and white) has been sustained.
As debris from Katrina continues to be cleared away, a new identity for the Pass is revealed. All that remains of the built environment are architectural surfaces. The surfaces are remnants of what used to be. They contain information about space regarding the public and private, the natural and the man-made, and they are vital to the survival of the town.
Record | Anchor

Necessary vs. Superfluous

Surface Remnants

In these studies it is imagined that flood waters would evenly cover the white surface. The green, then, would protrude above the water replicating the surface which lies unseen below.

Materials: museum board and water color paper
Cutting and pushing back portions of the site in these paper models allowed for exploration of possible new surfaces.

Materials: paper and foam core board
Concept
Record | Anchor
Necessary vs. Superfluous
Surface Remnants
A more crisp and precise effect was desired for these models. Cutting and folding planes creates recesses and inclines.

Materials: foam core board and museum board
It was desired that there be a direct relationship between what is taken and what is added.

Materials: foam core board
Design

Goals

Surface Extraction

Modeling
Active Timeline and Narrative

The new environment created throughout the surfaces helps develop connections between the devastating loss of Pass Christian’s built architectural history and what can be expected for its future. The space seeks to bridge the gap between the missing relics of the past and the construction of the future.

Learning Tool

With each new surface created within the zone, it appears that the earth is physically sliced and pushed into place. In the negative space of each surface alteration a visual connection to the natural forces, which are at the root of the place’s narrative, can be seen. Residents can actually watch the water level physically rise and fall over time through land slits. When the area floods, which it will inevitably do, the high points of the surfaces will remain above the water as a reference point to show people just exactly how the site is affected by water.

Overtime, as with an event timeline, water levels can be collected and marked on the surfaces. This information is invaluable to the survival of the Pass, and allowing everyday access to it will help the residents have a better understanding of the environment in which they live. It is not expected to immediately affect the way people build and exist within the site, but overtime, it is the goal of the project to adjust the way Pass Christian residents live and build. Ultimately this knowledge will have a positive effect on the amount of loss which is associated with the area. Residents can not control nature, but they do have control over the way they live within nature and improving that relationship is a long term goal of this project.

Transitional Community Space

The town’s economy relies heavily on tourism. Also, the town’s unique character feeds off of its ability to come together and celebrate the town’s history and accomplishments. The surfaces provides space for temporary structures to be set up for town festivals and other yearly events, of which the town has many. As these events come and go, so will the structures. They are meant to be transitional and the changing function of the surfaces is a reflection of the town’s transitional and temporal nature as well.

During a hurricane, the most important part of the new zone, the core surfaces, will survive. Everything else must be taken down or risk destruction by wind. The subtle vertical profiles of the surfaces are a direct reflection of the power the hurricane winds have. As a final transitional function the surfaces can serve as a landing pad for relief housing in the hurricane’s aftermath, making it easier for the town to recover by keeping its population there.
By identifying and mapping remaining buildings, a community scar is revealed within the historical district.

Design
Goals
Surface Extraction
Modeling

Remaining Architectural Surfaces

Abstraction of Architectural Surfaces
Further investigation of lost historical sites locates the area specifically scarred by Hurricane Katrina Damage.
Regulating lines are established to connect the sites. They create an interlocking web above the already in place street grid and are a starting point for surface extraction and placement.
Regulating lines fade and spaces in between emerge in this map iteration.
Surface Plan

A zoomed in view shows the surface locations along with the original regulating lines which intersect them.
Design
Goals
Surface Extraction
Modeling

Lost Sites Final Imaging

Coastal Image Area
City Limit
Road
Memorial Park
Historical Site Destroyed by Past Hurricanes
Historical Site Destroyed by Hurricane Katrina
Design

Goals
Surface Extraction
Modeling

Materials: water color paper and museum board
Design

Goals
Surface Extraction
Modeling

Materials: water color paper and museum board
Design

Goals
Surface Extraction
Modeling

Materials: water color paper and museum board
Design
Goals
Surface Extraction
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Goals

Surface Extraction

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Goals
Surface Extraction
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Materials: museum board
Goals
Surface Extraction
Modeling

Materials: museum board


Pass Christian Web of Memories: http://city.passchristian.net


FEMA: http://www.fema.gov
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