Losing Ground: *Methods for Leeville*

LSU Architecture Graduate Studio 7004
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Compiled by Kalli Cunningham, Architecture + Landscape Graduate Student

Instructor, Shelby Elizabeth Doyle
Visiting Assistant Professor of Architecture

Leeville Louisiana
The best stories take us inside of storytelling so seamlessly, that when we emerge, the impossible is easier to imagine. This fiction creates a space in our minds to consider other perspectives and adopt new solutions.

Sheree Renée Thomas, Imagination Will Help Find Solutions to Climate Change, The New York Times

ARCH 7004 Losing Ground: Methods for Leeville

Leeville is the fourth architecture studio in the six-studio sequence Master of Architecture Program at Louisiana State University. The studio examined the small coastal town of Leeville, Louisiana as a surrogate for towns throughout the Gulf South. Leeville is not protected by the levee system and is exposed to the impacts of a changing climate, coastal land loss, and increasingly violent storm events. As a harbinger of coastal Louisiana, the town of Leeville is from the future.

Each student produced a method for Leeville, using drawing, photography, video, writing, and modeling. These methods aim to reconsider the conceptual framework for the future of small towns often overlooked in discussions of urbanism. They are not intended to provide realistic or complete solutions but rather to use fictional narratives to make the ‘impossible easier to imagine’. These ideas were explored at the deltaic, city, building, and architectural detail scale. The methods for Leeville are identified here.

Protection (Kathrine Bartkowiak) imagines Leeville as a protected outpost remaining outside of existing protection infrastructure even as land recedes.

Collective Resilience (Laussa Shmo-Smith) imagines Leeville as an act of collective resilience, where residents develop architecture to continue the geographic location of the town regardless of the changing climate.

Restitching (Ishnaz Smith) imagines Leeville as a seasonal fishing camp, restitched and rebuilt each year, changing and adapting to remaining structures.

Realism (Kaitlin Miller) imagines Leeville as a continuation of the existing flood protection infrastructure and re-purposes the town as a flood gate managing Bajou Lafourche.

Syntellosis (Jordana London Wright) imagines Leeville that inhabits U-A.1: symbiotically protecting the highway from the climate events and re-purposing the town as a guardian of Port Fourchon’s infrastructure.

Adaptation (James Canales) imagines a Leeville where architecture serves as the basis of a new infrastructure of land building, returning Leeville to its previous footprint.

Resistance (Kelli Cunningham) imagines Leeville as a series of contemporary three-dimensional arpentes, capturing and redistributing the environmental and economic resources of the landscape.

Radical Survivalism (Karl Schmidt) imagines Leeville as an infrastructural node that is attuned to natural functions and processes of its landscape.
Introduction
Leeville, Louisiana
Symbiotic Defense
Landon Rugh
Protection
Katherine Barkowski
Realism
Kelli Miller
Adaptation
James Canales
Radical Survivalism
Karl Schmidt
Collective Resilience
JaLeesa Sims-Smith
Re-stitching
Josh Smith
Resistance
Kelli Cunningham
The Not Yet
Mapping exercise
Things Come Apart
Detail study
Studio Resources
leeville.wordpress.com
Louisiana’s coastline is losing wetlands at a rate of 16.57 square miles a year, equal to the loss of a football field of coastal every hour. This landscape reflects the aggregate consequences of the anthropocene sooner and faster than perhaps any other part of the United States. Therefore, the present conditions of the Louisiana coast represent several possible scenarios for the future of the nation’s coast and provide a real-time context for examining the tools, methods, and practices that will be required to cope with these consequences.

Located outside the levees along Bayou LaFourche, Leeville serves as a connection point between Port Fourchon, the largest oil port in the United States, and Golden Meadow, the first town within the levee system. The town, once a stopping point on LA-1, is now bypassed by the recently elevated highway which will eventually connect Port Fourchon directly to Golden Meadow, behind the levee, completely isolating Leeville. Bounded to the east by Bayou Lafourche the town remains an important ice production post for the commercial and recreational fishing industries. Once home to orange groves and cotton fields the footprint of the Leeville has given way to wetlands (see USGS Map Plates), a quagmire between land and water. Amenities such as the post office, bank, and school have relocated to Golden Meadow. Thirty permanent residents remain, others commute from Golden Meadow to work, and during the recreational fishing season the population grows to several hundred temporary residents.

The goal of the studio was for each student to imagine a possible future for Leeville, to create a video narrative about that scenario, and to propose a method for designing in that future. This process of world building was introduced through Miriam Cronin’s The Net Yet, set in the complex and fascinating dystopian landscape of 22nd century New Orleans. Ms. Cronin writes of the novel:

"The United States has shrunk, become the United Authority. States along the Gulf Coast and the Pacific Rim has been cut away -- too many disasters, too hard to govern. The elite Heirs, who run the Authority for themselves, live hundreds of years on nearly foolproof life-extension programs. Their upkeep absorbs all the economy’s resources. The poor eke out a narrow, illegal existence, working as slaves or performers, or hanging on in restricted tribes called Enclaves.

Resource distribution: economic, infrastructural, environmental, cultural, was considered throughout the studio. Rather than advocating for a traditional notion of ‘saving’ or ‘preserving’ Leeville the studio explored the concept of absence and questioned architecturals methods for Leeville from life-extension to un-building to reconstruction. The documentary film Water Like Stone, set in Leeville, provided a precedent for film as a narrative media for conveying architecture and urban designs."
Leeville’s primary industries are commercial and include fishing and oil and gas extraction. One of Leeville’s last thriving businesses is Griffin’s Icehouse. This ice is a part of last stops on the way to the Gulf of Mexico for commercial fishermen to fill their hulls with ice to preserve their catch. Griffin’s also serves as a social gathering spot within Leeville, a restaurant and a store. Ice has literally become the life line for Leeville. The culture of fishing still maintains a social aspect within the community as many residents return to fish, while moving their assets within this levee.

This studio focused on ways of negotiating a landscape in flux. Leeville’s foundation is shifting from terrain to water while maintaining industries that rely on edge conditions to survive. The project also calls for a negotiation of several industries currently located within Leeville. The production and distribution of ice, connection to the commercial fishing through a marina, and the idea of electricity. Leeville currently is connected to the water and electricity infrastructure behind the levee.

Coastal Louisiana suffers 90 percent of the total coastal wetland loss in the continental United States, losing 16 square miles of land a year. This amounts to 70% of wetlands lost in the years since 1932. Evidence of land loss is prevalent within Leeville as the old highway sinks into the marsh, and somethings fill with water. Every storm surge brings Leeville closer to the edge of the Gulf of Mexico. In 1950, a hurricane destroyed Cheniere Caminada, a former coastal town, forcing residents to move north to Orange City later renamed Leeville, reflecting the region’s history of loss and migration.

Leeville’s land loss has been accelerated by many factors within the lower Mississippi River deltaic system. Bayou LaFourche was once connected to the Mississippi River and could have become the main channel if not for human intervention to protect major shipping lanes through the ports of Baton Rouge and New Orleans. At Donaldsonville, Louisiana the bayou was dammed in 1903, this stopped the flow of water and sediment down the bayou and to the marshes around Leeville. This lack of sediment replenishment is allowing erosion to continue unhindered.

In 1920, oil was found in Leeville, which led to a large boom and increased industry in the town focused on orange groves. The opening of Port Fourchon in 1960, now the largest oil port in the United States, followed this increase in oil industry in southern Louisiana. Access to Port Fourchon is now protected by the Elevated Highway. In 2008, during Hurricane Ike, water washed out LA-1, cutting off access through Leeville. In 2009, construction on the elevated portion of the highway began. The highway currently cuts off Leeville from any potential through traffic. The separation plan for the elevated highway is planned to run past the levee system further isolating Leeville. An industry that once brought fortune to Leeville now aids in its decline.

Canalization is speeding up the process of subsidence outside of the Golden Meadow levee system. These canals cut by the early oil industry, as well as for fishing access, allow for impoundment of sediment to be removed faster from the depths of the land. This creates more edge area for the interaction between land and water blurring this line as land turns to marsh and marsh turns to water. Within Leeve land is less solid earth than it is saturated mud. Exploring methods of occupation within Leeve could provide a case study for other similar coastal cities.

Since the construction of the Elevated Highway in 2005, Leeville has been economically isolated by the oil industry while having still been impacted by the industrial canal’s presence. Many residents have left the town, as there is no school, post office, bank, or official political boundary still associated with this land outside the levee.

The Louisiana Coastal Protection and Restoration Authority’s 2012 Coastal Master Plan identifies the area surrounding Leeve as a potential salt marsh restoration project.
The LA-1 elevated expressway is the life line between Port Fourchon and the rest of the United States. This length of highway is the primary means of transportation for the extraction and distribution of the Louisiana coast's abundant resources. The centralized location of Leeville within this stretch of highway will allow the support of both LA-1 and Port Fourchon. With the threat of unknown future climatic events, the country will need to protect both Highway 1 and Leeville in order to maintain this vital connection to Port Fourchon. The elevation of the highway already avoids the rising water, leaving the protection from inclement weather to be determined. Leeville will remain outside the levee, to ensure the survival of Leeville and effectively maintain the resource connection, the town must align itself with the current infrastructure and provide the necessary enclosures needed to withstand most natural elements.
Residents moved north to Orange City, renamed Leeville.

1960 - Port Fourchon opens
1970 - Hurricane Betsy destroys large majority of Leeville oil derricks
1980 - Deep Horizon oil spill
1990 - Severe cold closes down LA-1 bridge
2000 - Construction of Leeville waterway connection begins
2020 - 2025 - Leeville expansion begins

1890 - Hurricane destroyed Cheniere Caminada
1900 - Bayou Lafourche damned at Donaldsonville
1910 - Hurricane destroyed 99 out of 100 buildings in Leeville
1920 - Residents moved north to Golden Meadow
1930 - Oil discovered in Leeville
2008 - 2014 - Severe cold closes down LA-1 bridge
Study model of architectures interaction with existing infrastructure
Protective vertebrae interacting with physical scaled bridge model.
In order to sustain Leeville’s contribution to the fishing industry and to maintain the importance of fishing to the economy and community of Leeville, there needs to be an architectural intervention that allows for easy access to sea waters without the danger of certain weather conditions. My proposal is a man-made platform stationed off the coast of current Leeville, that is spatially and programmatically designed to best suit the fishing lifestyle, both commercial and recreational, and yet has the ability to protect against harsh weather. It mechanically rises as sea level rises over time, rises in the short term during storm surge, and folds up to protect against hurricane winds and rain. This design allows for the platform to best perform as a fishing hub, but there remains the threat of severe weather. The intervention is rooted in place with piles, but has the ability to mechanically be raised over time with sea level. In times of harsh storms and hurricanes, the structure can be significantly raised to avoid high levels of storm surge. In these cases, the intervention closes in on itself, creating a sealed envelope, providing protection to person and industry from wind and water. The ferries and floating receiving dock have the ability to go onshore, taking with them any fishing visitors. The residents who wish to stay behind can dry dock their boats inside the structure and wait out the storm. The intervention closes up by unfolding the docks and rotating them upward to create walls. In the dry dock areas, the dock folds out to create a floor, with panels rotating down from the roof as walls to close in the area. This idea for a self-protecting structure can be used as an example for many different coastal towns that are in danger of losing land. This architecture allows for people to inhabit the water, to live in areas that would previously be at risk.
The circulation analysis of Leeville and its surrounding area led to the placement of the intervention off the south tip of current Leeville, the intersection of several waterways, making for a productive launch site for day fishermen, and stopping site for incoming fishermen looking to get ice or drop off fish. Because the platform requires necessary goods for production and provides significant amounts of sea food to the mainland, it needs to maintain connection to the shore. Two ferries, one for people and one for fish, travel back and forth to a floating structure that stays tied to the coast line as it recedes over time. This structure has cleaning equipment and a cold storage center as a temporary landing place before the fish are sent out to distributors.

Eventually the piles holding the intervention will be too short to allow for continued rise. To combat these inevitable changes, the intervention has the potential to become a floating structure, as seen in the site model, that can travel back and forth from the coast line to ships and oil platforms providing ice, oil, and goods.

1935 Land Map

1945 Land Map

1994 Land Map

2012 Land Map

2030 Land Map

2100 Land Map

1945 Land Map

1994 Land Map

2012 Land Map

2030 Land Map

2100 Land Map
In position one, the intervention is at its resting state, how it is used on a day to day basis. Boats come and go with recreational and commercial fishermen. People relaxing can go up on top of the structure, covered with a removale tensile structure. When in need of supplies, the grocery store and bait shop are conveniently located near the housing with their own boat slips.

Position two shows the beginning stages of closing the structure as a storm approaches. The ferries, floating dock and tourists leave and seek shelter behind the levee. Those wishing to stay put their boats into boat lifts above the boat slips around the grocery store. Those boat slips then close up around the boats, protecting them for future use. Other existing docks fold out and up to create walls. Dockless areas have panels fold down from the roof to fully enclose the structure.

Position three is the fully enclosed structure, closed down for a storm. In preparation, the tensile structure is removed, and residents stock up on goods. They are able to continue living within the structure, without the everyday activities of fishing and distributing ice. The joints within the moving pieces that enclose the structure are designed to be water tight, allowing for dry interior spaces. As storm surge rises, the structure rises to maintain above the water line.
Water Like Stone, depicts Leeville as a tightly knit community bound by a very unique connection to a rapidly changing environment. This environment is the marshland of the Louisiana coast that was once home to a fishing industry unlike any other in the United States. After years of hurricanes and a recent oil spill, the land supporting the people of Leeville is being destroyed and washed away everyday and little is being done to change this. Michael Pasquier identifies that one of the problems preventing change is the inability of the community to address the situation. He says that the general belief of the community is that the problems of today can be fixed tomorrow. The unfortunate downside is the fact that whenever "tomorrow" comes, it might be too late. Is it possible that the people of Leeville are already living within an apocalyptic society? McCarthy might agree comparing the way the people of Leeville think to the nomads that travel a post-nuclear landscape in his book The Road. "People were always getting ready for tomorrow, I didn’t believe in that. Tomorrow wasn’t getting ready for them."

In order for any positive change to happen residents need to use this way of thinking because, according to Pasquier, residents of southern Louisiana have held this same belief forever. Observations on the Concepts of Place in Post-Risk Societies would identify this as a state of pragmatic acceptance. Characterized by a reluctant acceptance of the present state with the intention of only surviving tomorrow, pragmatic acceptance fails to address the current needs of a society. It does however point to another state that could potentially be the key to their survival and achieved through design. Through radical enlightenment one identifies the potential risks as reality and takes action to mitigate them. However is it too late? "There could be proof in the introduction of the bridge that serves as a new hurricane evacuation route along the coast. Referring to the aforementioned state of radical enlightenment this presents an opportunity to identify the need for change in Leeville and address the risks that require this change. Like Design for the Apocalypse states this change needs to be marketed not as the “end of” a way of life but as an opportunity for Leeville to “re-start and re-think” their current situation. In this case we would be addressing present needs of a community threatened by erosion. As residents of Leeville have come to terms with the reality that they will be forced to retreat to the protection of the levee efforts must be focused on preserving their culture through the protection and development of the fishing industry, both recreational and industrial. By sacrificing existing parts of the site that are already threatened by water inundation and protecting others through new hybrid strategies encroaching water will be able to flow freely through the site allowing the fishing industry to continue to operate without threat of future sea level rise and potential storm surge.
These diagrams illustrate the layering of program within the context of flood protection infrastructure.

In an effort to preserve existing wetlands it was important to limit any new construction to the existing hardscape of Leeville taking advantage of more suitable foundation soil.

A series of spillways help to control water inundation allowing it to pass freely through the site. This spillway is a layered to collect sediment as water passes through during low tides.
To understand how the sea wall might be able to move up and down I took apart the an umbrella and put it back together that uses the same idea of an extension arm that opens and closes to provide protection. Those ideas were then applied to the sea wall.

Coastal development requires management of land edge conditions using retaining walls and sea walls. Combining the most successful technique of rip rap and the typical retaining wall erosion can be prevented from this coastal edge. These ideas were then applied to the operable sea wall to raise and lower it during storms.

The operable sea wall closes when a storm is approaching protecting the infrastructure that is essential to the fishing industry but remains open in normal moderate conditions to allow access to the water.

Using a simple pulley system lifts help to protect the boats from damaging waves and additional maintenance costs by lifting them out of the water. Similar technology are applied to the operable sea wall to raise and lower it during storms.
There are old boat men, there are bold boat men, but there are very few old bold boat men.” This quote from the documentary Water like Stone perfectly describes the way I would envision the emotional attitude of the local residents in Leeville, LA. Being from a place so perfect but yet so challenging definitely defines a person and a community. Although it may appear differently, Leeville, Louisiana is a very wealthy place. Wealthy with everything except currency. While watching Water like Stone and being formally introduced to local residents of this small fishing town, I began to see an emotional bond. Regardless of the profession, current financial positions in life, or all around well-being, the residents gave off this glowing aura of satisfaction. Everyone from Leeville was proud to be from Leeville. I believe this strain from the deep rooted family heritage that still exists in Leeville. It seems very typical for multiple generations to live and grown in this small community. In most cases not only live, but work and play as well. The preservation of Leeville is particularly important because of this unique lifestyle that flourishes from its soil. The question at hand is how can Leeville adapt in order to save what is left? Typically when something is wrong with the geographical location in which you live, the solution is simple, move. However I believe this case is very different. Leeville is a small community. A small community of fisherman and town people. In order for a fishing community like Leeville to prosper they need access to one thing, water. This necessity also happens to be the one thing that is ruining Leeville as a whole. Hurricanes hit the coast of Louisiana more than any other place in the United States, second only to Key West, Florida. The lower coast of Louisiana is suffering at such an aggressive rate that small coastal towns like Leeville are looking for ways to stay afloat. In a sense that is exactly what this town needs, a way to float. The solution must stem way beyond better infrastructure and improved hurricane survival tactics. These methods prove to be effective throughout the globe, however they will not be enough to preserve everything that Leeville is. More than trailers, boats, and bait shops, Leeville is a way of life. Looking toward the future, there are ways in which Leeville can be preserved. The memories of what Leeville is today, and was in the past, can be recorded. However one day the world may change and the lifestyle existing in Leeville may be lost forever. The article by John McMorrough, Design for the Apocalypse, brings up many interesting points about a changing world. Some ideas include reasons why transformation, of a people, or a place, may be the only possibility for existence. John McMorrough states, “...it is scarcity, of food, water, safety, resources, amenity or potential, that is the engine of transformation and change.” In the case of Leeville, many of these commodities are becoming threatened by natural disasters.
On a planet where such disasters cannot be predicted, it is only a matter of time before the world as we know it changes beyond our eyes. This phenomenon, or Apocalypse as described in the articles, will force humans to rethink society and the way in which we live. The articles discuss the "end" as the moment before the "beginning". The glowing Apocalypse gives us the chance to "reset and rethink" the world around us. The article also raises interesting points related to the architecture of the "beginning". John McMorrough states, "How would architecture act in a post-apocalyptic mode? And what is the relation of architecture to capital when there is no capital". This provoking concept that architecture would eventually stem back to its primal purposes of mere shelter, and move away from the prized artwork is hard to let itself become today, offering interesting opportunities. The idea that architecture may become a condition. The idea that being an architect is something we all must understand as people for survival. These ideas make us reconsider the true value of architecture and design. In the case that the world does not "end", and the apocalypse does not unfold before our eyes, we must continue to plan ahead and progress. Recent advances in technology have allowed us to predict the path and strength of distant hurricanes and tropical storms, giving communities the time needed to prepare, or in some cases, evacuate when necessary. Unfortunately, this was not the case in the late nineteenth century when Cheniere Caminada killed hundreds of Leeville residents. The legacy of those lost is something the people of Leeville are desperate to preserve and protect. Hurricanes almost fated to define Leeville. The community has endured so much struggle that they all seem to lean on each other for support. Leeville represents a lifestyle much different from the rest of the United States. A way of life that has continued from generation to generation. The people of Leeville are optimistic and continually believe in tomorrow, because tomorrow holds hope. Hope that one day the small community that raised them will live long and prosper. Hope that Mother Nature will eventually stop taking away the soil beneath their feet. Hope that a long family legacy will forever live in the history books. Leeville is full of hope. To lose a place like Leeville means to lose tradition. It means to lose a distinct culture. To lose Leeville means to lose a way of life. However Leeville is not alone. With the inevitability of rising water conditions in Leeville, the Louisiana coast, and hundreds of other places around the world, the sea is taking over. Louisiana competes with rising water by simply building levees. The obvious solution to any flood problem is to forfity the "ridge". But what if a different approach was taken. What if towns like Leeville learned to live with the water? There are many ways in which a built community and water can blend contiguously. One way would be to design essentially waterproof structures that would be able to withstand storm conditions as well as provide an artful seal for damage protection. Structures such as these would require reinforced foundations for stability and would allow us to move away from the shift based housing model typical in this region. Unfortunately the major downfall to a waterfront structure is that it is impermeable to flooding. The Earth comes once the flood hits, and we first people trapped in their homes. Transportation is evil. The United States is essentially founded on the concept of separation. Once the roads are flooded and cars are no longer a useful amenity, how will people get from point A to point B. In a fishing town the answer seems obvious. Leevee, LA: Circa 2005
Old Highway LA-1 is currently the only transportation route between Golden Meadow and Grand Isle, including Port Fourchon. The local economy of the small town benefits from the high number of commuters passing by on their way to Port Fourchon or Grand Isle.
Leevee, LA: Circa 2006
The year following Hurricane Katrina, phase one of the new elevated LA-1 project begins. The elevated highway now forces all vehicular traffic around Leeville, creating a dead-end condition. Tourism and the economy begins to suffer.
Leevee, LA: July 2009
Phase one of the new elevated highway is completed. The newly created LA-1 currently connects everything south of Leeville, including Grand Island and Port Fourchon, to old LA-1 just north of Leeville. Phase two plans on extending the bridge further to eventually end in Golden Meadow, where traffic would be protected by the levees system.
Leevee, LA: Circa 2030
Sea level has risen upwards of 15+ inches. Many areas of marsh are flooded and get washed away. At this point my design intervention has begun to build first the elevated housing units. Any new residents of Leeville are required to follow the new building regulations that ensure protection from hurricanes through the year 2100. The newly created LA-1 connects a way of life.
Leevee, LA: Circa 2100
Sea level has reached upwards of 6-7 feet above sea level from 2014. Leeville is entirely uninhabitable, with some places submerged as much as 4 feet. At this point the intervention begins to preserve Leeville’s existence on the land. Floating marinas are introduced along Bayou Lafourche which allows the seafood economy to continue to prosper.
Leeville, LA: Circa 2000
Leevee, LA: Circa 2005
Leevee, LA: Circa 2010
Leeville exists today in a beaten and battered state. However, multiple systems allow the town to exist and prosper. My site analysis consisted of identifying such “productive systems” and implementing their attributes into the future proposal. The systems identified as the lifeline for Leeville are the Economic System, including the commercial seafood economy and tourism, Transportation System, including multiple boat docks both public and private as well as the connection to the newly oriented and government protected elevated highway, Utility System, including all necessary services for survival such as electric and water, and lastly the environmental condition in which Leeville exists, the Marsh Ecosystem.

Leeville becomes a town oriented to boat traffic, survived by elevated homes and an artificial ground floating above the water level. The site plan illustrates how all the commercial fishing has been pushed along Bayou LaFourche and the elevated structures are on the opposite side of the main pedestrian bridge. The pedestrian bridge serves as a spine connecting a network of program.
Above show 3 prototypes in the test model. Each prototype was documented for 20 minutes and the results were analyzed. In every case, I identified strong cases of scour occurring on the front facing edges. This scour pushed the water around the outside, whipping the sediment around the back where it began to collect in the calm areas.

An important aspect of the housing units are the way the structural elements meet the water and earth below. This model shows how the architecture becomes productive and works to control sediment deposition and eventually create a new marsh below. Over time the home owner takes ownership over the new marsh and introduces vegetation to stabilize the soils.

Using a sediment flow model, I built and tested multiple design options for the structural spread footings utilized below the elevated structures.
The project is an extreme form of a future wherein humans must occupy space in a manner that is attuned to natural functions and processes of that place, exploring the outcome of this reality and a human propensity toward complex, large scale infrastructural solutions in a deltaic condition. The intervention responds to changing conditions, keeping the built environment aligned to the saturation threshold [land / water interface], by becoming a mechanism for strategic sediment deposition organized around a mobile, reconfigurable infrastructure allowing the geographic repositioning of the urban zone. Architectures of individual programs or functions exist within this fluctuating matrix, the relationship of architecture to infrastructure remaining relatively stable [though constantly changing] as the urban zone adapts to the shifting context. This provides internal stability for Leeville, while still providing protection for occupants and keeping the urban condition and human occupation adjacent to the dynamic bayou edge. Leeville has embedded in it an essential relationship to water: transportation, economy, sustenance, and recreation rely on the connection a coastal town has with the adjacent water. Yet Leeville is a place tied to the land: floating structure has little no permanent occupation and residences are situated on “ground”. Additionally, circulation and interaction occur largely on land, or proximate to land, identity is derived from the meeting of land and water. Leeville persists economically largely due to the existence of an ample supply of ice and recreational tourism. To the extent that essential character of Leeville survives it will be place derived from the meeting of land and water. Leeville is less “ground” than the zone of highest relative saturation of sediment in a water-sediment gradient with zones of relative density. In addition, the change in salinity that coincide with the disturbance of the water-sediment balance will alter the proportion of oyster shell and plant materials relative to existing communities, further altering the characteristics of the occupied “ground”. Leeville exists at what is now the end of bayou LaFourche, the bayou itself formerly the lower fork of the Mississippi river, and the potential for the loss of communities on the main channel, including New Orleans, is not inconsequential. The current fear for the potential of the Atchafalaya river to “capture” the Mississippi [and therefore become the Mississippi] is interesting for the fact that, had the LaFourche vein not been severed, there was the possibility [if only slight] that LaFourche could have become the main artery as the river chose the path of least resistance to the coast [as it had in the past].
The proposal makes use of the stability found in the pilings and piles in the urban condition, the strong vertical elements standing in contrast with the horizontal land - water mix and holding strong via interaction with layers of slower moving sediment found below the water level.

The intervention is comprised of Nodes, Platforms, and individual programmed spaces and structures.
Adaptive Culture

JaLeesa Sims-Smith

Method for Leeville: Collective Adaptation

“The people of Leeville have a resilient culture that manifests as social interaction, the fishing industry, and a flexibility to survive despite the fluctuating water levels and precarious weather. Historically, this resiliency has allowed the people of Leeville to adapt over time - from rebuilding after hurricanes, to adjusting planted crops, to erecting makeshift structures - while attempting to address the city’s ever-changing environmental conditions. Their ability to adjust to the ever-changing climate proves that humans can adapt to uncertain environments and by doing so can create a better world than what is currently present. This adaptive culture must be preserved. Architecture is one medium by which this is achievable. In the New Leeville, redeveloped pause points – physical locations of social interaction – constant access to the water, and adjustable modular pieces will allow the people to adapt and actively recreate their community based on varying climatic conditions. Leeville’s water level is constantly fluctuating, so adaptive measures must be implemented. By using adjustable elements, the people of the New Leeville are able to transform their environment for cultural reasons – gatherings, festivals, and the like – as well as climatic reasons – hurricanes, tornadoes, etc.

The current Leeville is a close knit town. Because they spend a lot of time with one another, each adjustable wall must have at least 2 people to assemble it. This builds camaraderie within the community, and it solidifies the recycled culture of the New Leeville – a culture of collective interaction. Unfortunately, because of Leeville’s location along the coast, it is often susceptible to hurricanes. The design of the multi-family residences addresses these damaging storms. During nice, sunny weather or rain and thunderstorms, the new complex remains in its multi-story condition. However, if threatening weather is approaching, the walls of the entire complex are able to retract into the main wall, creating a single story complex. The programmatic design of the first floor – having a communal kitchen, a bathroom, and a potential sleeping space in the living room – allows residents to live on the first floor as long as needed should the upper walls need to retract in an emergency situation. This allows for increased protection when enduring a hurricane or other threatening storms. Also, the roof acts as a drainage system, so when there is a surplus of rain, the new community will still be able to function without being concerned with flooding.

Interlocking spaces – extrusions and recessions – within the floor plan of the residences are reminiscent of the interactive, social spaces found in the current Leeville. Throughout the residence, there are multiple pause points – such as the pause points found in the current city – that provide opportunity for verbal interaction as well as non-verbal interaction. The non-verbal spaces are equally as important as the spaces with traditional, verbal forms of communication because they house the silent extrusions and recessions that remind each resident that Leeville was and will continue to be a community connected where one is never alone.”
In the multifamily residential complex of the future Leeville, there are several spaces that encourage social interaction, both verbal and nonverbal. These spaces re-envision the characteristics of the pause points currently seen throughout the town. The interlocking spaces, garden, communal kitchen, and adjustable walls encourage verbal or nonverbal interaction and cultural significance based on their placement, adjacency to adjoining spaces, and design.
Interlocking spaces within the floor plan are reminiscent of the interactive social spaces found within the old Laeville. Throughout the residence, there are multiple pause points that provide opportunity for verbal interaction as well as non-verbal interaction. The non-verbal spaces are equally as important as the verbal ones because they are the silent extrusions and recessions that remind each resident that Laeville is a community connected and one is never alone.

These diagrams address responsive systems to the weather conditions. If it is sunny or raining slightly, the residential complex remains two stories. However, if a storm is approaching, the residents are able to collapse the housing units to one story. Because of the double wall system found in the complex, the architecture is able to protect the residents with walls that are twice as strong as a regular wall. Also, in the case of a severe rain storm, the roof of the complex acts as a drainage system where it allows the water to easily flow downwards. This excess water is collected in tanks and used to water the herbal gardens throughout the residential units.
Leeville is in constant flux, deteriorating land, tropical storms, water level rise, and through it all people continue to because of their strong nomadic tendencies. In 2100, Leeville will sustain seasonal recreational fishing camps. Each spring large crowds of fisherman return to the remaining remnants of storm damaged deteriorating architecture in Leeville. Each year localized marine industrial fabrics are used to patch and reprogram these spaces to provide temporary shelter each fisherman. Each patch has a personal story to tell, and accommodates the level of living that fisherman can design for himself. Each fishing camp is then activated for the entire season until the winter when the town is abandoned and undressed until next season. This cycle is presents an ever changing adaptation and reprogramming of architecture in Leeville every year. This intervention prompts the interaction of fabrics and architecture or simply “fabric architecture.” Standing at any point in this small town it is evident that the primary source of traffic happens on the water. At the center of it all the fisherman.
2100 Seasonal Fishing camp
Leeville, La
8019 Dupione deep sea
Dupione Marine Industrial fabric
angled steel plate support
taped poly mesh fabric
metal coated ring
cable connector
detail
TENSILE CONSTRUCTION DETAILS
Leeville Realigned Kelli Cunningham

Method for Leeville: Resistance

Louisiana’s oil industry’s has destroyed access to other resources within the lower deltaic region. Big oil, canalization, and the elevated highway have deformed the landscape of Leeville, starving it of resources, impeding its ability to survive. The architectural intervention within Leeville will realign to provide equal access to the resources found within this industrial landscape. This realignment will visualize the inequality within the infrastructural landscape that has destroyed the economic welfare of Leeville. The urban design of this project depicts the historic precedent of the arpent system which spatialized resource as a method for land division and use. This new arpent is a three-dimensional architecturalization of resource access in the current deltaic landscape.

The elevated highway has cut Leeville off from the economic pipeline of lower Louisiana. The lower Mississippi river corridor has become the sacrifice zone for the oil industry. Traditionally a sacrifice zone refers to the agricultural practice of deliberately degrading one area of land to increase productivity in another, but scholars have begun using the term in explicitly accusatory ways to refer to areas degraded by modern industrial societies in pursuit of economic gain.

Transportation and resources has shaped french land development in this area of Louisiana. The arpent system equalized access to all resources found within the landscape. I am proposing that we realign the public land survey system Leeville currently falls into, and realign allowing equal access to, the stability of the bridge, the marsh for fishing habitats, ice industry of Leeville, the old road bed of LA-1, the navigable water channels, current oil wells and the current oyster communities. Leeville has a history of reorienting to resources, from orange farming, to fishing allowing this urban scale move to fall into the long history of place. The people of Leeville are dissatisfied with the impending future dystopia will realign the current path of landscape destruction and will begin to hoard what resources they can get a hold of before the effects of the oil industry completely devastate the region. People begin by fortifying resources and claiming volumetric space then inhabi these-3-dimensional property lines. These property lines snake around one another some taking stability from others structure.

This reaction of realignment is within the tools of building within the deltaic region of Louisiana, the extent at which people will begin to claim resources stems from a reaction to the elevated highway. This visualization of resources within the Leeville is warning of a future in which people are forced to fend of themselves producing an ad hoc architecture that responds only to the individuals need for resources. This future could be applied to many coastal places.
The lower Mississippi River corridor has become the sacrifice zone for the oil industry. Traditionally a sacrifice zone refers to the agricultural practice of deliberately degrading one area of land to increase productivity in another. But scholars have begun using the term in explicitly accusatory ways to refer to areas degraded by modern industrial societies in pursuit of economic gain.

Transportation and resources have shaped French land development in this area of Louisiana. Starting along the bayou, with the arpent system land was divided perpendicular to the bayou stretching out to grasp the breadth of the landscape to maintain equal access to all resources embedded within the ground section.

Moving from transportation on the bayou, the high ground allowed for housing structures to be elevated from flood waters, then a flexible slope allowing for farming in drier seasons and trapping in wetter one.
The people of Leeville dissatisfied with the impending future dystopia will resist the current path of landscape destruction and will begin to hoard what resources they can get a hold of before the effects of the oil industry completely devastate the region. People begin by fortifying resources and claiming volumetric space with flimsy blowout structures.

They then begin to inhabit these 3 dimensional property lines with more hurricane resistant structures. These property lines snake around one another some taking stability from others structure. The realigned arpents are 3 dimensional property lines but the actual structures are placed within these arpents based on need to access resources. This bottom up approach to architecture allows for the residents of Leeville to take back control.
The worldbuilding of The Not Yet, by Moira Cronin, was a strategy used by the studio to imagine a future for Leeville in which to site a project.
Things Come Apart Dynamic Objects

Things Come Apart, a book and project by Todd McLellan inspired the following exercises which examined dynamic objects as precedents for architectural details.
Organizations

LA 1 Coalition
www.la1coalition.org

The LA 1 Coalition coordinates the dissemination of public information about the highway system between Grand Isle and U.S. Highway 90, once passing through Leeville.

Launch Leeville
www.facebook.com/launch.leeville

Launch Leeville is a non-profit which is dedicated to the preservation of Leeville.

Louisiana's 2012 Coastal Master Plan
www.coastalmasterplan.louisiana.gov

The 2012 Coastal Master Plan provides the information Louisiana's coastal citizens need as they seek to take care of their families, manage businesses, and plan for the future. The projects in the plan strike a balance between providing immediate relief to hard hit areas and laying groundwork for the large scale efforts that are essential if we are to protect communities and sustain our landscapes.

LSU Coastal Sustainability Studio
www.css.lsu.edu

The LSU Coastal Sustainability Studio (CSS) is a trans-disciplinary program of the College of Art + Design, College of Engineering, and School of the Coast & Environment.

Port Fourchon
www.portfourchon.com

Port Fourchon is Louisiana’s southern most port which brings in over 18 percent of America’s total supply of crude oil and natural gas located 13 miles from Leeville. The Greater Lafourche Port Commission, a political subdivision of the state of Louisiana, facilitates the economic growth of the communities in which it operates by maximizing the flow of trade and commerce.

Videos

Paradise Faded
www.amazon.com/Paradise-Faded-The-Fight-for-Louisiana

Paradise Faded is a compelling look at the causes, effects and solutions to the largest environmental disaster in American history: the loss of Louisiana’s coastal wetlands and the impact of Hurricanes Katrina and Rita in 2005.

Veins in the Gulf
www.veinsinthegulf.com

Veins in the Gulf is a documentary that traces the history of rapidly disappearing bayous, the environmental crisis of southern Louisiana, and the international impact of Cajun culture, which is quickly losing ground.

Resources

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