

SITES OF MEMORY MUSEUM OF MEMORY:

Digital Foundations at Clemson University

by **Ronald Rael**

The Foundation Level studios at The School of Architecture at Clemson University have employed the concept of **digital foundations**, a means by which students are taught the fundamentals of architecture by drawing, modeling, fabricating and representing using the computer as a primary vehicle in those explorations. With careful attention to elucidate the physicality of the material, spatiality, context and a connection to the body through the use of digital processes - processes that can often displace one from those actualities, students work back and forth between the digital and the analog. Models and drawings built in the computer leave the digital world to find a home in the physical world allowing students to explore making through casting, assembling and analysis. Material explorations in the physical world are invested in the digital world for further examination. Bolstering this pedagogy is the Digital Design Shop, which includes a laser cutter, 3D printer and CNC router. By the sophomore year students have been exposed to a broad cross-section of digital modes and methods of design thinking and are extremely capable of modeling, fabricating and representing in both the digital and the analog using their digital toolkit. The inclusion of **form•Z** into the students' palette as the chosen modeling tool for foundation learning was because of its ability to model, render and easily integrate with CAD/CAM equipment.

Within this pedagogy, a sophomore

studio investigated three projects: Sites of Memory, A Museum of Memory, and a publication, The Ninth Ward, that examine the post-Katrina landscape of New Orleans, specifically the Ninth Ward. By proposing a series of site-specific installations that raise critical questions of how one builds in this ravaged landscape, especially as it pertains to the memory of the city whose physical presence is absent or radically altered. Because the City of New Orleans and its neighborhoods are built, in large part, upon their relationship with the water and this gives the spaces of the city distinctive meaning. Food, culture, the port, the historic arrival of the distinct cultures, the cemeteries, and the architecture can all be seen as shaped by the forces of water. Decay, growth, destruction, and construction prompted by hydrological forces are all components of both the aesthetic and material meaning of the fabric of the city.

Sites of Memory

Sites of Memory is a project that explores the relationship between water and the making of architecture through the examination of transformative and temporal material responses to water relative to the dynamics of "fluid" materials through casting and form making. The outcome of this investigation is the design, construction, and installation of a Hydrocache – a location specific architectonic artifact, a gift to the Ninth Ward, that marks and contains essences

of memory relative to material responses to water and location. Each Hydrocache is constructed in large part of materials whose properties are shaped by a transference from liquid to solid states through form-making and casting with materials such as concrete, acrylic resin, latex, rubber, aluminum, and bronze.

The design for each Hydrocache was created using **form•Z**. Unfolding, contouring, milling, 3D printing, and laser cutting were the primary vehicles for extracting the information from the computer and into a precise, site-specific model at 1:1 scale. The examination of material and time allowed for students to question and re-investigate how their digital models could be fabricated in the physical world. The forces of water over time, such as flooding, rain, humidity, and fog transform the Hydrocache, after being inserted into a specific location in the Ninth Ward. Imbedded into and stored by each Hydrocache, exists a prescribed or/and indeterminate material memory that responds to forces of water, such as swelling due to absorption, rusting, cracking, drying, and molding. The Hydrocache marks specific Sites of Memory that reflect stories shared by residents who were displaced by Hurricane Katrina. The locations of the Hydrocaches are mapped with using a GPS device and presented via Google Earth and Frappr.com, encouraging visitors to the neighborhoods to raise awareness of the tragedy inflicted by Katrina.

Museum of Memory

Museums are important institutions that record the memory of cultural transformation. Occasionally, this transformation is a result of human tragedy and many museums house a collection of artifacts, images, text, and art produced in response to a particular period. Also, museums are often sited in the contexts of the event, making a visit to these locations even more powerful. The Auschwitz-Birkenau Memorial and Museum, housed in a concentration camp is one example of this. In addition to visiting the actual camp, one can see the examples of property collected from Jews brought to the camp assembled en masse as a curatorial vehicle to explain the scale of the tragedy. A room filled entirely with eyeglasses, another filled with human hair, and another with prosthetics, all different sizes and for different sexes, recall the memory of the occupants of the camp. The Vietnam Veterans Memorial by Maya Linn, which contains the names of every serviceman who died during the war in chronological order, offers a history of the event through occupation of the memorial itself. Offerings left at the memorial, of which National Park Service and the Smithsonian Institution have collected an estimated 30,000, are now on display in an exhibit separate from the memorial itself, reinforcing the preservation of the memory of those who lost their lives.

The purpose of the Museum of Memory is two-fold. First, the museum is to serve as a place where the history and culture of the Ninth Ward is celebrated. In addition, the grounds

of the Museum of Memory will serve as a memorial to the residents of New Orleans who lost their lives as a result of Hurricane Katrina. The Hydrocache and its latent potential are the catalyst for the architectural proposal. Students drew from the material, procedural, memorial, and formal responses to the site and reconsidered them in their museum proposals. Programs such as a Memorial Water Garden, Fats Domino Collection Gallery, and photography gallery were included in the Museum to question relationships between the ephemeral and permanent as they pertain to this historic community along the Mississippi River. In this case water, communities, structures, and culture can be seen as both permanent and temporary. The questions that emerged from siting the installations in the Ninth Ward continue in the discussion of siting the Museum. Material, circulation, and form also have direct connections back to the Hydrocache. Like the Hydrocache installation, the Museum itself must mark previous floods and respond to impending floods that are certain to impact the area.

Digital processes continued to be important in the development of the Museum of Memory. The refinement of casting, the physical production of complex geometries that presented assembly sequences or formal and spatial solutions and digital modes of physical output from the 3D models and their pertinence to the program were explored. Material was also again heavily considered, extending their reaction to water to include reactions to light, time and occupation.

The Ninth Ward

The final culmination of the design studio was the production of a book that presented the projects Sites of Memory, Museum of Memory as well as a series of photo essays that document the present condition of the Ninth Ward at the time the studio took place. Using **form•Z**, the studio spanned the processes of design, fabrication and finally representation through the digital renderings of the projects that are found within the book.

Students in the Class

The students who participated in the project were:

Rosalind Ashburn,
Brad Baxley,
Sara Ashley Brown,
Amanda Carter,
Tony Cates,
Beth Copelan,
Robert Eleazer,
Benjamin Felton,
Janis Fowler,
Mark Gettys,
Blane Hammerlund,
Clifford Hammonds,
Shana Hyman,
Joseph Lane,
Jeffery Lowder,
Matthew Rhodes,
Eulanda Rogers,
Nicholas Svilar, and
Broderick Whitlock.

The studio was directed by the author.

More information can be found at: <http://www.clemson.edu/caah/architecture/9thward/>



Ronald Rael is the Co-Director of the The Charles E. Daniel Center for Building Research and Urban Studies in Genova, Italy and for four years the coordinator of the Core Architecture Studios. Prior to joining the faculty at Clemson he was a member of the Design Faculty at the Southern California Institute of Architecture in Los Angeles and a Senior Instructor at the University of Colorado at Boulder. He earned his Masters of Architecture degree at Columbia University in the City of New York where he was the recipient of the William Kinne Memorial Fellowship.

LAYERS OF MEMORY

North Dorgenois Street & Alvar Street
N 29°58.818' W 90°01.928'

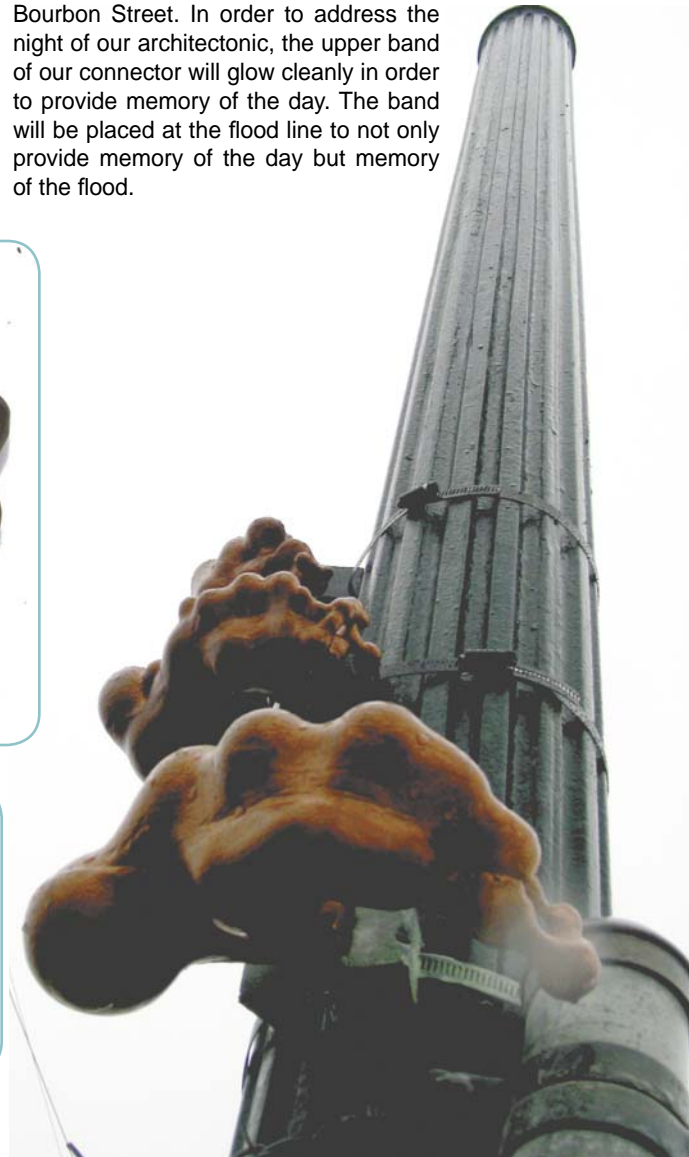
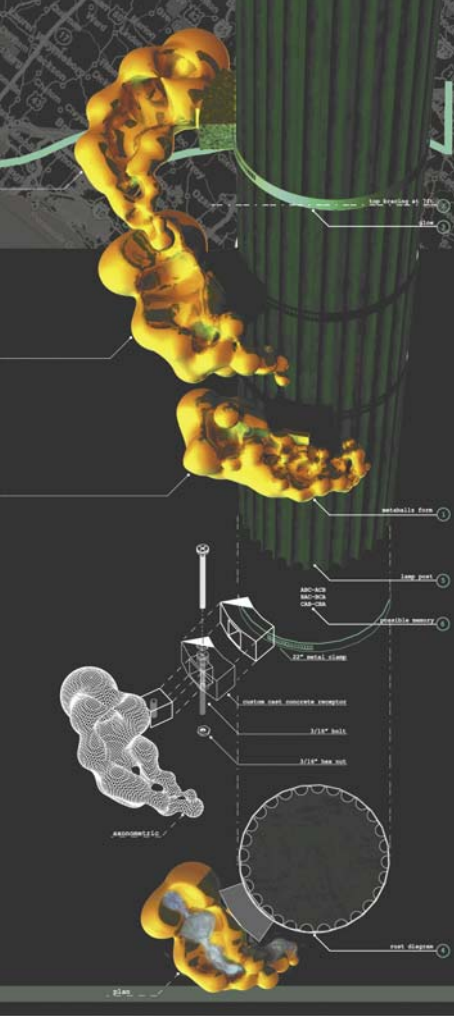
by **Tony Cates, Mark Gettys, and Robbie Eleazer**

Water has a propensity for both construction and destruction. Architecture too, has both the desire to transform space, a constructive and destructive act simultaneously.

Our architectonic will seek to graph and exploit the architectural nature of water in order to display memory. New Orleans, specifically the Ninth Ward, was devastated by Hurricane Katrina in August 2005. This area housed 20,000 people that were at or below the poverty level. The density of this area created layers of memory - families, traditions, religions, all clashed to create a layered culture. Our architectonic will respond to the idea of layered memory by creating a vertical and horizontal system to control water.

Once an established rusting pattern has appeared upon the fluted lamp post, the

general public will be able to challenge this pattern by changing the arrangement of the metaball forms and horizontal receptors. Once changed, a new rusting pattern is created. Depending on the amount of tie a rust system is in effect, and the amount of rain that passes through the system, and the arrangement of the system, layers of memory will form on the lamp post. The metaball forms are constructed of bronze, an alloy of copper, to ensure a certain beauty to the rusted forms. Night and day should be considered equal, especially in a city that truly never sleeps - with its bustling night life and vibrant culture of Bourbon Street. In order to address the night of our architectonic, the upper band of our connector will glow cleanly in order to provide memory of the day. The band will be placed at the flood line to not only provide memory of the day but memory of the flood.



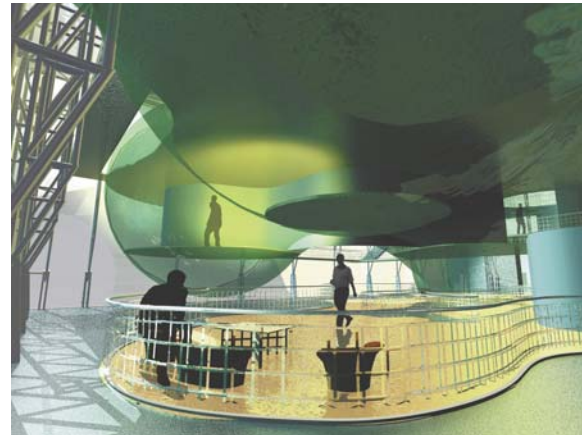
FLUID MEMORY

by Mark Gettys

Water definitely has a profound impact on the inhabitants of the Ninth Ward of New Orleans and has for decades. Originally a cypress swamp, the Ninth Ward is bounded by a river and two lakes, and has suffered repeatedly from deadly hurricanes. The Museum of Memory serves as an important institution that records the memory of cultural transformation caused by, in its simplest form, water. The design of the Museum of Memory focuses first on fluidity, the essential makeup of water and celebrating the history and culture of the 9th Ward; and secondly on memory, as a memorial to the residents of New Orleans who lost their lives as a result of Katrina.

Visual fluidity serves as the primary focus of the museum and controls everything in the building from first view to exit. The flow of water on a molecular

level surges through the grounds of the 9th Ward and pours through a traditional rectilinear form, defining the walls of the museum. The very symbolic and visually empowering structure provides a viewer with a profound respect for this fluid form and how it has dampened the lives of this community. The fluid structure is incased by a transparent rectilinear form that contrasts its organic nature without obstructing view of it. This notion of fluidity is carried through the building as the circulation from entry way toward exit resembles the flowing path of water in nature, an organic path from high ground to low, driven by gravity. Also the gallery walls parallel this notion of fluidity and are organic as well, conforming to the boundaries of the original fluid structure. The walls are designed to move and collect people through the museum relevant to flows and collection of water in nature. This is achieved through gradual larger gallery spaces connected with



smaller “funneling” transition spaces.

Memory is the core for the museum's ambitions. The Museum of Memory first marks this ceremonial seven foot line in the lobby as this fluid structure soars over the viewer in an organic fashion. There is a notion of water flowing over one's head about seven feet high; this serves as an exceedingly profound way to remember how drastic Katrina forces were. The design of the museum encompasses the conception of phenomenal transparency, in which intersecting vertical, horizontal, and fluid forms give glimpses through the museum without actually being transparent. The viewer can see where they are about to go, while they are going to the point, while also remembering where they have just come from. A network of recollection is thus created as one flows through the museum. This idea is furthered with the cladding of bronze tiles to the floors of the museum. The memory of the circulation through the museum is preserved as these tiles begin to patina over time with the humidity of the environment. Specifically based galleries also celebrate memory of heroes, with the Fats Domino gallery; of the destruction, in the photograph gallery and gallery of memory; of culture, with the Ninth Ward Rotation exhibitions gallery; and of the future, with the virtual stories gallery.

