Site and Architectural Agency: Incorporating Urban, Societal, and Ecological Concerns at an Emerging Level

KRISTEN KELSCH
Louisiana State University

ZACHARY ANGLES
Louisiana State University

Introducing the concept of site has always been an essential, but tricky facet of beginning design education. The myriad intricacies and externalities that a discussion of site presents creates the challenge as to where to begin and how to introduce the involved layers. Education philosopher Maxine Greene, however, noted that "when [students] care about what they are doing, they are likely to go in search of meanings, to begin learning to learn." How then ought we enfold student interest in the concept of site in a way that expands preconceived notions of architectural agency?

This paper explores a curricular experiment and presents the unfolding of an introductory architectural design studio which for the majority of the course decenters architectural design. Instead, the course establishes a foundation of extended urban, societal, and ecological investigations. As a part of a broader school-wide mission-statement, this approach seeks to infuse broader notions of architectural agency and students' investigation within foundational education.

Kicking off a three project structure, is an assignment which introduces topography and the challenge of authoring representation at the scale of a region. Incorporated in this exercise are digital skill tutorials in order to give students the ability to model and explore complex surfaces. Then in small groups students examine relationships between select cities and the Mississippi River and discover how intractably cities are related to the river, the surrounding landscape, and how the river shaped societal patterns within the cities. The project concludes with a group exhibition and discussion with invited critics. Before they receive the culminating project, field excursions and student-initiated trips provide students with opportunities to travel to and within climate-vulnerable regions in instinctual and unrestricted ways. These opportunities give students personal experiences engaged with the ground reality of their surroundings which can later be applied to macro and meso scale questions as architectural designers. Building on the lessons completed thus far in the course, students are tasked with the design of a firehouse for a small river city. Students apply the learning objectives and lived experiences from earlier exercises and excursions and begin making observations about the city, the local constituency, and the site's relationship to the river and surrounding area. Despite complications due to the COVID-19 pandemic, their site analysis and their design responses demonstrate an evolving ability to meaningfully interlace observations they have been developing over the term into proposals that acknowledge and address social and ecological challenges.

Students learn to understand architectural design in an expanding field of constituencies and variables. Through a set of exercises which allowed them to build an understanding forged through experience, we found students to be affected, motivated, and deeply involved. Students were keen to explore how their design of the built world could proffer holistic approaches to address complex contemporary challenges, many of which drew them to the discipline in the first place.

The Mississippi River Studio explores site as a way to expand thinking about the issues entangled with the design of the built-world. The implicit introduction of site-theory sought to establish the foundation for future explorations. The studio aimed to support the development of empathy by connecting students with real people in real places and illuminating the stories present in sites, while introducing a series of researching and representation skills which clarifying the rich and complex layers present in a site. Focusing on these teaching techniques and objectives as a way of establishing a foundational understanding of site and concluding with a project which calls for synthesize the learning into a design project, the studio design encourages students to conceptualize the built-world holistically and provides a preparation for more advanced later studios.

This paper presents the unfolding of an architectural studio which for much of the course decenters architectural design and works to establish a foundation of extended urban, societal, and ecological investigations.[1] Teaching and learning in the United States' Gulf Coast region, where the river meets the sea, there are many issues of eminent import (e.g. a petrochemical landscape, climate change and sea level rise, and a complex and persistent landscape of inequity and racism) each

SITE / SRF / PARAMETERS

OVERVIEW
This brief introductory exercise introduces skills in:
1) interpreting geospatial data
2) translating geospatial data into manipulatable digital geometry
3) explicit and parametric modeling tools of complex surfaces from reference data
4) analog and digital representations of complex surfaces

SCHEDULE
01.15.20 1:30-3:00 Rhino Tutorial [explicit modeling of SRF from USGS data]
3:00-3:30 Technical Q/A
3:30-5:20 Work in Lab

01.17.20 1:30-3:30 Rhino Tutorial [intro to Grasshopper [parametric modeling of USGS data]]
3:30-4:00 Technical Q/A
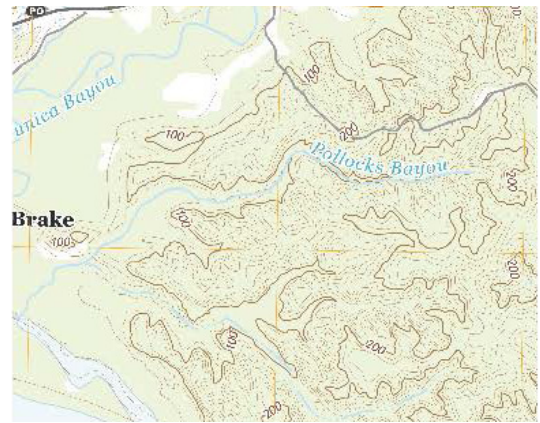4:00-5:20 Work in Lab

Figure 1. Excerpt from studio brief with USGS Topo 7.5 minute map for Angola, LA MS 2018. Credit: Courtesy of USGS and authors.

of these elements leaves traces on sites along the coast and our state which students are often daunted to tackle but passionate about. After detailing the specific design projects and creative activities, this paper will examine this approach as an experiment which builds on different pedagogical traditions. Our pedagogical intent was to encourage students to learn to see through researching how significant site issues implicate, or affect, architecture and how designing a piece of architecture engages these supra-architectural issues. By focusing on developing student empathy for sites and understandings of how sites are richly entangled in many complexities at an equal number of scales, this course proposes a possible mode of site-based architectural pedagogy.

THE EXPERIMENT
Over the course of the semester students were charged with completing three projects.[2] The projects consisted of a brief kickstarting skills-based exercise, followed by a team-based research project culminating in an exhibition of student work, and concluding with an architectural design project building on the site methods and skills. This sequence of projects was complemented by excursions and site visits to experience the landscape of the Lower Mississippi River and to gain a material understanding of project sites.

PROJECT ONE – SITE / SRF / PARAMETERS
Site/SRF/Parameters asked students to construct a digital topography based on USGS maps and to translate that digital model into a new site plan and stacked corrugated model. (Figure 1) The project's goal was three-fold. The first objective was to develop a foundational knowledge of how to read topographic and site documentations; technical workshops introduced the specifics of the graphic standards and concluding conversations centered on how student representations effectively communicated site features. The second objective was to introduce surface-based modeling within Rhino3D and work flows for generating three-dimensional complex surfaces, this was important as there is not a designated location within the curriculum that provides intermediary and

advanced computational skills there is an expectation that such skills are developed in the studio environment rather than in a support course. The third objective was to enhance students' speed and focus on craft and skills in advance of launching into our first multi-week project. The project's aim was skills-based. After moving through this exercise, we felt confident that students had developed a basic language and workflow that enabled them to record and communicate information about the physical features of a site.

PROJECT TWO – SITE / RIVER / ARMATURE
Having established foundation of representational skills, we launched the second project: Site/River/Armature. This project challenged the studio to investigate a series of sites along the Mississippi River. Working in small groups of three or four students, sites which stretched from the headwaters of the Mississippi River in Minnesota to its mouth in Southeastern Louisiana were assigned randomly. The sites were roughly equally spaced along the length of the river and were located at mid to large sized cities whose history, industry, and economy was tied to the river. They were ask to explore many different layers of the river from the industrial to the pastoral, the urban to the non-human, and historical to projective to identify how these varied conversations interrelate.[3] This research was ultimately compiled into a studio-wide exhibition on the river. Taking up nearly half of the semester, we decided it was a worthwhile investment to develop skills in understanding site complexity, how that effects the human scale, and ultimately how to clarify that complexity into critical, and hopefully actionable, observations. They were guided to research the site as a series of layers (infrastructural, industrial, ecological and social) at varied scales in order to form a robust understanding of the dimensions which constitute a site.

As students began researching and developing a knowledge base for their unique sites, which for many was quite foreign compared to landscapes they are familiar with, tutorials were given on the use of GIS in order to establish baseline documentation upon which their research could begin to be situated.[4]

Figure 2. Student work displaying studies of the Mississippi River at Memphis, Tennessee by K. Schmitt, H. Quadir, J. Struck and R. Vindel-Calix Credit: Courtesy of authors.

Generating base maps helped these beginning design students establish a spatial intimacy with distant sites and their research. Ultimately, they developed a deeper understanding of the organization of these landscapes as they could tie their burgeoning understandings of the city and the various narratives they were uncovering.

When it comes to the urban history of the Mississippi River, the histories have tied to its use by indigenous peoples, through colonialism, industrialization, to into our present as a vital infrastructural conduit across the 40% of the lower 48 United States of America. Students found many of the sites to be located at major intersections of road, rail, river, aviation, and petro-chemical infrastructures. This realization caused many groups to realize their localized site, however seemingly bounded, was tied to countries, economies, and flows at a potentially global scale; and they sought to connect these dots.[5]

Of course, in many cases the presence of infrastructural connections is directly related to the presence of a major local industrial center. Be it logging, crop or livestock farming, or petrochemical extraction and refinement, students discovered the rich history of industry's relationship to urbanism. Each of these, and other, industries tell unique stories based both on the industry and the local contexts. Students discovered how many of the cities were monotowns, how this limited specialization led to both the rise and fall, at times, of their

cities economic growth and wellbeing, and how their industrial performance contributed to the growth and development of the country.

Students were encouraged to record each of these sites from the perspective of at least one non-human actor. These led to students investigating flora and fauna from Southern red oak trees in the Louisiana swamps to migratory birds in Minnesota. Examining how the river has been engineered throughout the years, students began to realize the artifice of the blue line demarcating the edge of a body of water on a map when the river meanders, its levels rise and fall, and the ground around it are neither clearly dry land nor body of water. For students learning in the Gulf Coast, realizing how engineered and constructed the river was and the vast area that contributes to its ecology raised their awareness of climate change and their immediate surroundings.

Students developed new empathies towards their sites as research unearthed histories and characters that occupied, were important to, otherwise contributed to the story of their sites. Playing out the imagined lives of these historical characters, students were able to ground the historical events and stories they were learning about and see their sites through the eyes of these diverse constituencies. Understanding the characters and stories that took place at their site allow students to understand these distant sites as real places, lived-in and complicated. [6]

This series of these research layers students developed created a certain degree of initial chaos as groups were working to identify and clarify salient themes in their site. Not an unfortunate side effect, this provided a useful learning opportunity to highlight the inherent complexity present in all sites. The students were guided on how best recognize, but also distill that complexity into clear and specific conclusions and takeaways.

After they aggregated their findings from the research phase, they worked to illuminate specific themes. (Figure 2) Emphasis was paid to clarifying in oral, textural, and drawn media the group's chosen themes to communicate their story of their site.[7] Members of the studio collectively built and prepared an exhibition armature containing a river transect of each site mounted to acrylic plastic sheets. (Figure 3) This studio-wide exhibition allowed for the students to take authorship of an exhibition on cities along the Mississippi and to see how architectural knowledge can be communicated and sites compared.

FIELD EXCURSIONS, GOATS AND VENICE
Though we recognize that students learn a great deal by moving through a design process, we thought it was just as critical to design moments within the semester were students have diverse entry points into issues of site using different learning modalities. These experiences included a series of workshops and tutorials which created new classrooms and

Figure 3. Studio-wide exhibition of Mississippi River model. Credit: Courtesy of authors.

opportunities to discuss topics including graphics, technology, and professional development. Perhaps most impactful and remembered, the semester included back to back field excursions to reinforce course themes as well as provide an opportunity to experience research and places first-hand.

The first excursion was a studio trip to The Lower Mississippi River Physical Model at the [redacted]. One of the largest physical experimental models in the world, this river model replicates the flow of water and sediment through the river system as it outflows into its delta and, using projectors, displays satellite imagery and data visualizations across its surface. At 10,000 square feet, students were amazed to see the River system they had been studying laid out before them at such a scale in a manner where it wasn't merely pixels on the screen but a, albeit scaled, landscape before them. Students saw the ways, particularly at its southern extremes, the river was not one entity but many interrelated waterways and bodies. They were able to observe how these elements are impacted not only by locally observed events but by agricultural practices and weather across the river's vast watershed, climate change driven sea level rise, and subsidence which resulted from engineering of the river. Occurring during our research project on the river, our visit to the River Model reinforced the learning

objective of representing and understanding the complexities of interrelated systems.

Perhaps the most memorable trip of the course was an excursion to Venice, Louisiana and the fragile mouth of the Mississippi River. Seventy-six miles south of New Orleans, the trip took students on a tour of a landscape consisting of fingers of land punctuating an otherwise vast horizon of wetlands where contemporary occupation by humans is made possible through constructed levees and control structures. The group met at a farm before setting out. While at the farm students had the opportunity to play with goats, chickens, alpacas and other animals.[8] (Figure 4) However, outside the norm within an architectural curriculum, carving out this moment proved very effective in creating an empathy towards the site and local residents. Put differently, by going there they got to be there. Exposing students the ground reality provided an opportunity for students to hear real stories from the real people who live in the area. This was a powerful moment, as they had previously only seen the site through a lens of research and abstraction.

Given the nature of the landscape at the southern most extreme of the Mississippi River we were able to easily walk from the farm near the western levee protecting the land from inundation to the levee on the eastern side holding the bank

Figure 4. Student-initiated field excursion. Credit: Courtesy of authors.

Figure 5. Field excursion. Credit: Courtesy of authors.

of the Mississippi. Seeing homes on implausibly high stilts and standing on the levee observing the Mississippi markedly higher than the land at the other side, students again could develop an intimate understanding of the complicated infrastructural of occupation of sites threatened by natural and human created forces. Making a trip to the helipad atop the local hospital allowed us to experience how, past the levee, the wetlands stretch as far as the eye can see. (Figure 5) These observations reinforced that the mapped blue line indicating the edge of a body is a construction at odds with this landscape blurred between water and land. Venturing further south to complete our journey to the mouth of the river we were stopped as the narrow road snaking along the river was flooded out making passage by our convoy impossible. This again made tangible the fluctuating nature of sites as they are affected by nature and society shifting around it as a capstone to an excursion centered around life and experiences at one extreme of the Mississippi River.

PROJECT THREE – SITE / COMMUNITY / FIREHOUSE
The semester culminated with a final project which challenged students to design a small firehouse for the river city of Saint Francisville, Louisiana. For Site/ Community/ Firehouse, a firehouse was chosen as the student's design project to ground the themes of earlier projects, excursions, and conversations in an architectural design. This final challenge of the semester was important as a tool for students to synthesize previous observations and tactics that were developed through observations and research into a design proposal seeking to affect

the surrounding context and provide a flexible public amenity to the city. Previous projects sought to illustrate how site is a complex, and often contradictory, situation full of human and nonhuman constituencies with varied goals and needs as well as constantly fluctuating geographic features. The firehouse asked students to weigh these issues against each other and develop a strategy to best serve the greatest number. Specifically, students were asked to serve both the residential and professional needs of the firefighters and emergency personnel and adaptable spaces used by the larger community.

Built atop a narrow bluff overlooking the Mississippi River above an earlier port settlement of Bayou Sara, St. Francisville boasts modest tourist interest with its antebellum architecture and gardens and is characterized by its small town main street community. Bayou Sara was abandoned after being repeatedly flooded but as time has passed St. Francisville has expanded down the ridge to the river's edge. Building on the lessons of community and human stories that are anchored on sites, students were quick to explore the main street area, politely inquire if they could speak with residents and passersby about their experiences in the town, and begin to extrapolate what life in this bucolic hamlet. Building on the observations they had been establishing with earlier excursions, students were able to identify the unique geography of the city is sited on and infer the relationship between the bluff and the longevity of the town's history. Venturing down to the river's edge, students found crab shops selling fresh shellfish and the catches of the day pulled from the river and gulf. They also encountered, like on the trip to Venice, a river suspiciously close to the road height until the road was inundated and passage was impossible. The history of Bayou Sara proving its continuing, or perhaps increasing, value as a lesson to learn from.

Knowing the final project was replacing the existing fire station on the main street in Saint Francisville, students were eager to understand the streetscape, setbacks, overhangs, porches, stoops and the other architectural features which contributed to the community life they were observing. Quickly a series of maps and street elevations began populating the studio searching for connections between the surrounding architectural fabric and the stories and people they had heard and met during our visit. What could have been an objective analysis of architectural types such as porches instead became charged with emotional stories and relationships. These experiences that the students had and the testimonies they had heard activated these spaces and revealed new layers to their performance.

The firehouse is a unique civic building typology which calls for the blending of different functions, often radically conflicting ones. It is place where the efficient circulation to the apparatus bays is the design imperative. While the design necessitates quick and effective response to emergencies, visits to multiple firehouses and interviews with firefighters revealed that the

day to day workings of the firehouse is more often a of place of domestic life. Between springing into action, firefighters prepare food, recreate, exercise, relax, and rest. We heard from many that the collective act of such daily tasks directly to building trust in one another and in the cohesion of their firehouse as a whole. Tackling the desire from the emergency personnel to have comfortable small group gathering areas as well as private individual spaces while at the same time preserving the essential emergency performance of the building was a central challenge for students as they were layering in the project's programmatic requirements with site tactics and flexibility to serve an external, but essential, public.

The second major charge emphasized was to provide flexible space for the local community. A firehouse provides an explicit public service through its primary function responding to local emergencies but often overlooked are the ways firehouses often provide a series of secondary services to the community ranging from hosting election day voting to community education and holiday events. A designated public lobby, community room or classroom were included in the required program as a way of guiding students to entertain this transient user-base which might often be at odds with the desire for privacy from the employees of the firehouse. For many students, designing the two faces of the project, one public and one domestic, built on observations of the surrounding streetscape and how private and public serving structures address the street. Porches, stoops, and yards were some of the features that students began manipulating to create unique ways to facilitate public engagement and informal gathering areas.

While students were bound to designing within the existing footprint of the firehouse, the previous work of the semester led them to read the city as a series of layers full of stories and design opportunities. Though the site necessitated that this would be an infill project, students were guided to spend a considerable amount of time inventorying the area and looking beyond the technical site boundaries for inspiration and connections. Primed from previous work in the semester, many were drawn to the neighboring civic buildings and sought to connect these structures into a more defined civic campus for the community.

Students took on the challenge of developing a thoughtfully sited structures that earnestly sought to provide spaces for a series of imagined occupants of the diverse constituencies. Though radically different in their approach and modes of representation, a clear thread emerged: students did not see the site and the community as second to the building and its design. In the oral presentation and making of the final presentation artifacts, we saw evidence of students connecting to the place and weaving the place into their designs.

CONCLUSION

The semester took students on a journey researching sites up and down the Mississippi, on site visits to engage students in the life along the river, and studies of how the its long evolution ceaselessly continues. Focusing on experiences, characters and stories, that activate and create empathy towards sites and the constituencies that inhabit them, the studio sought to tie the complexities and multiple narratives embedded in a site with contemporary design challenges that attracted many students to the discipline in the first place. Tying issues of race, climate, injustice, industry and ecology to historical and contemporary questions of site allows students to understand the varied issues the built world can, and does, engage. Introducing site's natural and physical features as a constantly evolving landscape affected by climate, engineered landscapes, and pressures of settlement and preservation, students were able to make observations about how systems far larger than a building or city affect individual sites. These fluctuating elements and holistic perspectives create a foundation for the role of site in architectural design prepares students for later studios which might provide more topical or specialized instruction and themes. Holding on site studies before using an architectural design project to synthesize lessons learned allowed the studio the space to introduce issues in contemporary site discourse ahead of the introduction of relevant literature in history or theory courses providing another foundational layer preparing students for later stages of the curriculum.

The changing circumstances of the global COVID-19 pandemic raised several questions about the pedagogy of the course as well as the themes covered. There are a few takeaways from the syllabus which adapt effectively to these changing circumstances and others which leave looming questions about teaching objectives and values to be covered in future iterations of the course. First, studying distanced sites through archival and virtual research platforms provided an effective mode of covering a range of cases across the study and helping students to unpack historical, social, and political narratives which could be obscured by the stimuli present in a physical site visit. Emphasizing research into a site through the archive allows for a mode of research and learning that is resilient to changing public health situations as well as providing an economical alternative to physical site visits to distant locations. Moreover, the course kept as a recurring theme the value of developing empathy through experiences as a way of developing interest and passion for a site; this is perhaps the aspect of the course least resilient to the changing circumstances. Small group trips, staggered over a period, would allow for students to participate in guided site visits while respecting necessary public-health guidelines. Additionally, taking advantage of virtual engagement with sites through remote interviews or drone piloting would allow for forms of engagement not explored in previous iterations of the course.

PAPER

Site can be a tricky subject to parse and interact with at any level. With its many entangled constituencies, histories, and contributing elements that reach far outside the scope of the building towards both the global and microscopic, site's complexities are at odds with the challenge of beginning design when complexity often overwhelms and renders issues opaque. Education philosopher Maxine Greene noted that "when [students] care about what they are doing, they are likely to go in search of meanings, to begin learning to learn." 9 While just one approach, it could be argued that one way to engender interest and drive investigations is to develop empathy within the students towards the characters, issues, and politics in which site is linked.

ENDNOTES

1. As the fourth semester design studio in a ten-studio sequence, this course is situated early on in the student's foundational design curriculum. Though the catalog statement calls for an "emphasis on process, materials theory, site inventory and analysis and impact of regionalism," the course design infuses broader notions of architectural agency and investigation in response to a school-wide mission. The studio was team-taught and utilized a common syllabus. Faculty rotated within the studio after each project to provide students with the opportunity to work directly with and receive feedback from each member of the teaching team. In Spring 2020, the teaching team consisted of three individuals with divergent interests and pedagogical styles. The teaching team consisted of name and title, name and title, and name and title (redacted for review).

2. A fourth project was planned but ultimately not used as the studio adapted to the COVID-19 pandemic and adjustments to academic calendar.

3. As this was their first research project in a studio environment, insights into research methods and best practices were introduced and studio-wide interim pin-ups provided students with an opportunity to reflect on the depth of their research. Put differently, students were encouraged to go beyond initial facts and findings generated by cursory searches.

4. To reduce barriers to entry, Students were instructed in a workflow building on their existing experience within Rhino. The Grasshopper plug-in Meerkat was used to translate GIS datasets into Rhino geometries.

5. Pierre Belanger, Landscape as infrastructure: a base primer (London, UK: Routledge, 2017)

6. Jonathan Gottschall, The Storytelling Animal: How Stories Make Us Human (Boston, MA: Mariner Books, 2013).

7. Students organized their findings onto a series of templated drawings curated by instructors. The templates allowed for students to horizontally compare their respective cases and learn to recognize the dramatic and diverse ways the river changes along its length and across studio groups.

8. It should be noted that they took to this proposition with great amusement, quickly even the most reserved students were petting goats or fawning over newly hatched chicks. We thanks [redacted] for opening up their home and farm to our cohort.

9. Maxine Greene, "Public Education and the Public Space," Educational Researcher 11, no. 6 (June-July 1982): 7.