PORTFOLIO

Kevin He

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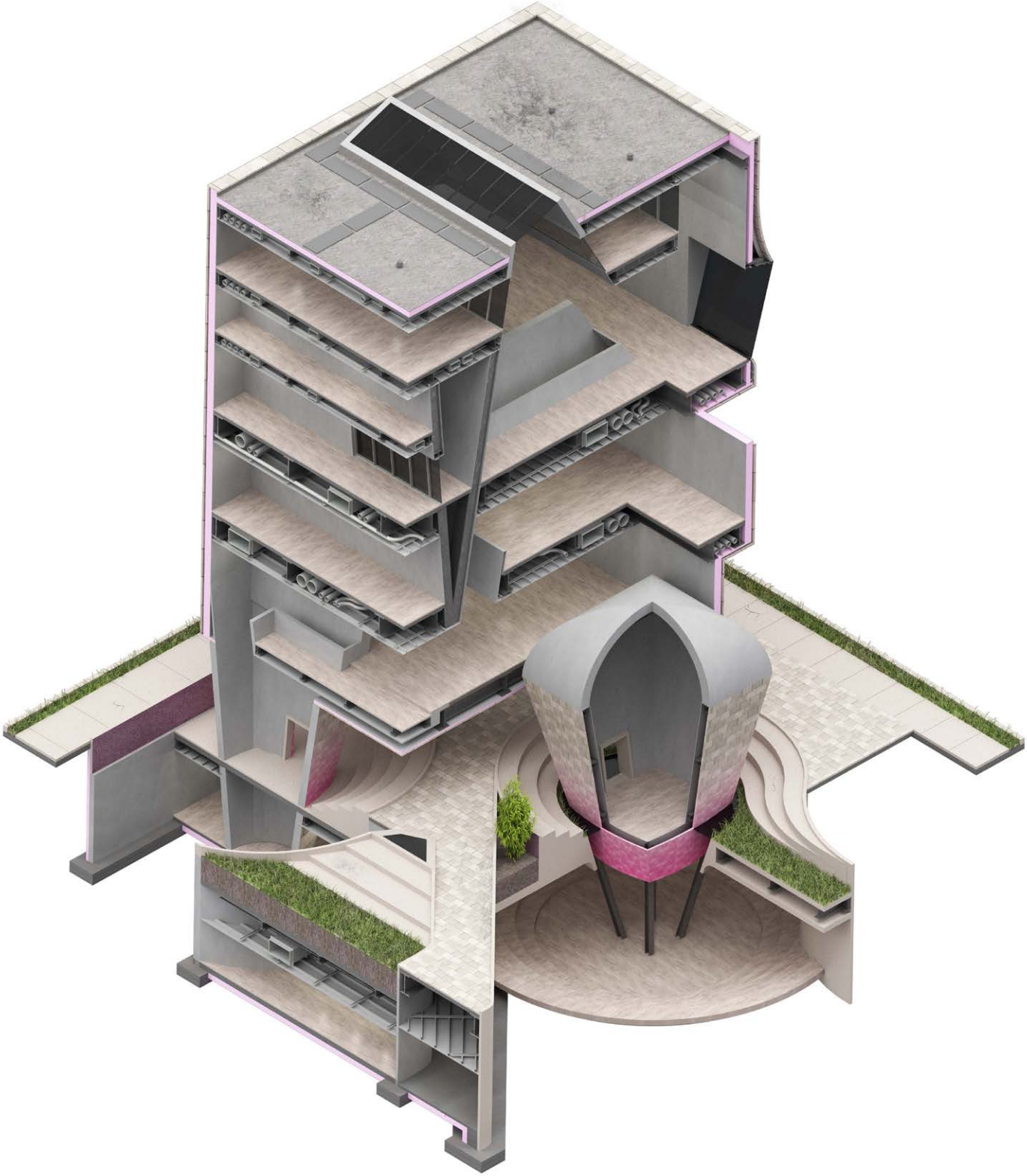
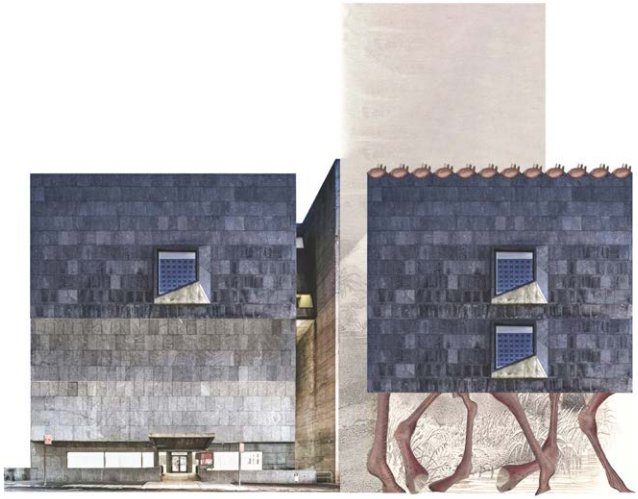
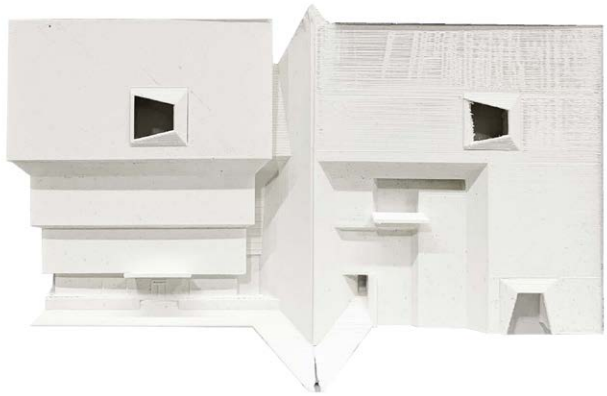


DIPTYCH DEPICTIONS

Spring Studio 2020
Instructor: Miroslava Brooks
Skills: Rhino, Grasshopper, VRay, Keyshot

Mirroring the Met Breuer, a new museum extension is constructed opposite to the original's site. Both externally and internally, the extension begins to question what reality and imitation entail.

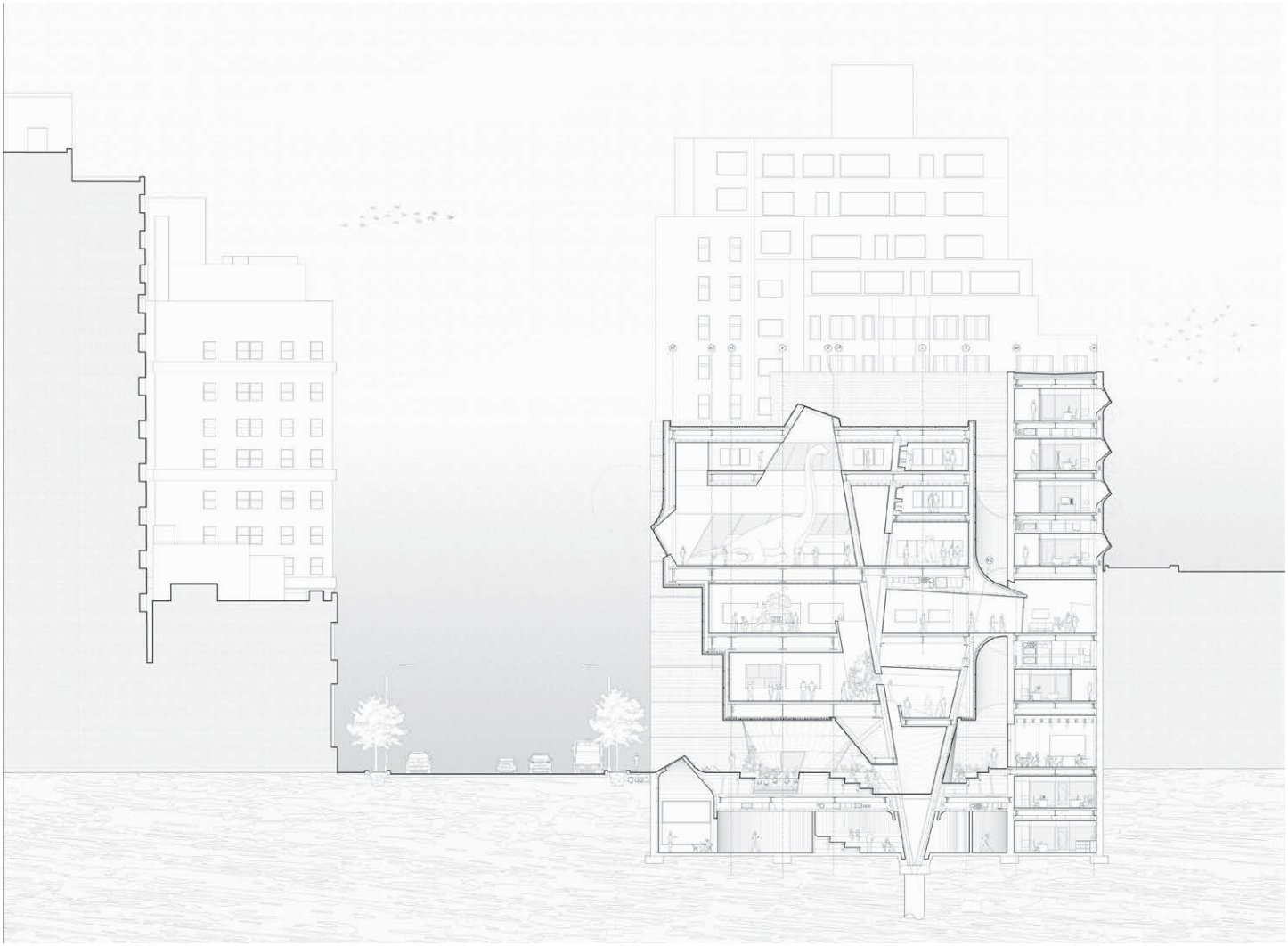




The cryptids, fake creatures, rely on low resolution to become real. The drawings, utilize high resolution to replica a real creature, but through the drawing process, become not real.

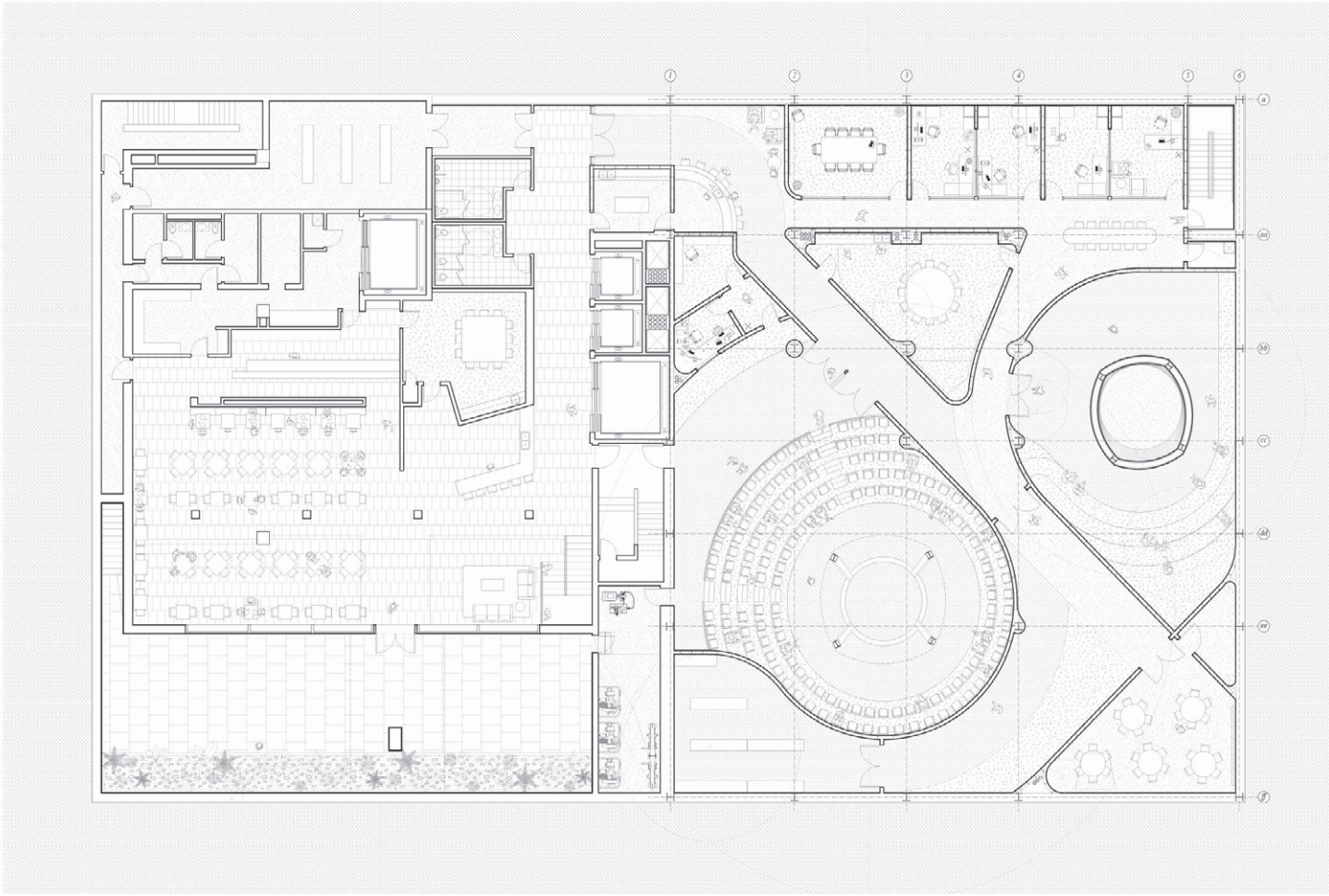
The collages explore how the idea of fake realities could be interpreted through architecture by replicating the original Breuer on the opposite side of the site with new modifications: first with fictionalized anamorphic features, then with architectural elements. One element of the Breuer can start to spin off into an entirely new system, similar to how one small piece of truth can spin many new tales of fiction.

The relief models push the idea of fake realities further to begin to explore materiality and geometry of the potential addition, using new angles and textures derived from the Breuer.



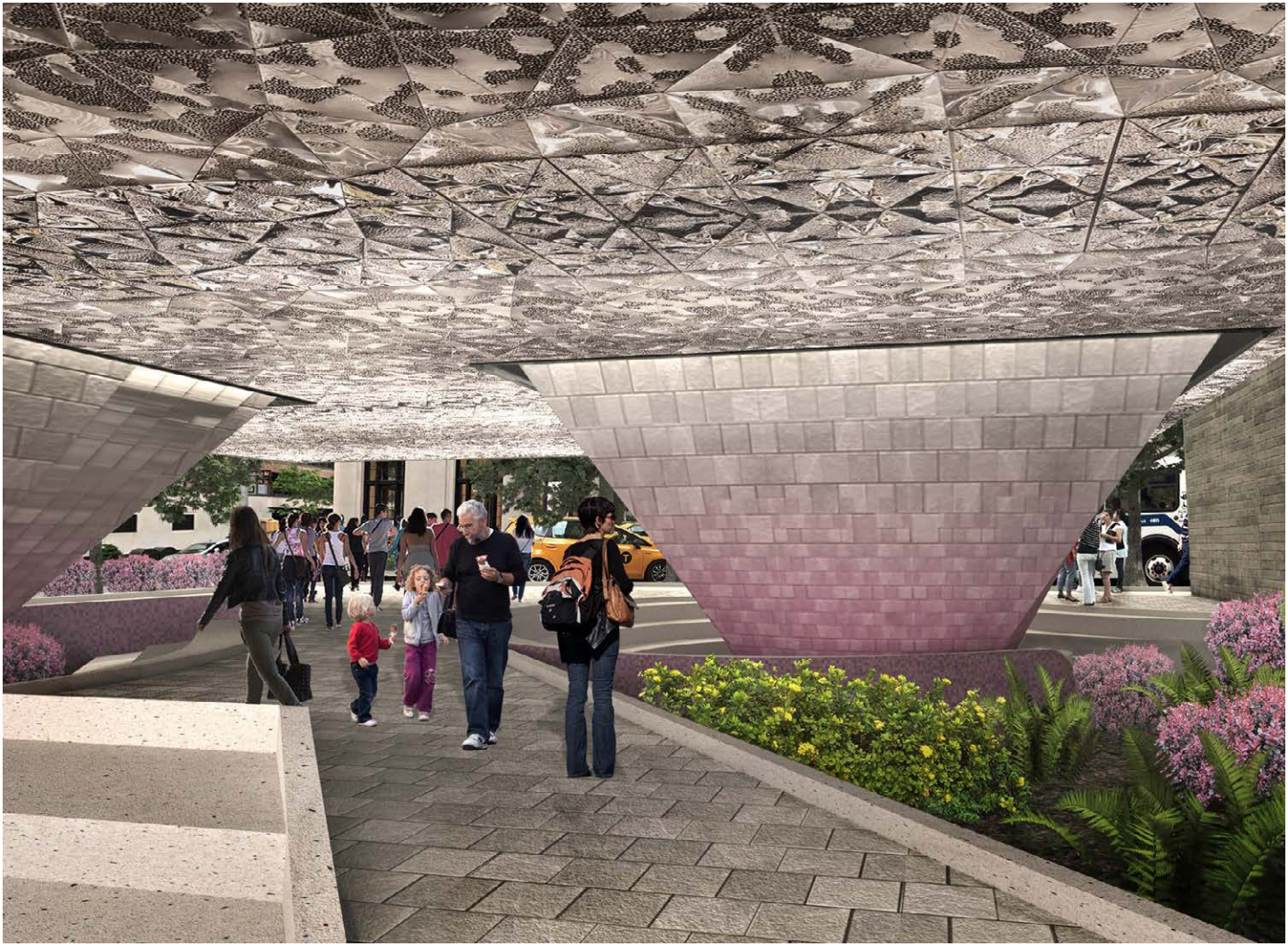
The project was designed through the exploration of section. With the aperture of Breuer being the most iconic image of the project, it was re-presented through a spatial near miss. The apertures become large spatial voids and organizes exhibition spaces. The iconic figure of the Breuer is now radically transformed on the interior.

As explored later in the interiors, the new addition houses parallel exhibits to the original Breuer with the original exhibiting certain factual events/findings. Borrowing elements from the original Breuer, the addition spins a new architecture based upon the exaggeration and reorientation of the original Breuer's architectural elements such as the apertures and stepping that continue into the groundscape

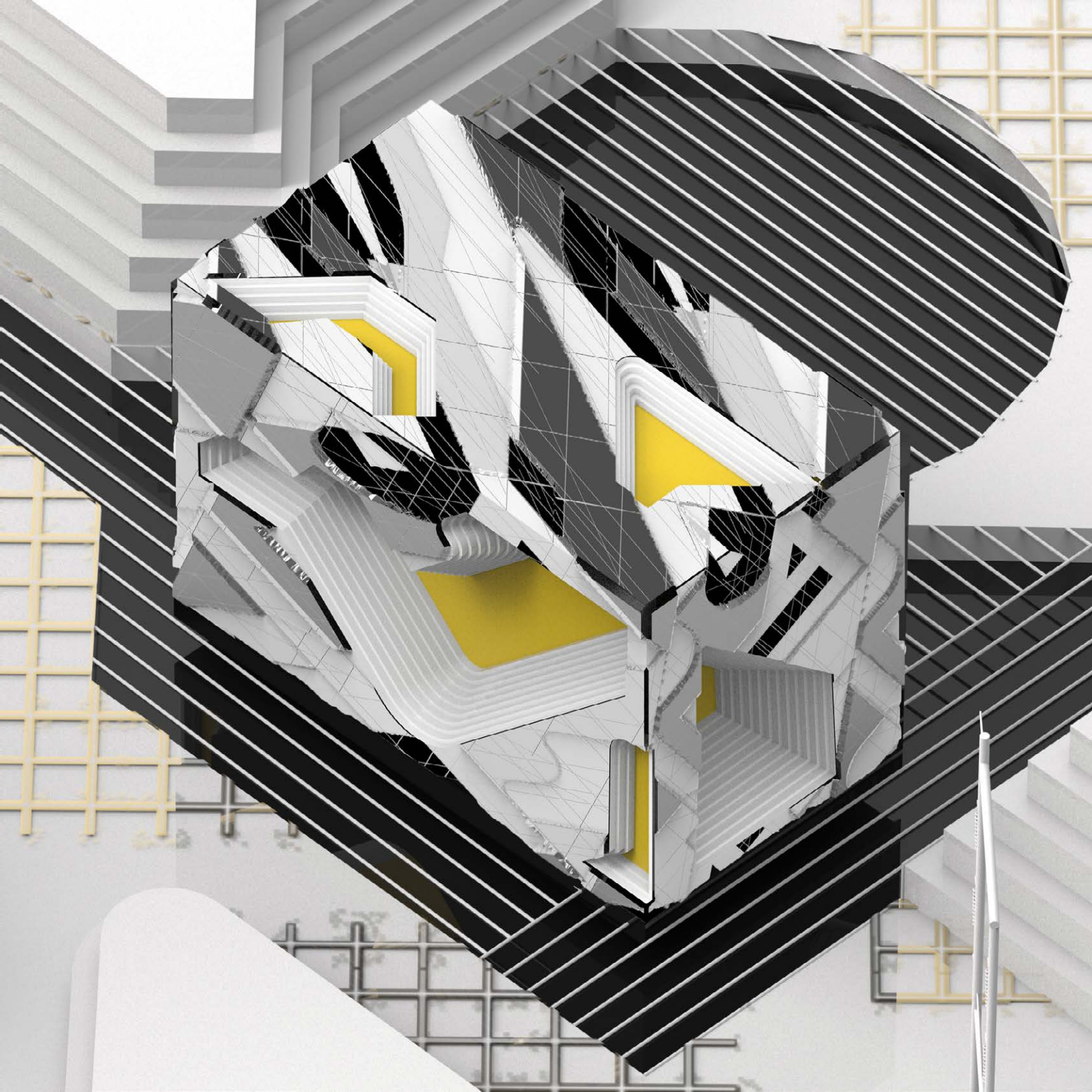


As seen, an entirely new organization is revealed on the inside of the addition compared to the original Breuer with new voids and circulation across the levels. Again, each level enters through the back-wall volume. The array of split levels begin to break up space of the addition as opposed to the open plan of the original.


Madison Av



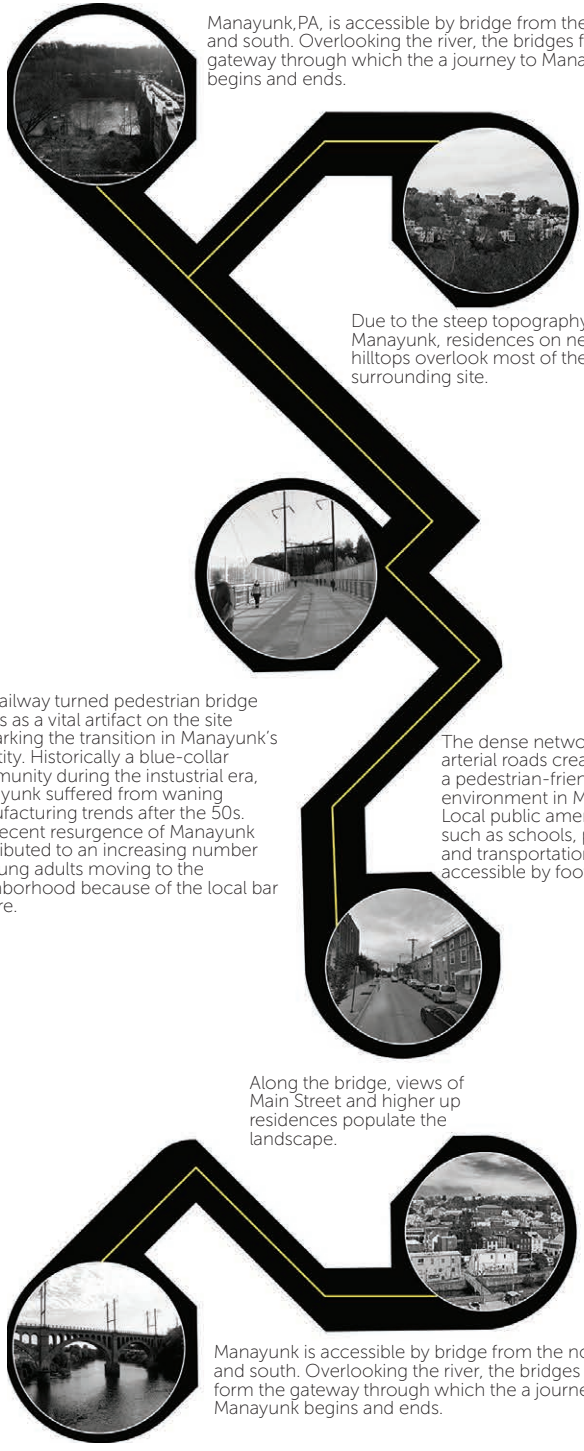
The new public plaza plays games of resolution, the legs transforming in scale and color as they reach the ground, while the benches that erode from this new earth reveal bright mosaic patterning, the smallest scale of resolution.



VIEWPORTALS

Spring Studio 2019
Instructor: Brian De Luna
Skills: Rhino, Grasshopper, Zbrush, Keyshot, ArcMap

A city's history is encoded in the its built infrastructure: roads, rail, and walkways. Through specific viewports, the memories of the region are revealed as visitors transverse the site.



Manayunk,PA, is accessible by bridge from the north and south. Overlooking the river, the bridges form the gateway through which the a journey to Manayunk begins and ends.

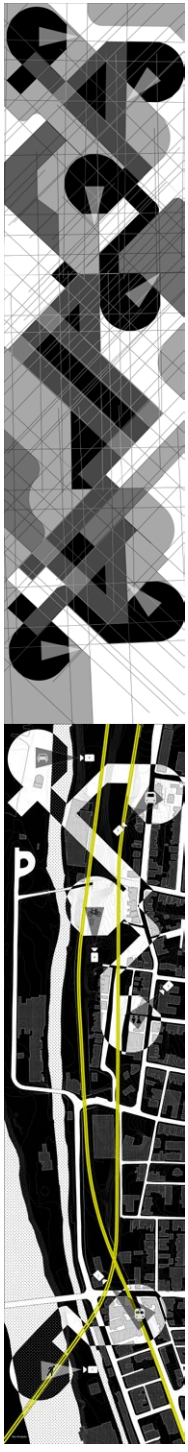
Due to the steep topography of Manayunk, residences on nearby hilltops overlook most of the area surrounding site.

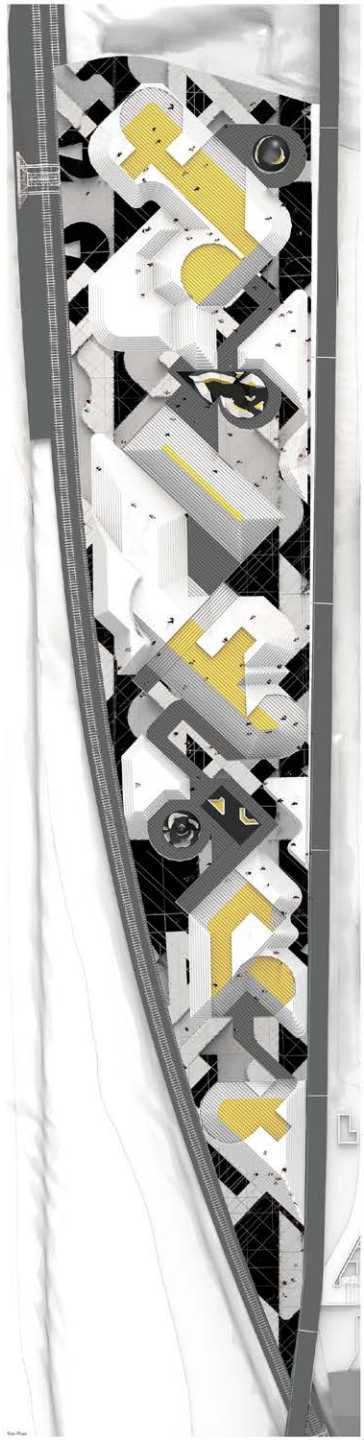
The railway turned pedestrian bridge serves as a vital artifact on the site demarking the transition in Manayunk's idetntity. Historically a blue-collar community during the instustrial era, Manayunk suffered from waning manufacturing trends after the 50s. The recent resurgence of Manayunk is attributed to an increasing number of young adults moving to the neighborhood because of the local bar culture.

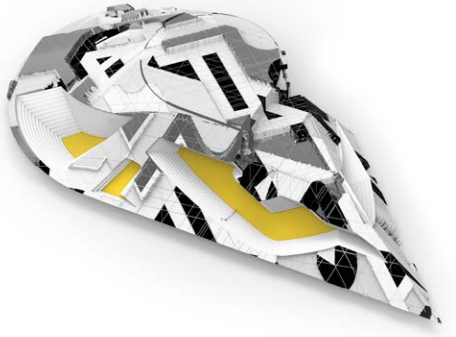
The dense network of arterial roads creates a pedestrian-friendly environment in Manayunk. Local public amenities such as schools, parks, and transportation are accessible by foot.

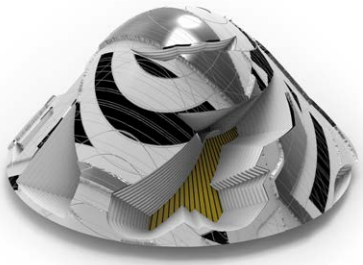
Along the bridge, views of Main Street and higher up residences populate the landscape.

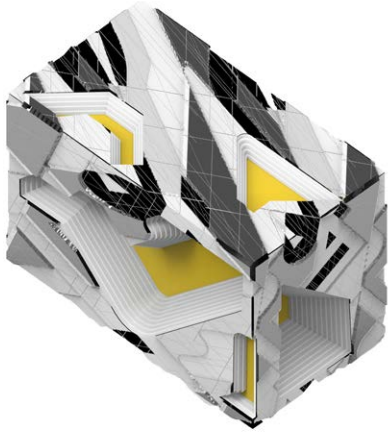
Manayunk is accessible by bridge from the north and south. Overlooking the river, the bridges form the gateway through which the a journey to Manayunk begins and ends.

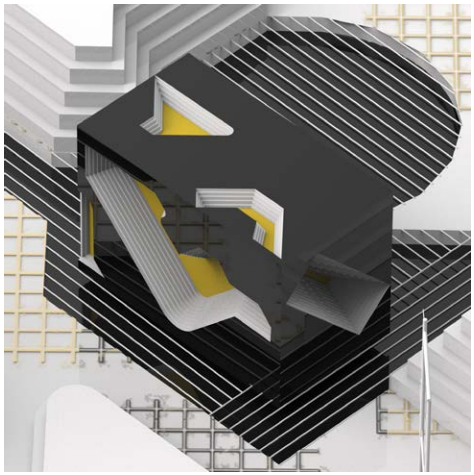






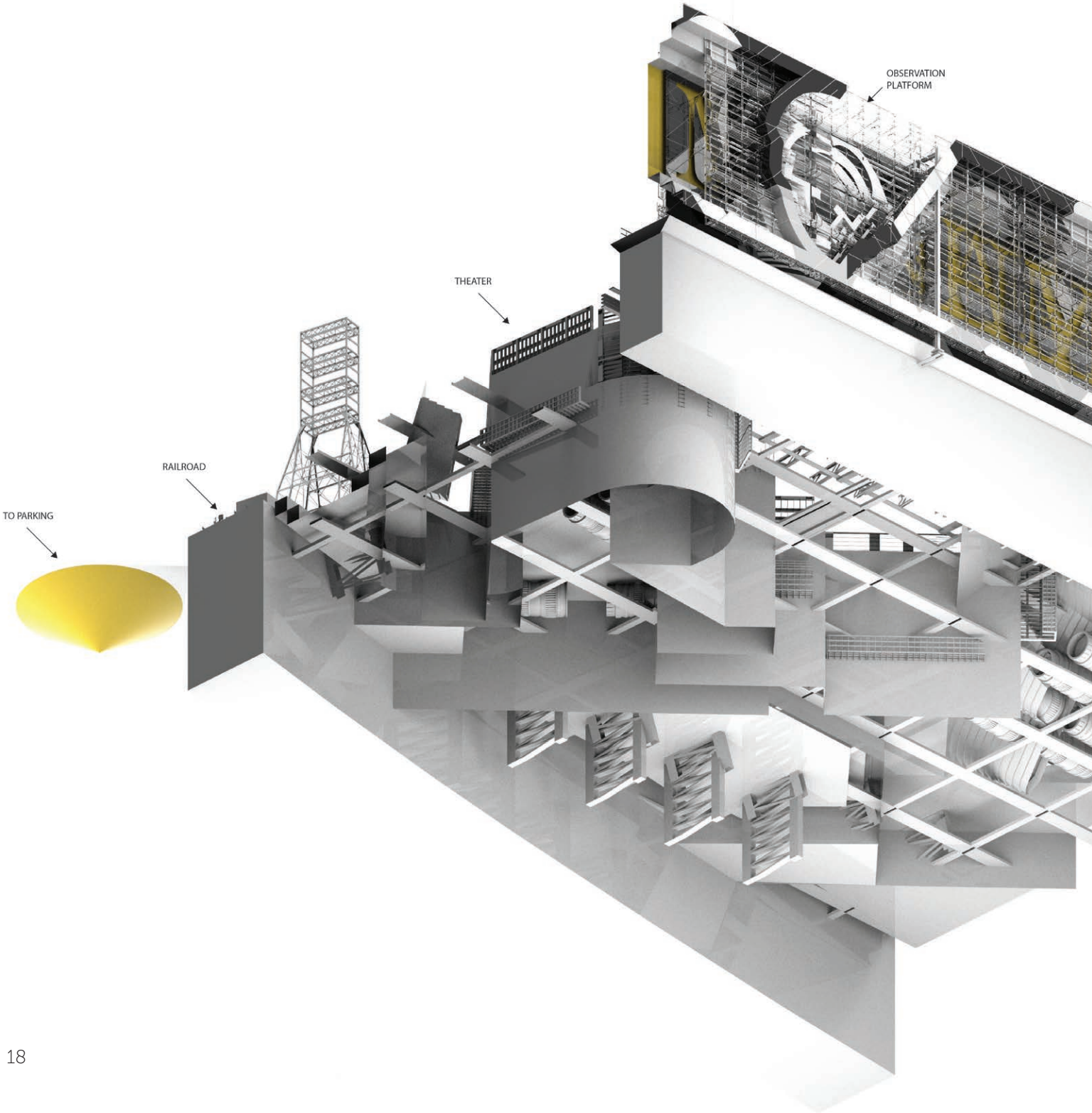


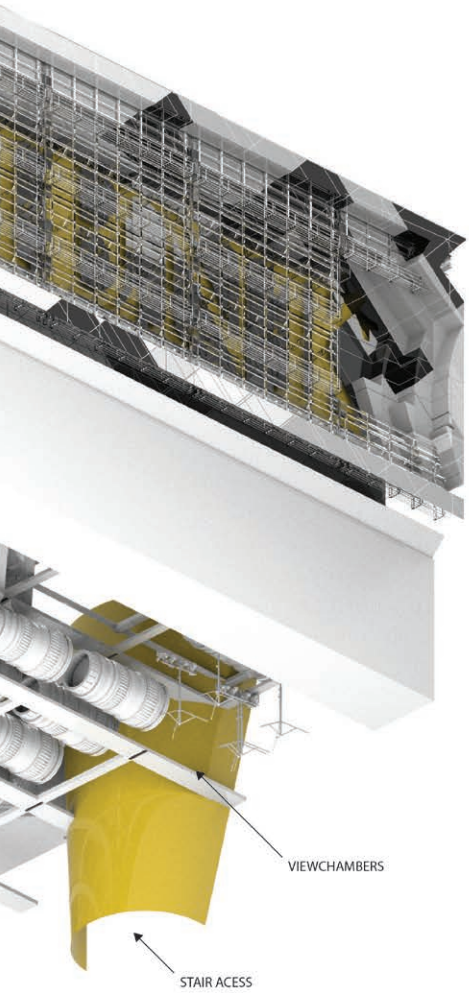




Topographically diverse, the sightlines around Manayunk, PA,reveal different building typologies on all levels. However, the dynamic history and development of Manayunk has rendered the views fragmented.

The Viewportals situated on the site become theaters from which the surrounding site is observed. Accessible by all forms of transportation, the Viewportals encourage a communal experience to learn about the past and look towards the future of development.

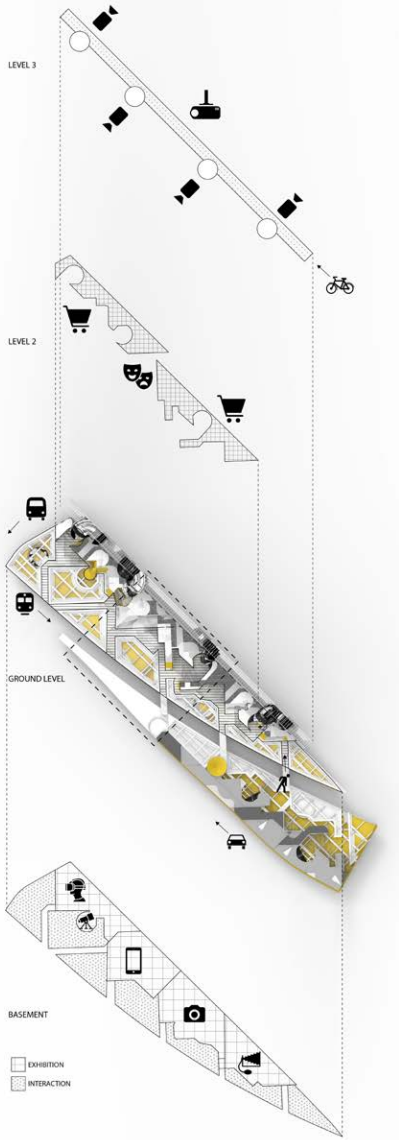

OBSERVATION
PLATFORM
THEATER
RAILROAD
TO PARKING

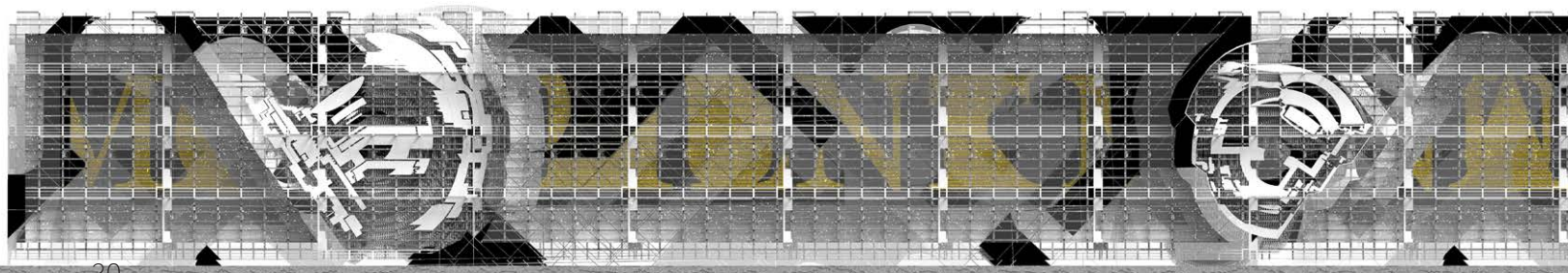


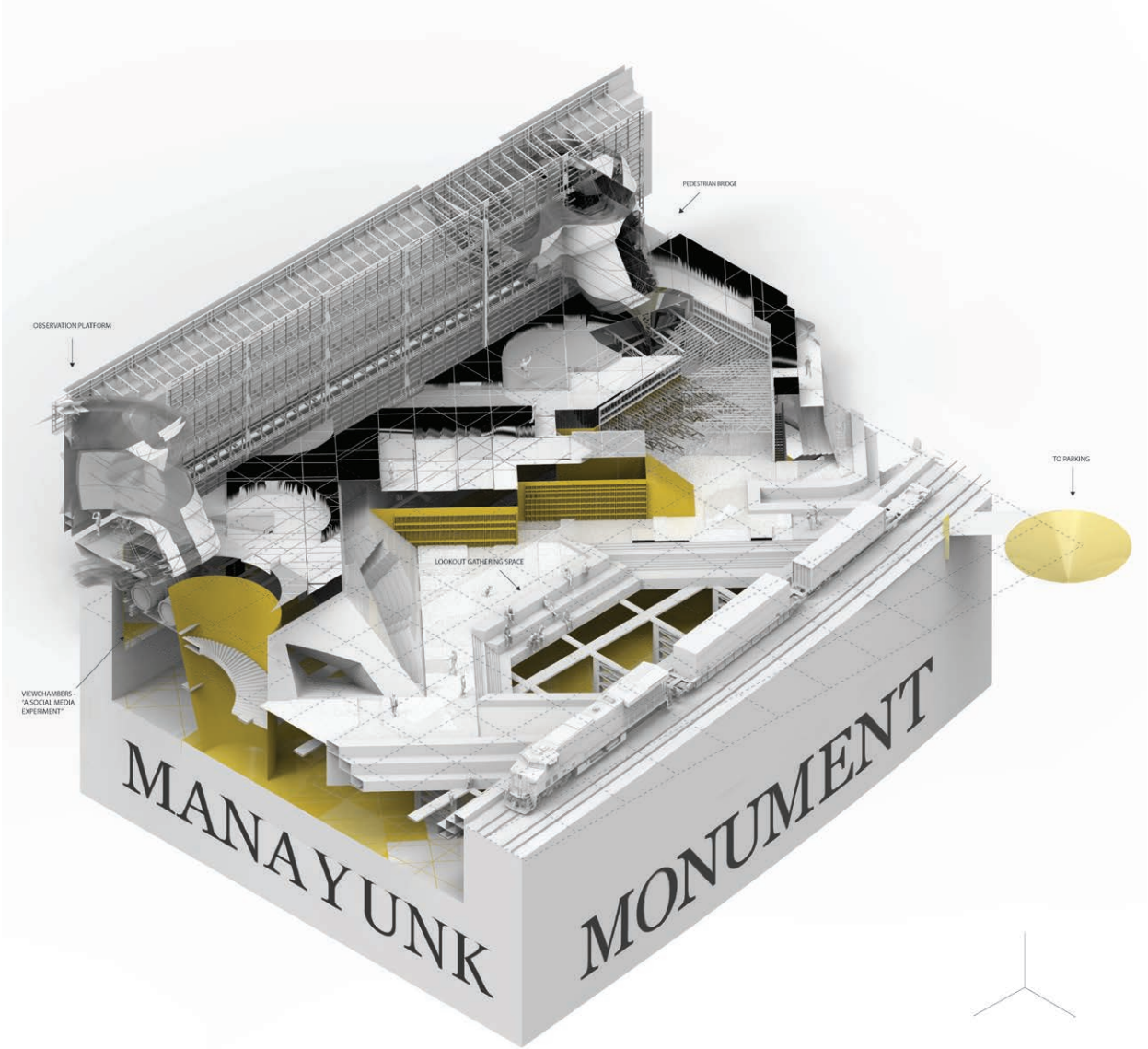
MANAYUNK MONUMENT

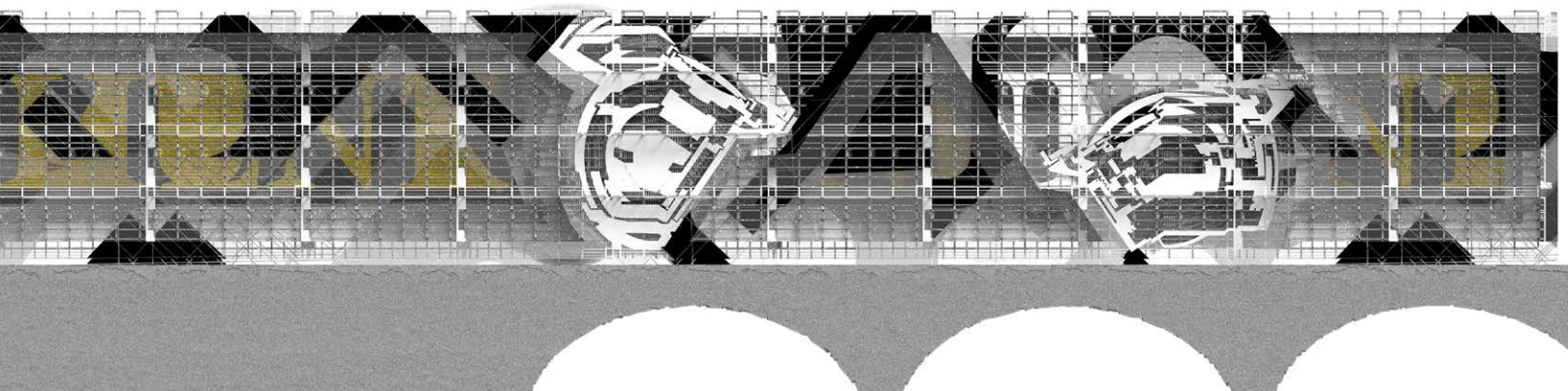
Spring Studio 2019
Instructor: Brian De Luna
Skills: Rhino, Grasshopper, Zbrush, Keyshot, ArcMap

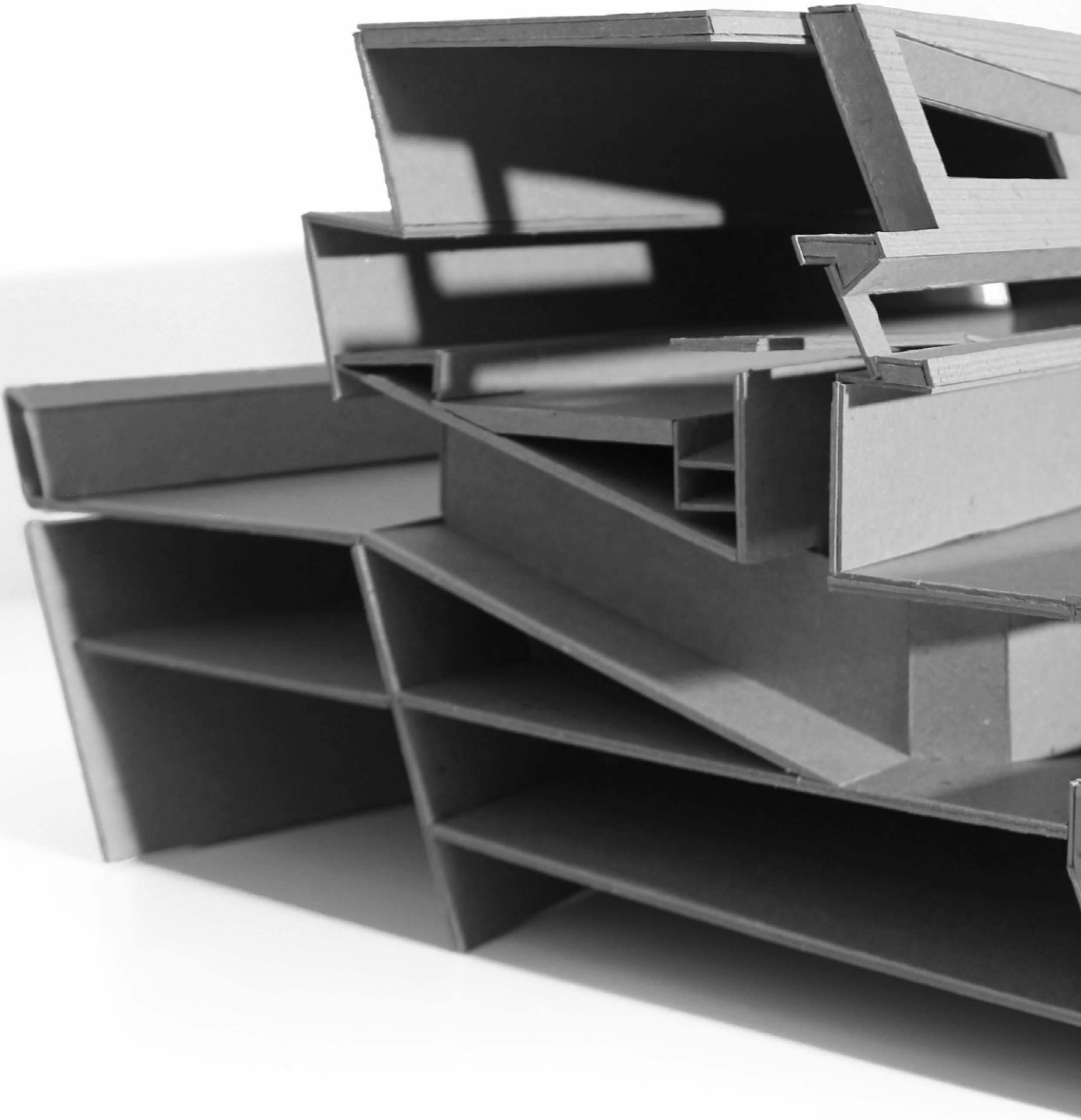
A monument to the city is erected in the form of a billboard that points towards locations in the city along a path derived from the city's own circulation.


LEVEL 3
LEVEL 2
GROUND LEVEL
BASEMENT
EXHIBITION
INTERACTION




PEDESTRIAN BRIDGE
OBSERVATION PLATFORM
TO PARKING
LOOKOUT GATHERING SPACE
VIEWCHAMBERS -
"A SOCIAL MEDIA
EXPERIMENT"
MANAYUNK
MONUMENT

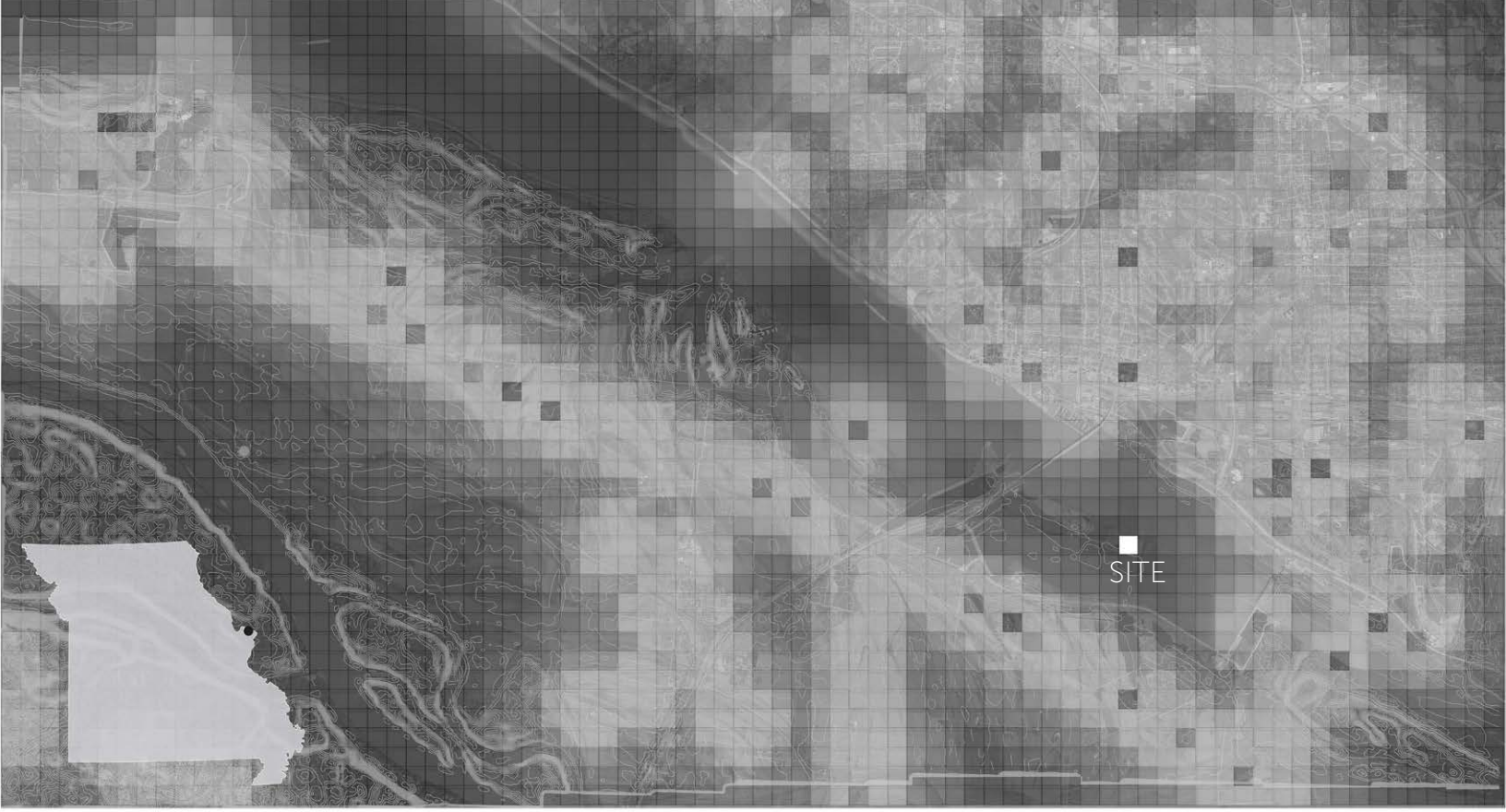




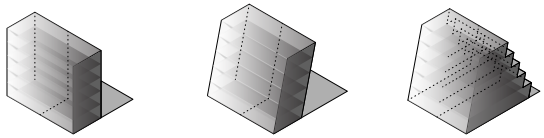
THERMAL DATA SPA

Spring Studio 2017
Instructor: Chandler Ahrens
Skills: Rhino/Grasshopper, ArcMap, DIVA

The data center is a recent form of infrastructure that is essential to the modern utility network but often hidden from the public sphere. This project attempts to utilize the byproduct of data centers, heat, to create a mixed use spa/ data center facility for the public.



ELECTROMAGNETIC RADIATION MAP



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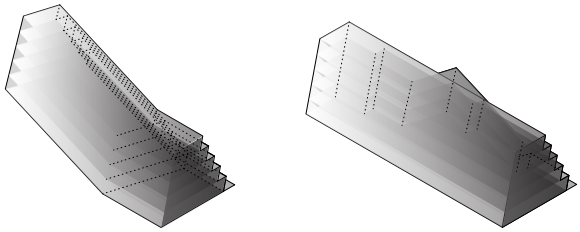
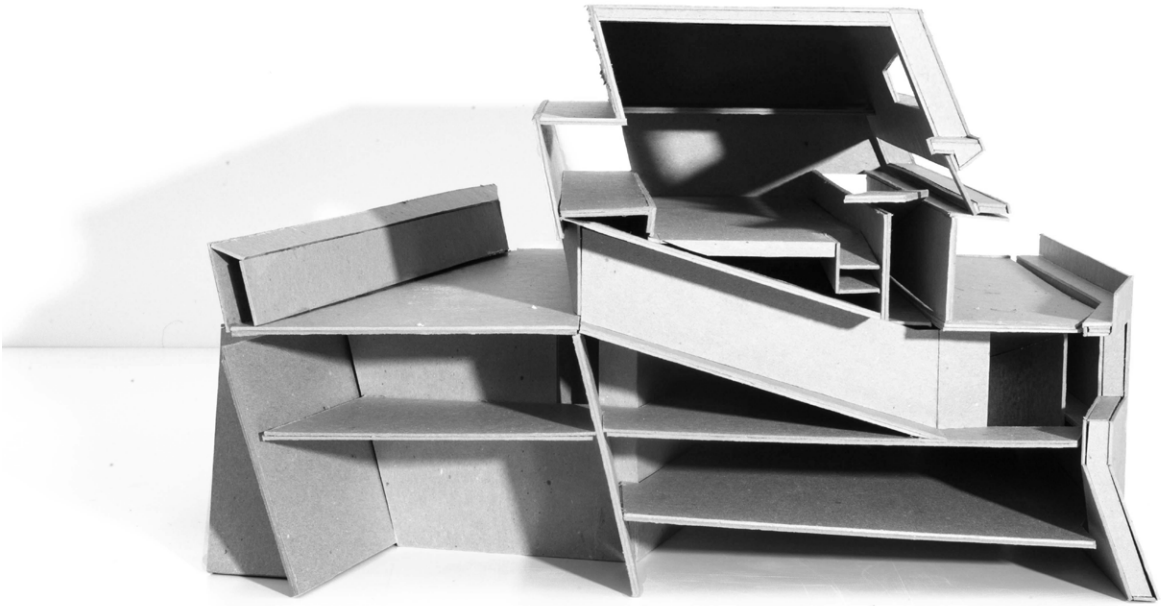
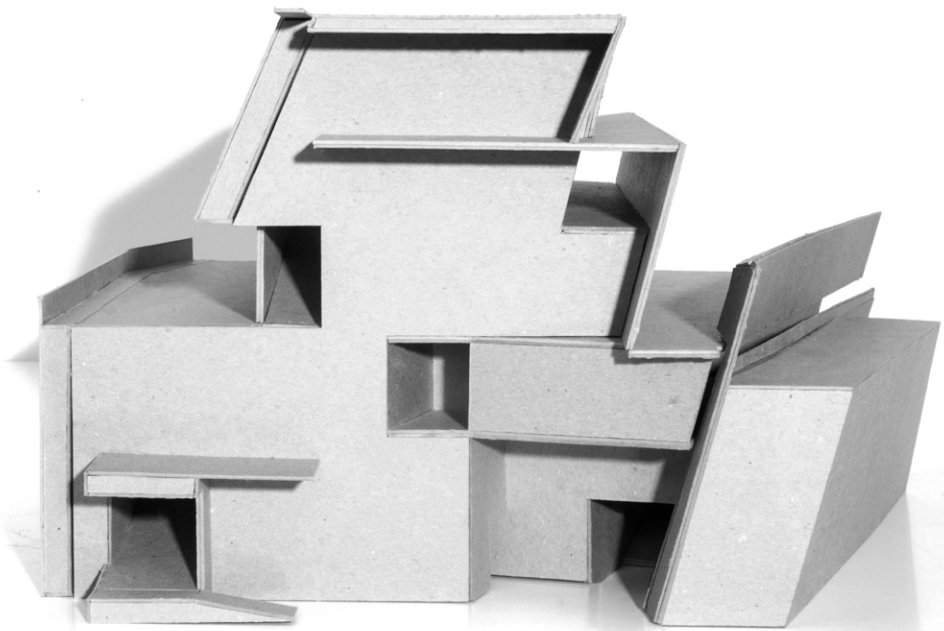
MODEL PROGRESSION



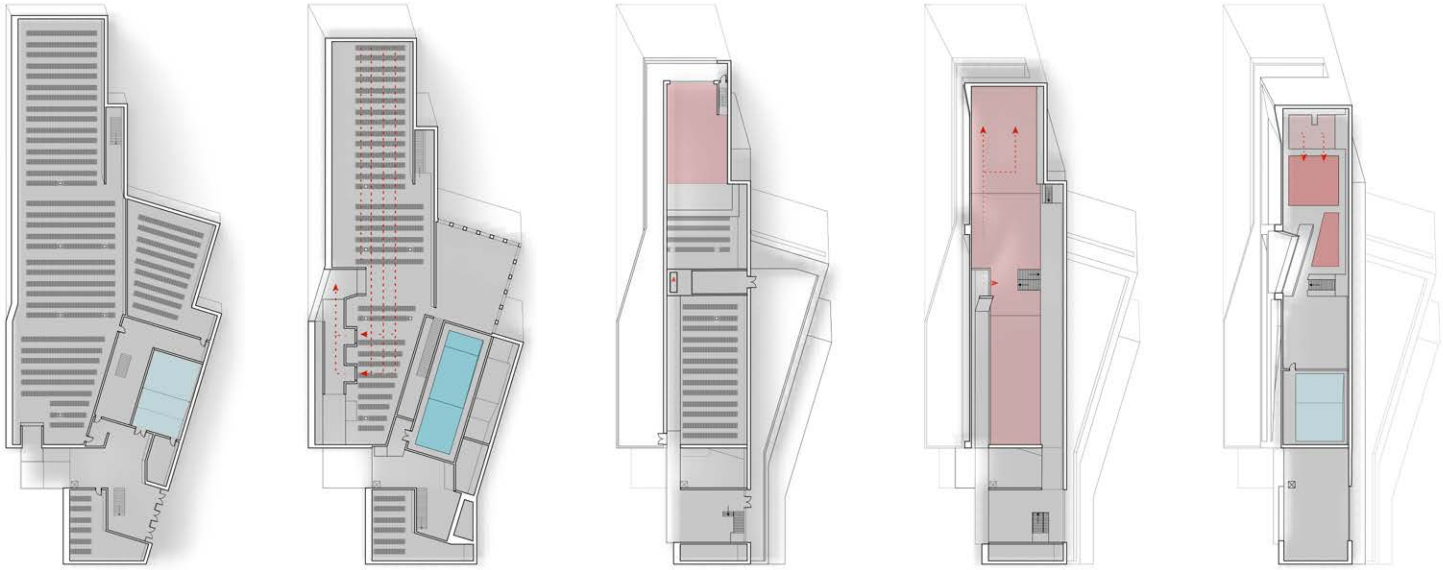
West Alton, MO, is a low occupancy area with more infrastructure than population. The main footprint created by the area's infrastructure (cell towers, power plants, and power lines) in the form of the electromagnetic radiation was plotted in context with the project location. Data centers require immense amounts of electricity necessitating its

The structure was sloped to lean towards the north direction to maximize solar gain on the southern facade, reducing the amount of heating necessary to maintain warm temperatures for the upper level spas.





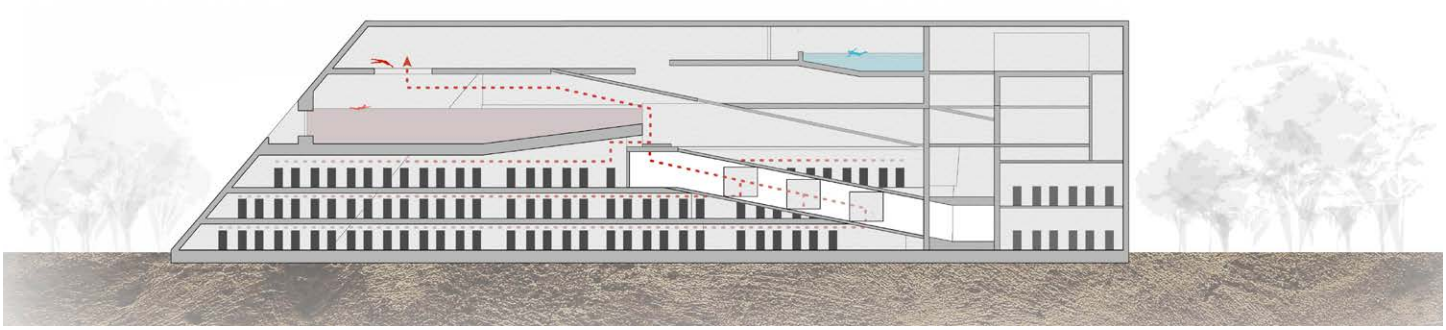
AIR FLOW
WARM POOL
COOL POOL



LEVEL 1 LEVEL 2 LEVEL 3 LEVEL 4 LEVEL 5

PLAN

N



SECTION

The prototype for the data center/spa utilizes an open floor plan in volumes that would benefit from air exchange. Warmer air rises upwards from the data servers in the lower levels into the warm spa area.

The corridors and ramps of the building function as circulatory paths for both humans and air.

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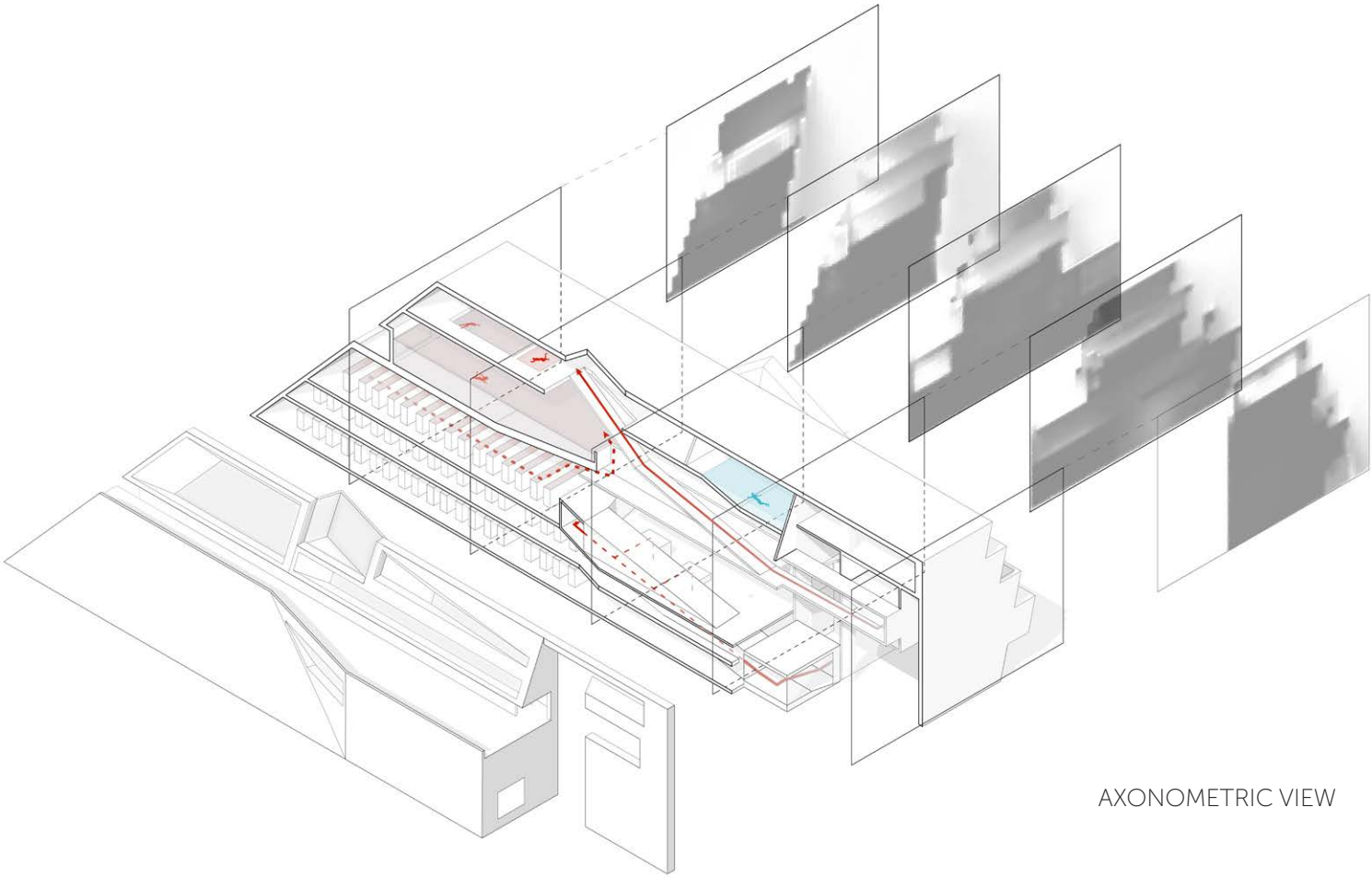

AXONOMETRIC VIEW

DIVA solar radiation simulation shows the heat gain mainly in the upper levels containing hot pools and saunas while the structural mass shields the lower levels containing cool pools and an ice bar.

The exterior concrete walls mitigate solar heat gain through the lower levels while large fenestration maximizes heat gain on upper floors.

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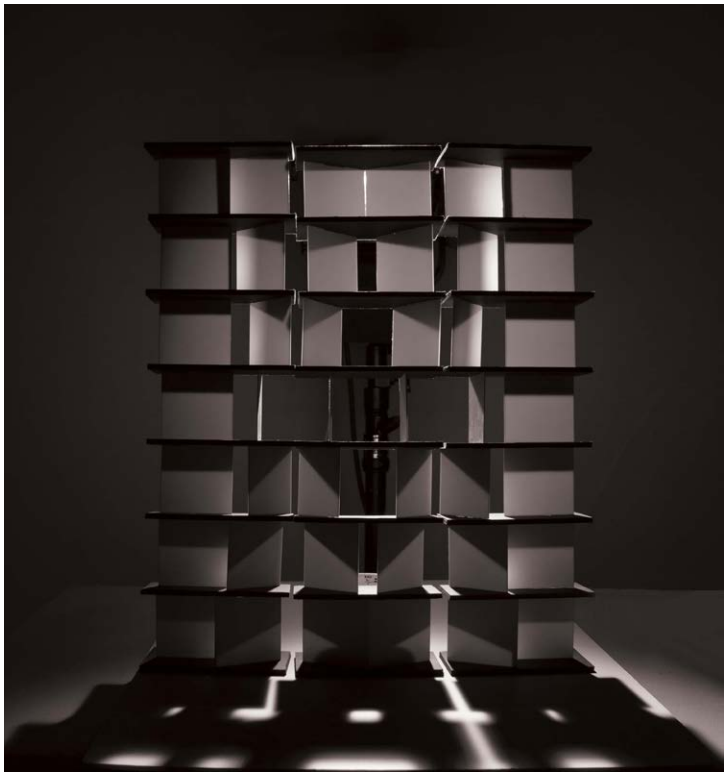
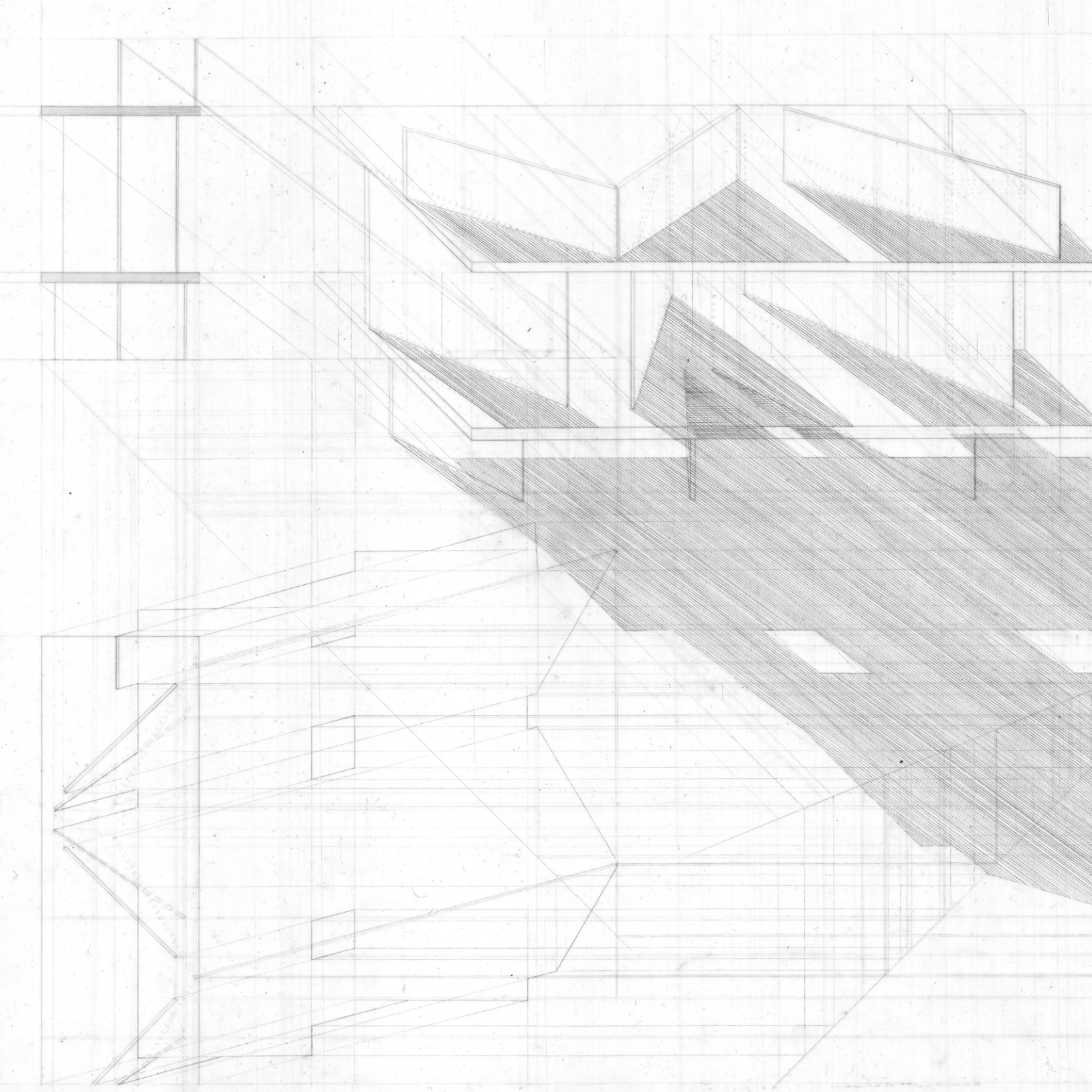
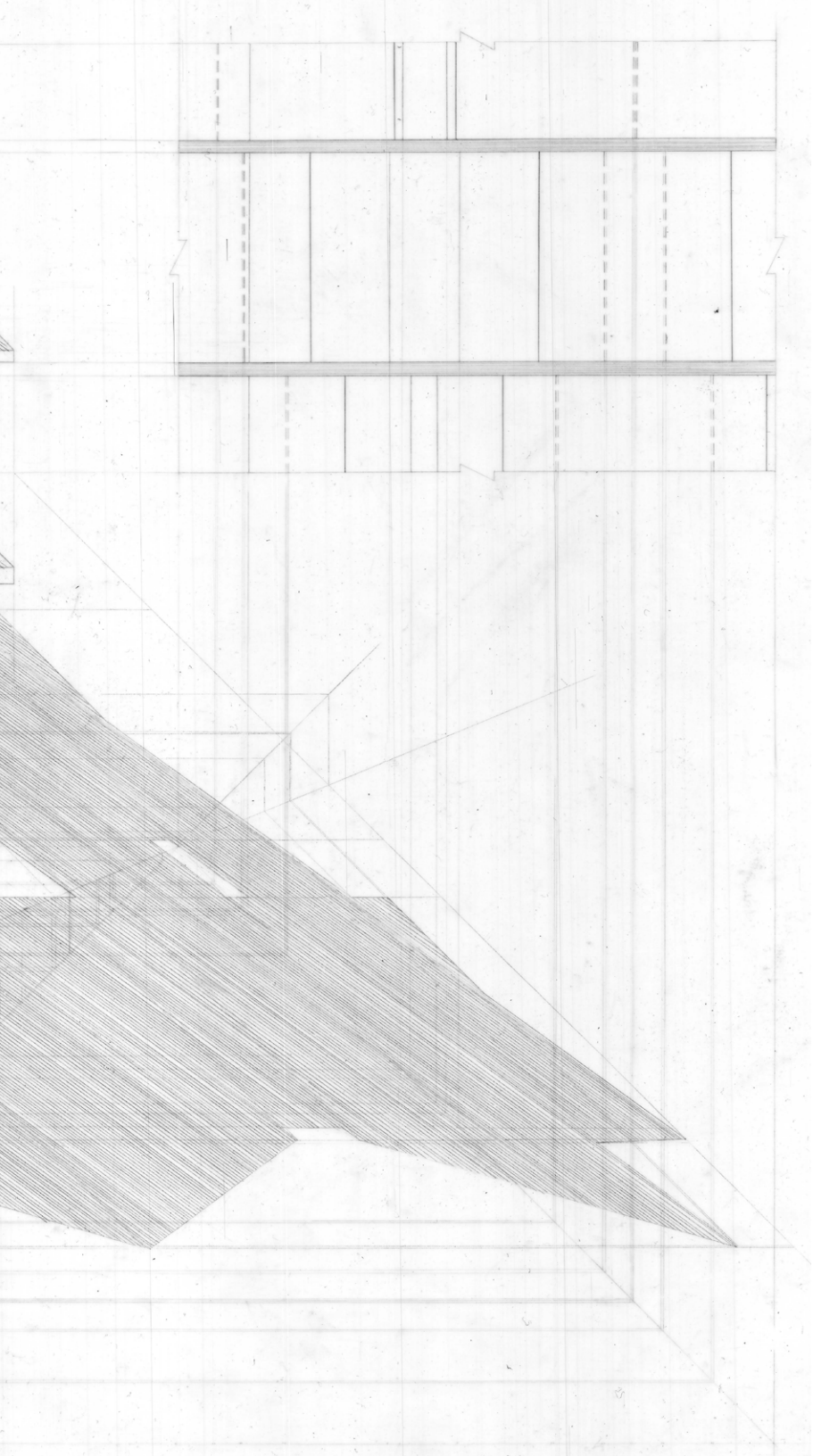


LIGHT CHAPEL DEVICE

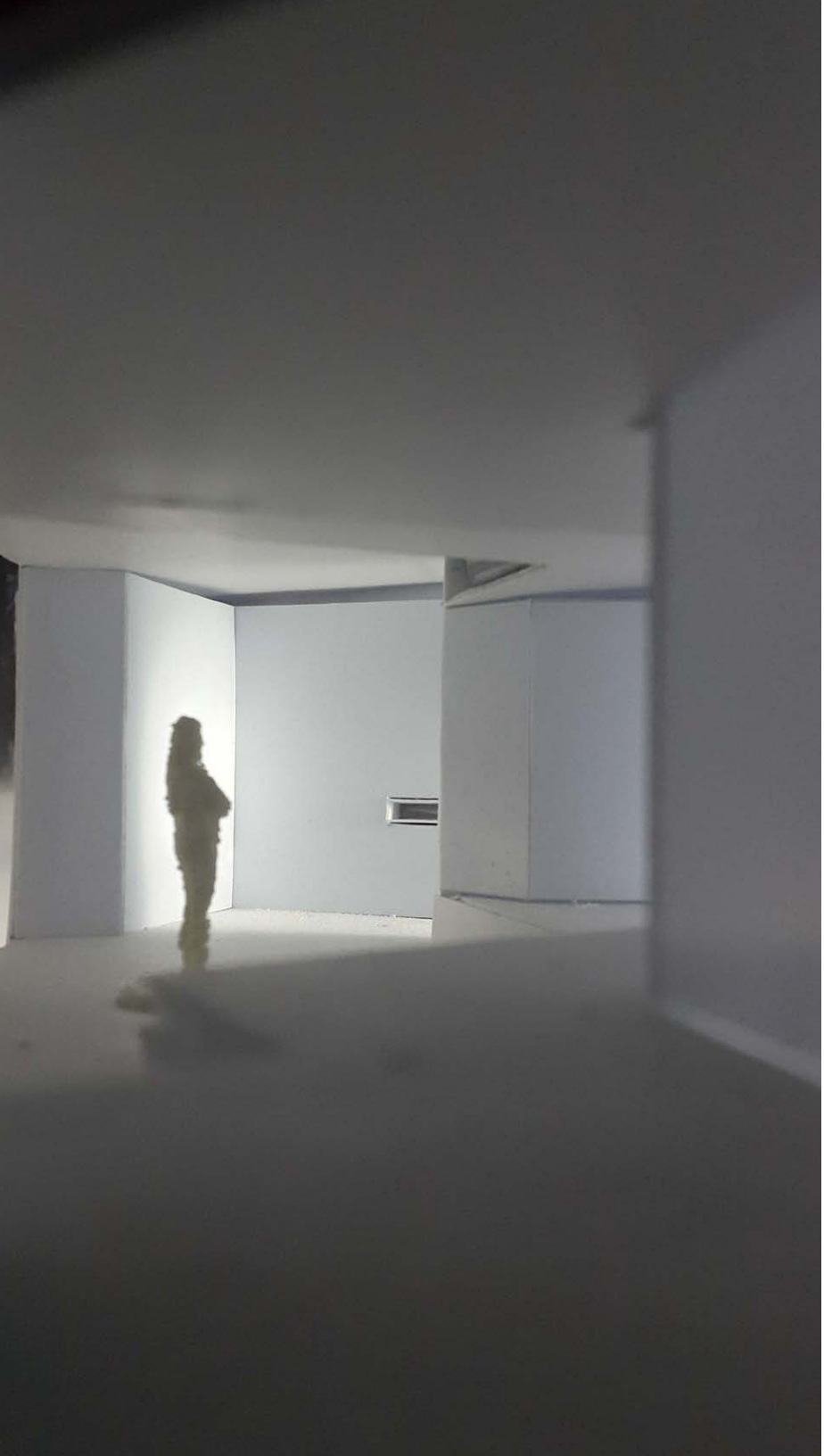
Fall Studio 2015
Instructor: Nathaniel Elberfeld
Skills: Hand drawing, Lasercutting

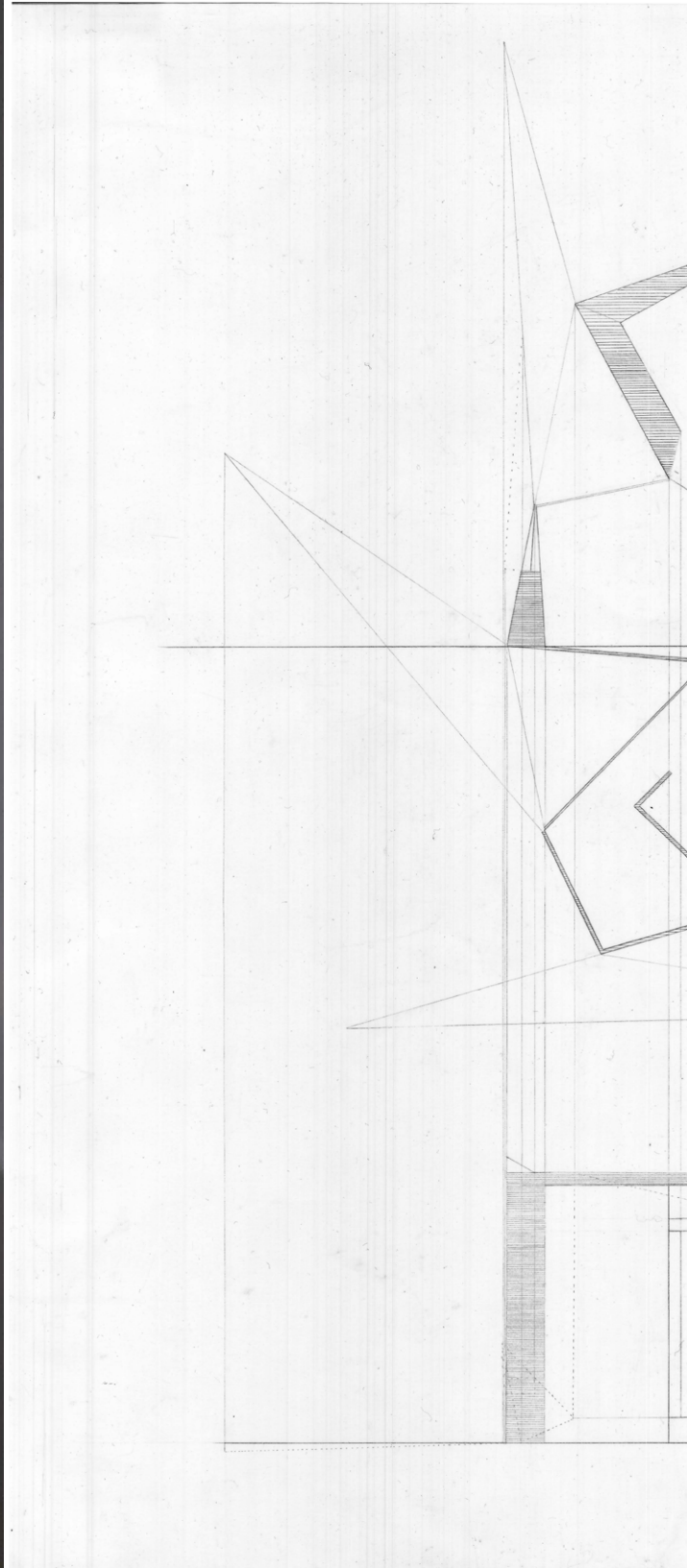
The most striking characteristic of light is the array of intensities it can produce. The light device captures all the diverse effects using a series of panels set to radially shifted angles. The result is a spectrum of ambient to direct light.





The graphite drawing on mylar illustrates the shadows created by directional light. The specific shadow that is captured highlights that shadows are the main experience of the model, and not the structure.

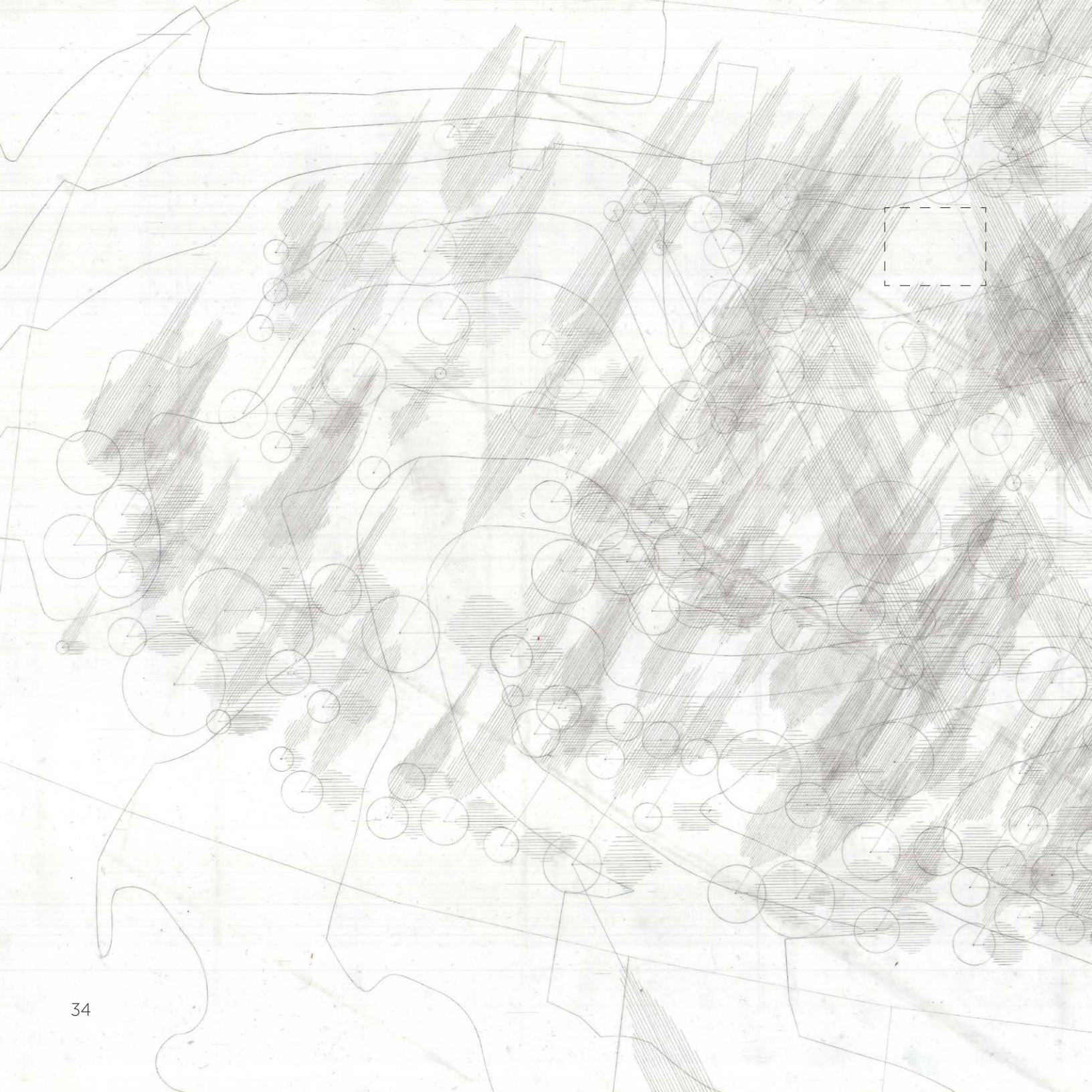


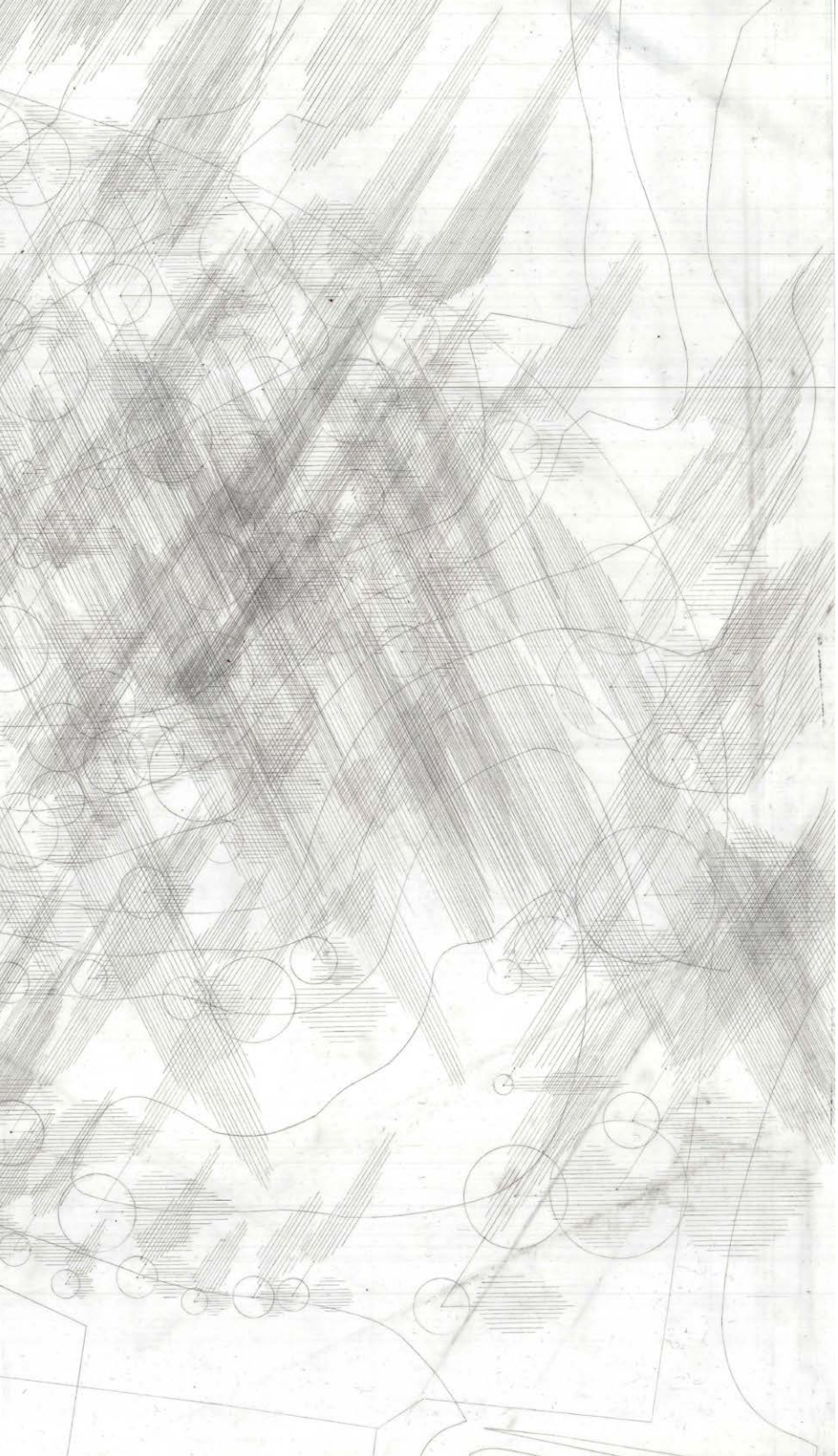


LIGHT CHAPEL

Fall Studio 2015
Instructor: Nathaniel Elberfeld
Skills: Hand drawing, Lasercutting

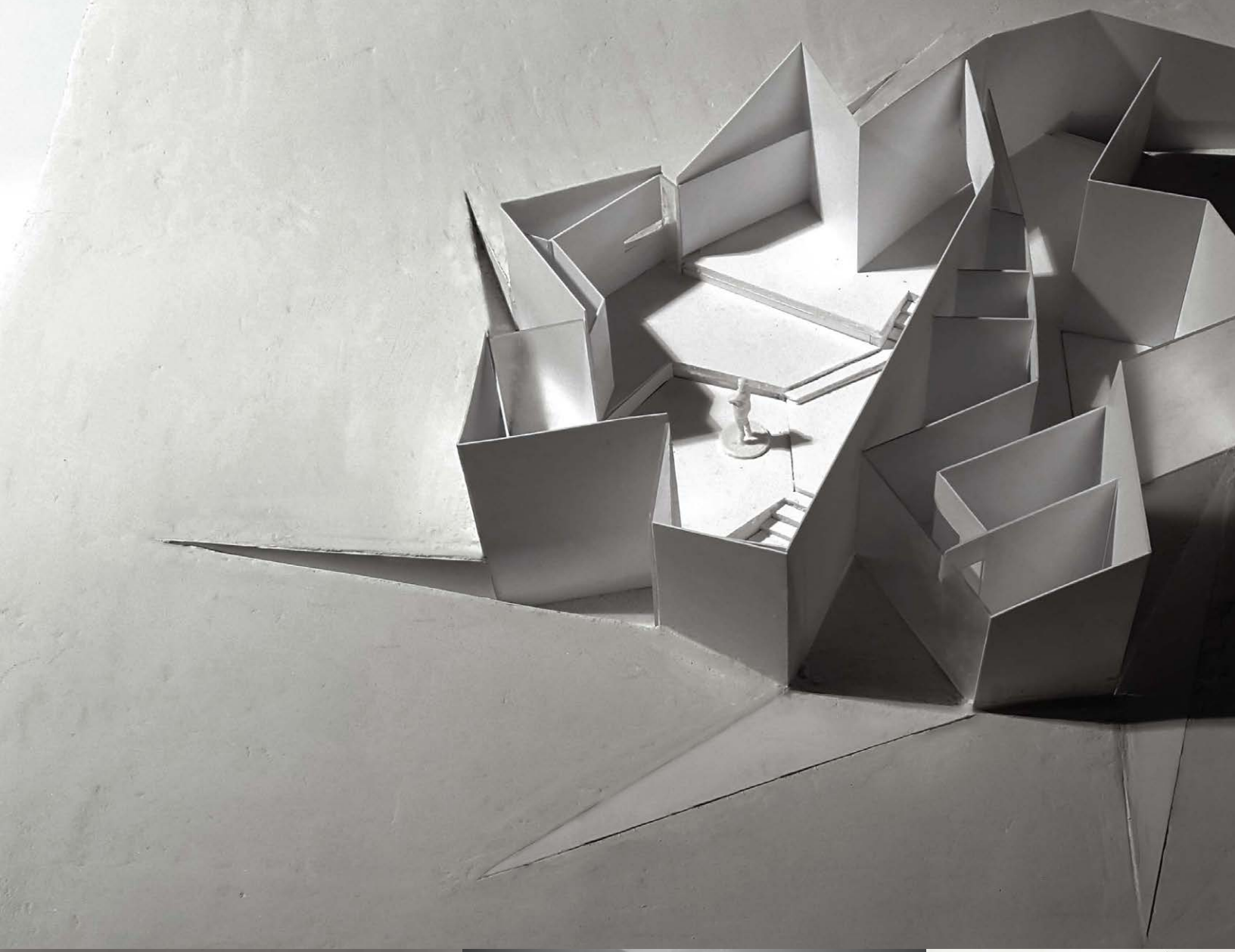
From the previous exploration into the properties of light and shadow, an urban chapel was created to utilize an array of lighting conditions to create a spiritual space.





The site of Concordia Seminary Park possesses a natural landscape and scenery in the urban St. Louis.

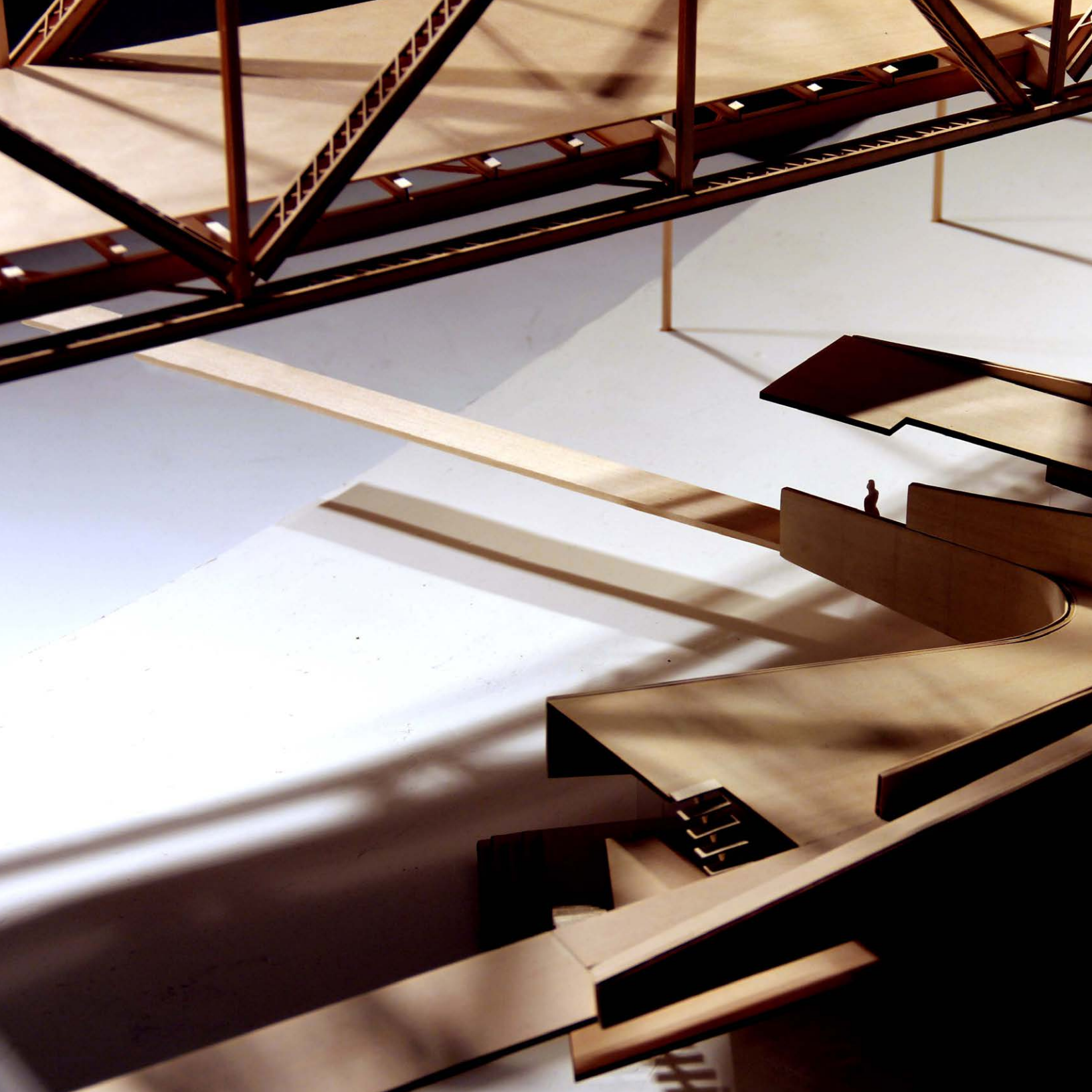
The site drawing on mylar uses the topography and solar angles to map tree shadows that reveal areas of light contrast. The chosen site has the greatest contrast in lighting conditions throughout the day.



The light chapel uses both changing floor elevations and wall angles to provide the most diverse lighting conditions on the site. The main atrium provides a meeting space along the steps for the passersby or long-term visitor.

Within the interior environment, the lighting conditions dictate the private and public space. Dynamic lighting filled lively spaces while softer light bathed areas of refuge.

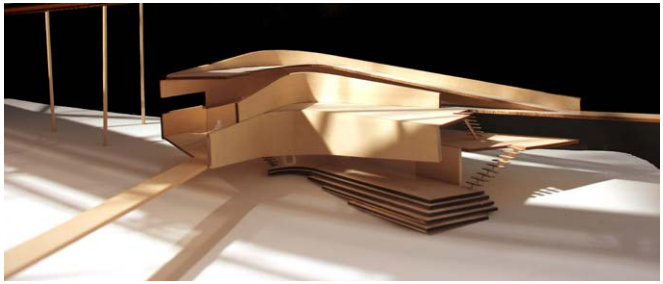
A series of prototype models using an array of angled walls reveal a variety of light conditions during the night and day.

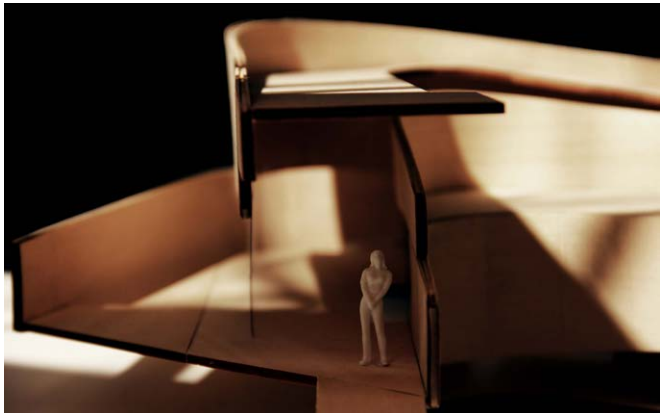


FLOOD CENTER

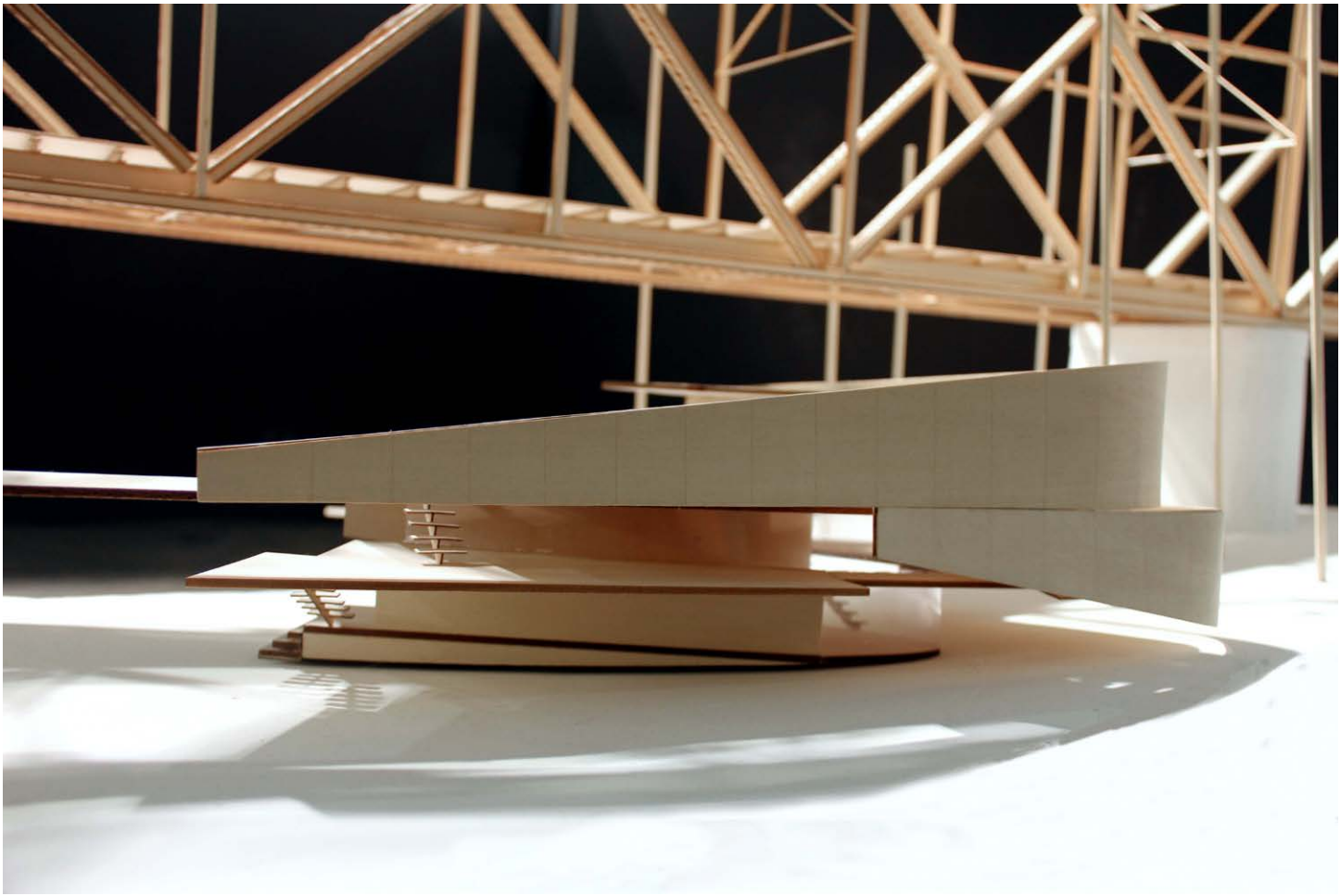
Fall Studio 2016
Instructor: Jason Ward
Skills: Rhino/Grasshopper, ArcMap GIS

Flooding is most powerfully experienced at the level of the flood plain. Branching off from the Chain of Rocks Bridge, the flooding research lab occupies the 500 and 100 year old flood plains.





1:4 MODEL



STUDY

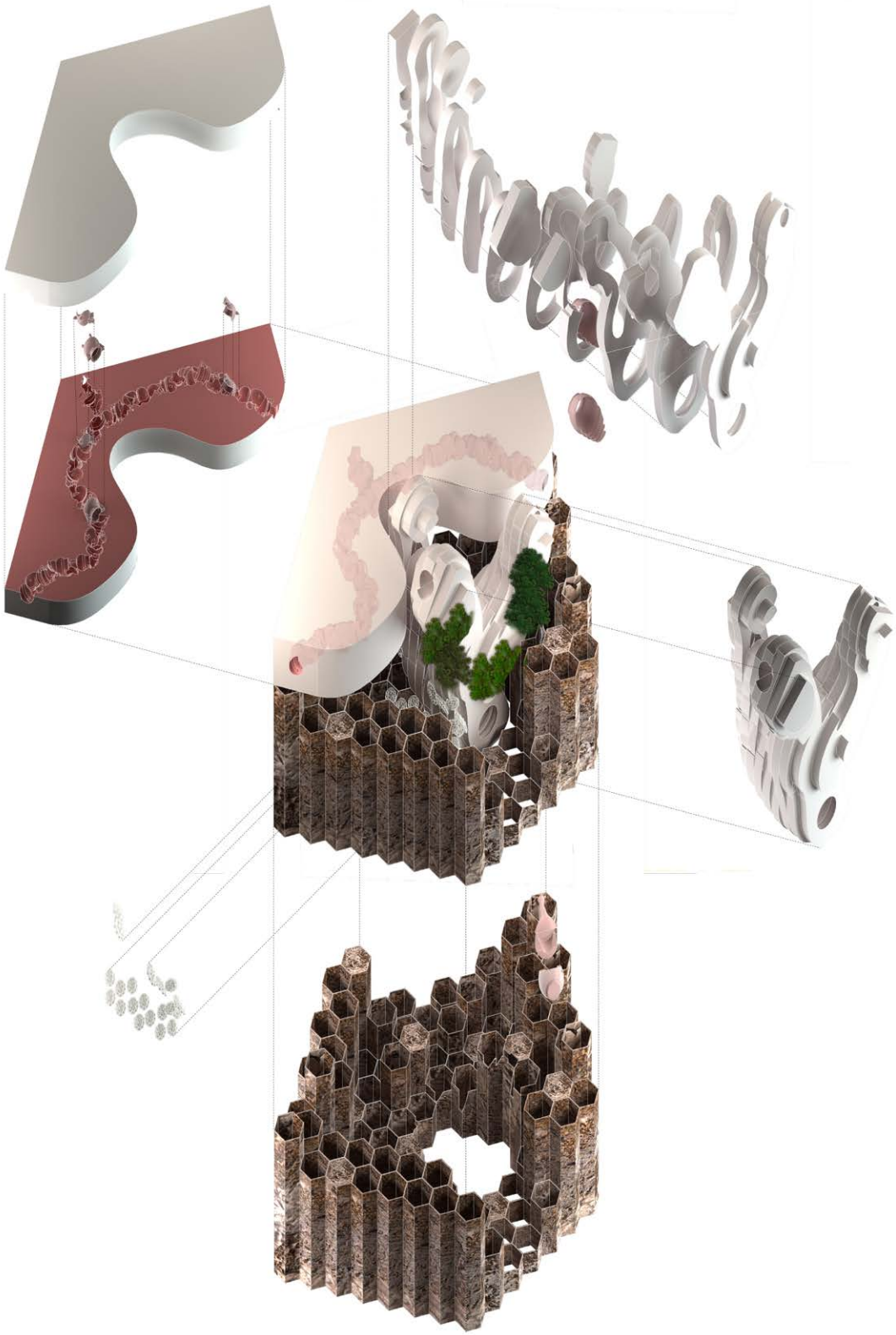
Whereas the bridge seeks to connect people from land to land while avoiding water, the flooding center seeks to connect people to the intersection of land and water: at the floodplain.

The sloping concrete walls frame the observers' views below the horizon, focusing on the 100 year and 500 year flood plain elevation. The bridge also functions as a framing tool from the top-level observation deck while also providing solar shade.

ECO-ORGANISM

Fall Studio 2018 Group Installation
Instructor: Brandt Knapp
Team: Kevin He, Ruichen Xu, Maria Fuentes, Katherine Vavilov
Skills: Vacuum Form, CNC, 3D Print

Derived from organisms of different ecologies, Eco-Organism houses artifacts that have been repurposed to serve as new habitats.

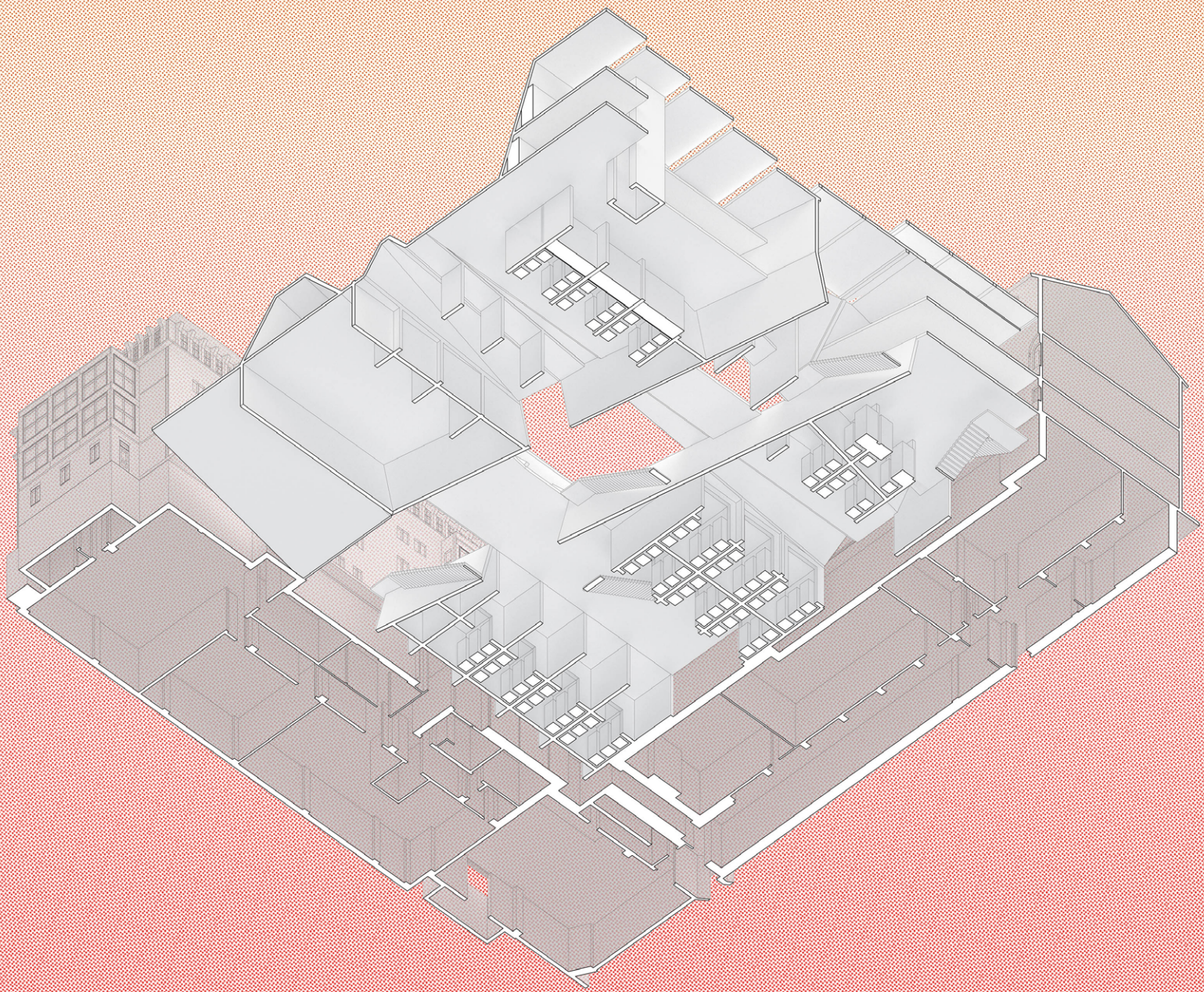


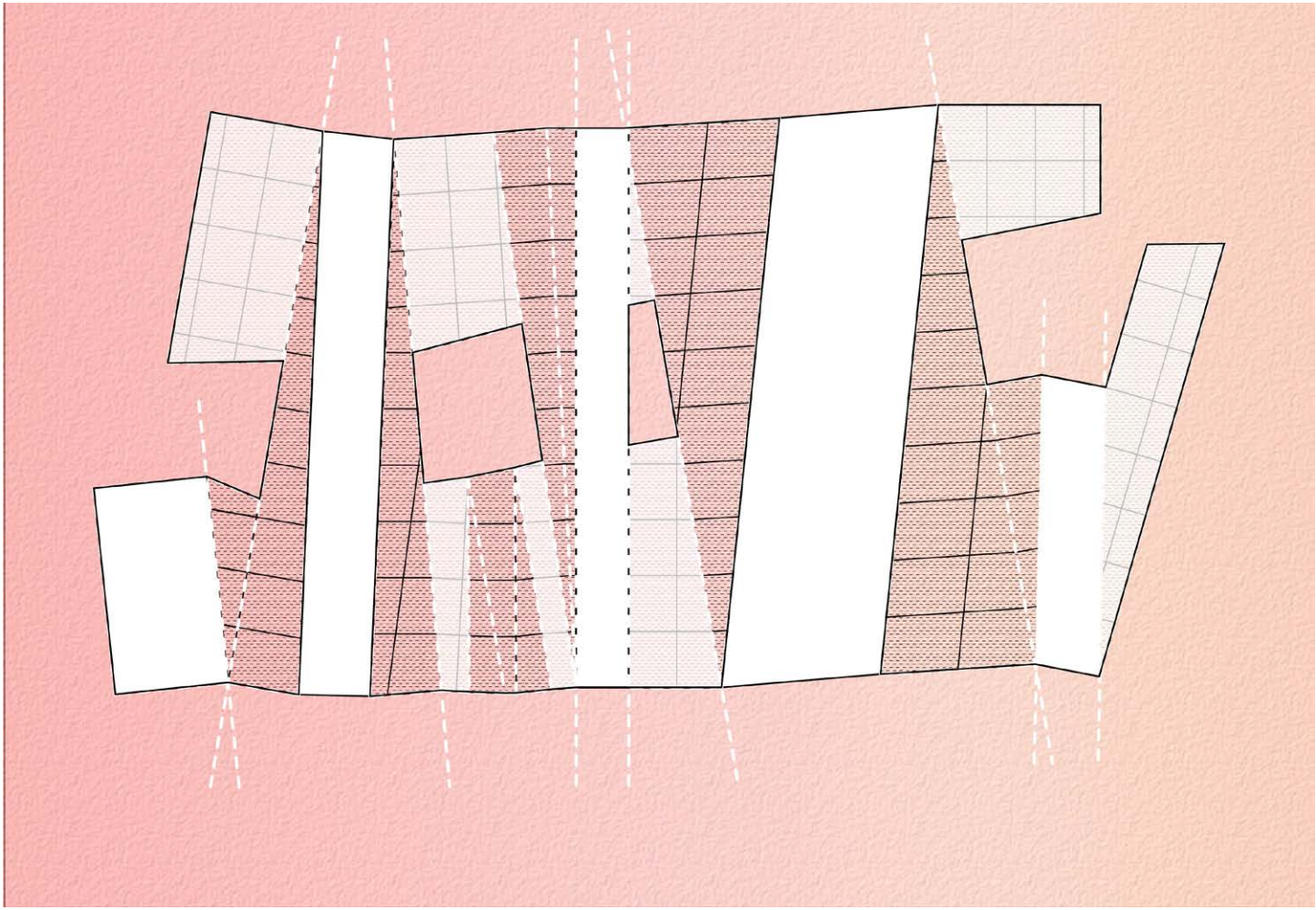
Space is a perceptive vacancy where things should go. Each vessel was created with the purpose to be filled. From the funeral jars to cooking pots to perfume containers, the vessels' original functions were lost as its identity transitioned from that of a manufactured tool to an artifact.

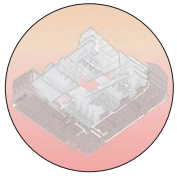
Comparing the vessel from its conception to present day, the geometric form of the vessel is the only continuity. In line with its original function, the vessel's form is repurposed for habitation by a new organism. From the vessels, the location and time period provide a setting in which new ecologies can be created. Based on the organism, the geometry and fabrication process for each piece of the cairotile is sculpted by the form or organizational characteristic of the organism.

Through various studies into the curvature and surface of each vessel, boolean operations were performed to fuse solids and voids. The curves and surfaces were used to create new habitats for the indigenous organisms. The resulting collaged cairo tile model is a fusion of different ecologies that are cross-pollinated and connected by fabrication and form.

The resulting installation was showcased in the Penn Museum as part of an ongoing exhibit on form studies of the original artifacts. Open to the touch for visitors, the Eco-Organism brings a collage of new habitats into the traditional museum environment.



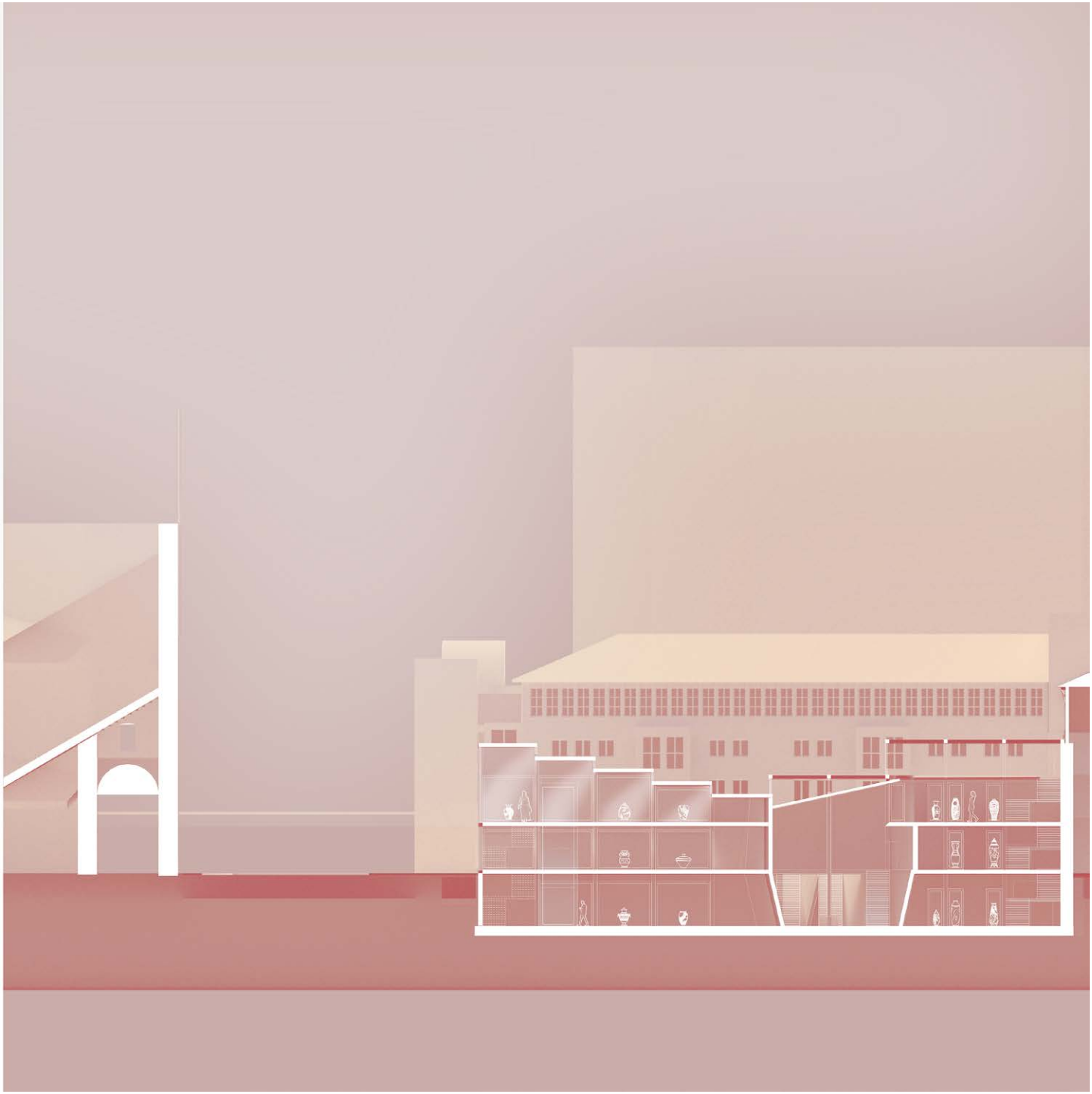


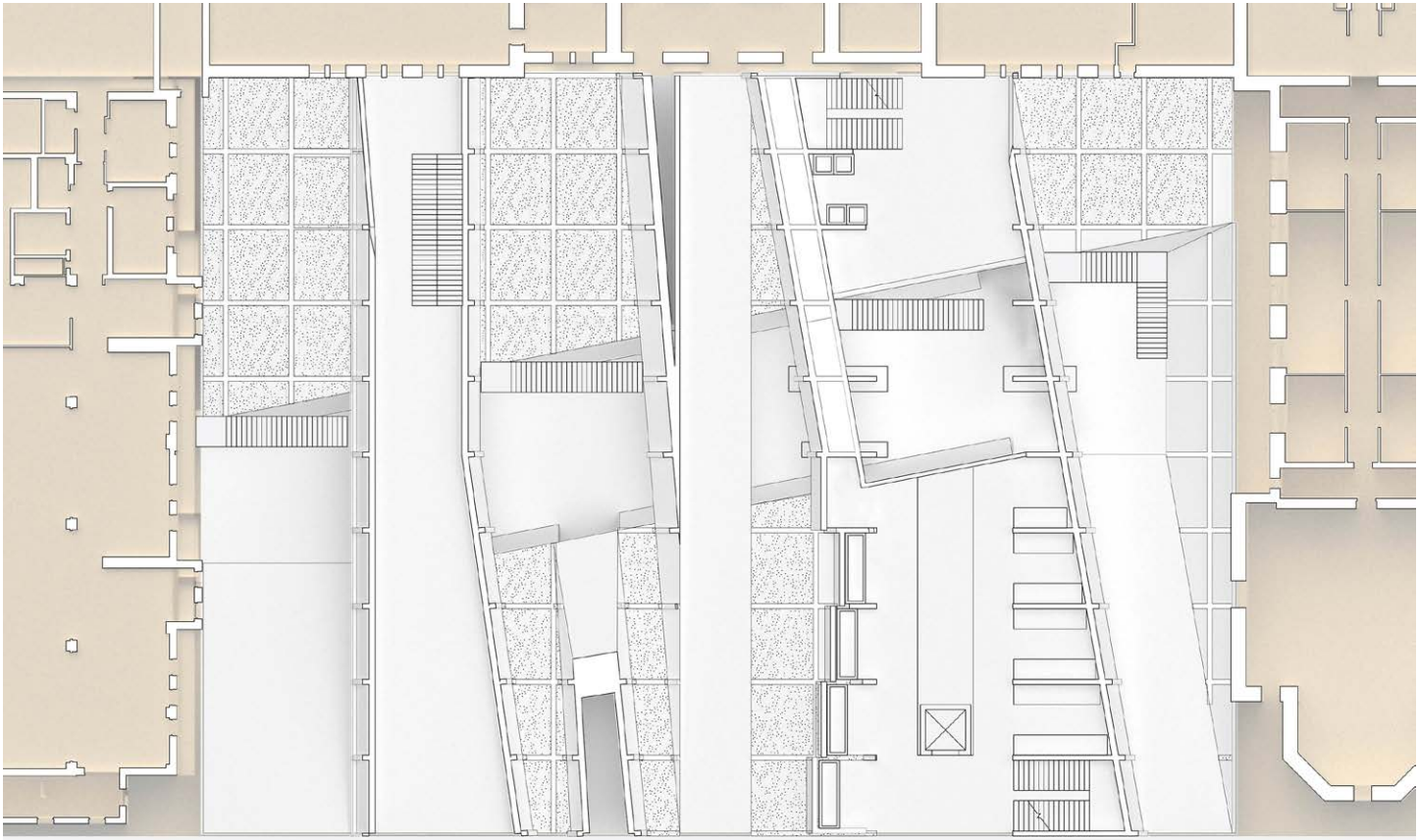


UN-EARTHED ARCHIVE

Spring Studio 2017
Instructor: Brandt Knapp
Skills: Rhino, Vray

In an age where artifacts are moved continents away from their origin and placed in a glass display, returning to the earth plane is the most appropriate.Folding out of the ground, Un-Earthed Archive brings artifacts and visitors into a common plane.





In the field of archeology, it is often the artifact that can transcend time to tell a story of culture and history. However, there are actually two separate types of human interventions that are uncovered during an archeological excavation: artifacts and features. Features are the unremovable objects from a site, namely interventions with the ground. By only retaining the artifacts, we are in fact losing much of the context from which artifacts are excavated from.

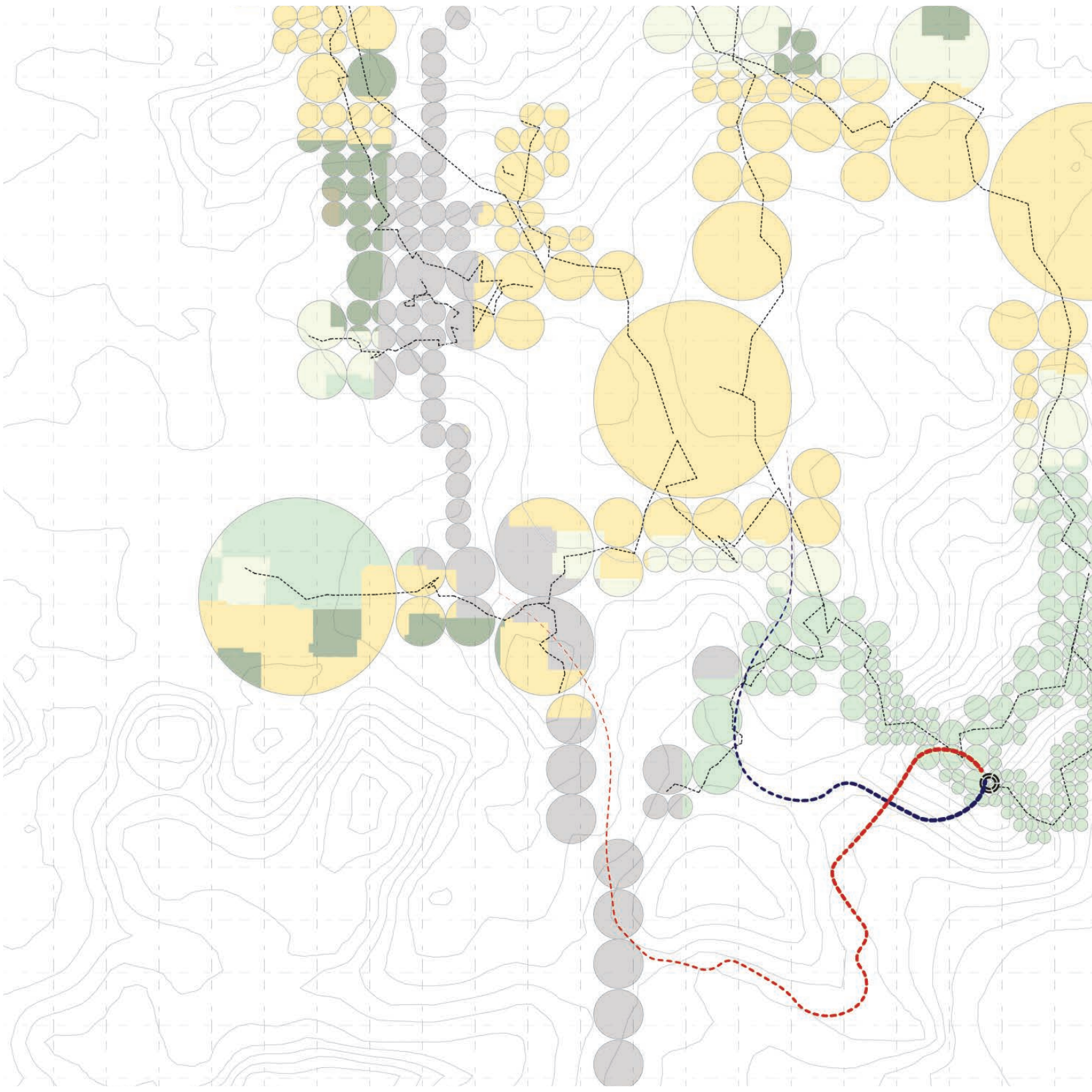
Stemming from the ground, embedded structure rises and dips to create accessible paths and gallery space. Artifacts are placed throughout a structural grid, layered underground, harkening to their original resting place. The cuts through the ground are angled akin to those found in excavation sites; not as dig interventions, but as features. The new ground is not an imitation of an excavation, it is a return to relationship of artifacts and features. With the era of rapid development, we forget earth used to be not only the plane for foundation to sink into, but also the form and structure for the earliest human interventions. The final result is a "new earth" that is similar but not exactly like the real earth: an "un-earth".

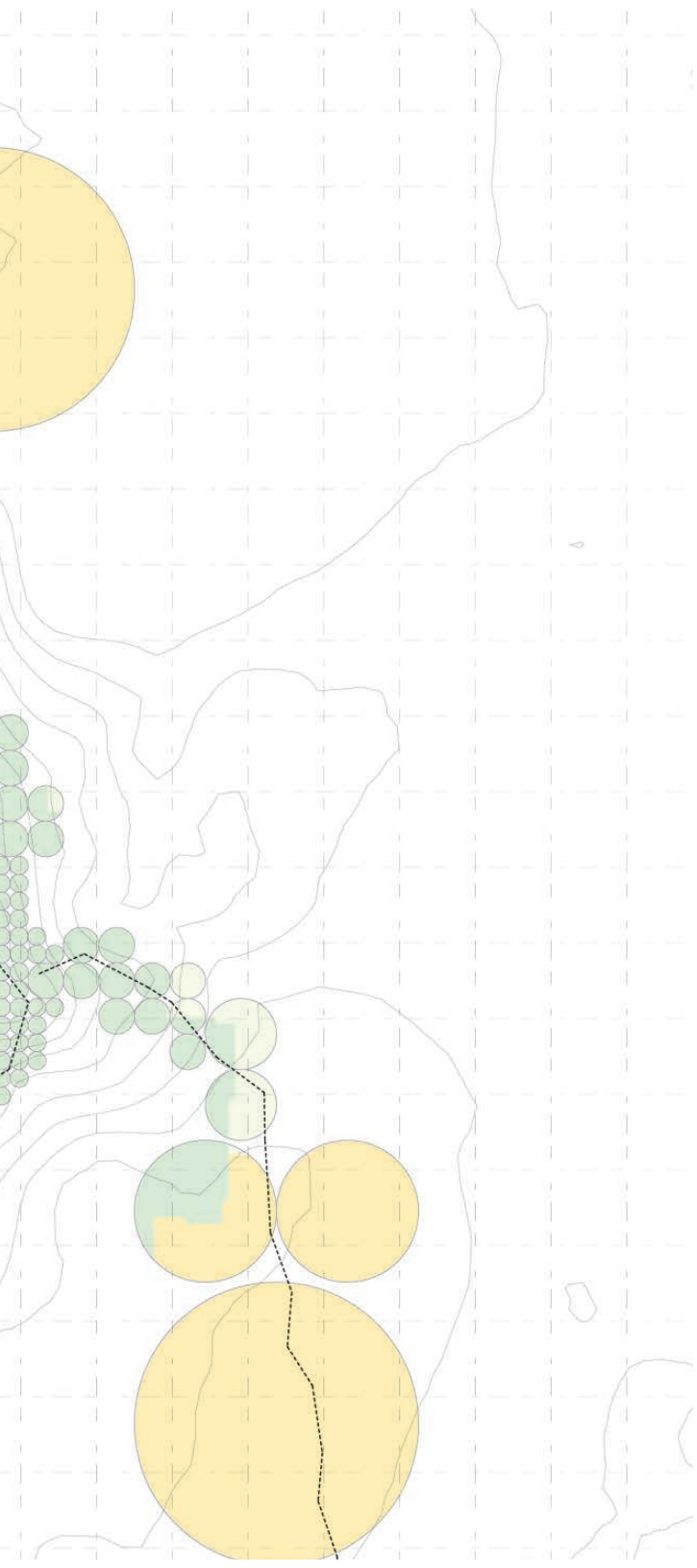
Ground is the vernacular across the world. In every setting, ground is the common language and base from which to work from. While this particular ground does not tell the whole truth and story, it brings an awareness to the story that exists in all grounds, uncovered or hidden.

“THE FIRST SUPPER”

Fall Elective 2019
Instructor: Simon Kim
Skills: After Effects, Photoshop, Casting

An imagined symbiosis between human and non-human creates a new organism that affixes to the face of the user. Filtering and augmenting the interactions between the human and outside environment, the organism forces the human to relearn basic activities such as dininng.





SITE MAP

LEGEND:

DRAINAGE
START END

DEGREE OF SLOPE
FLAT STEEP

CAVE
ENTRY PATH

HUMAN
PATH

BAT
PATH

LAND USE

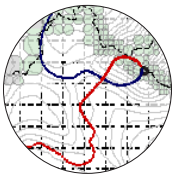
CORN

SOYBEANS

DEVELOPED

FOREST

FIELD



SINKHOLE ECOSYSTEM

Fall Studio 2017
Instructor: Gia Daskalaskis
Skills: ArcGIS, Grasshopper

The fragile environment of a sinkhole plain is created from the intersection of drainage and karst rock. The resulting site conditions are in a delicate balance to preserve the ecosystem that has characterized the sinkhole plain. Cropland, forests, caves, roads, and buildings create the setting of encounter between humans and nature.

Design Variables

Window Wall Ratio

10% — 100%

Louvre Material

No Louvre | Wood (excluding biogenic carbon) | Aluminum | Glass

Louvre Depth

12"

Louvre Spacing

15"

Louvre Height (by Material)

0.5" | 1.75" | 2"

Louvre Thickness (by Material)

NA | 0.25"

Louvre Facade

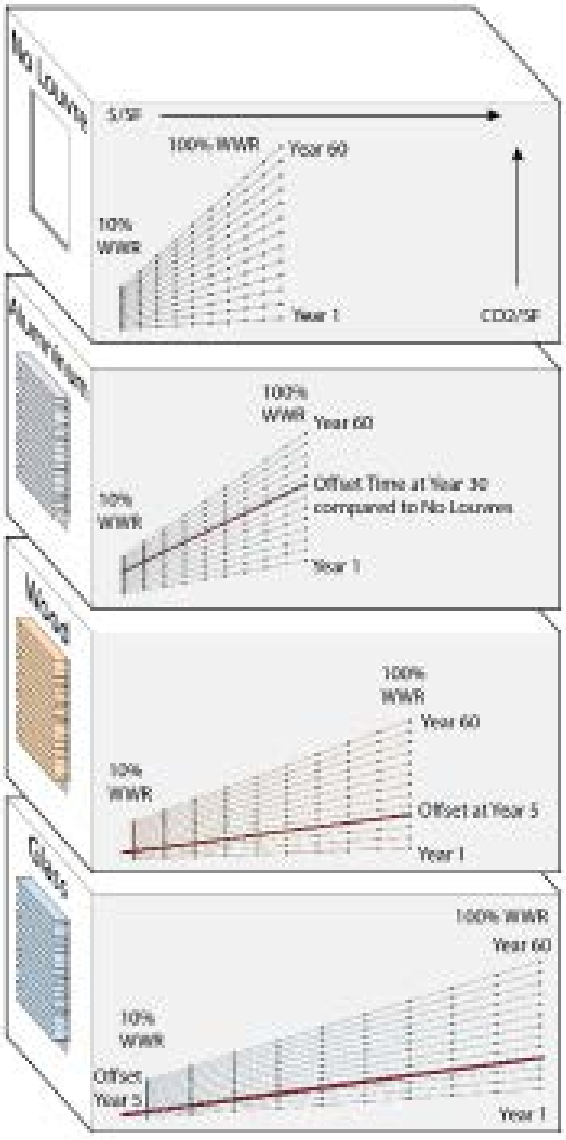
South

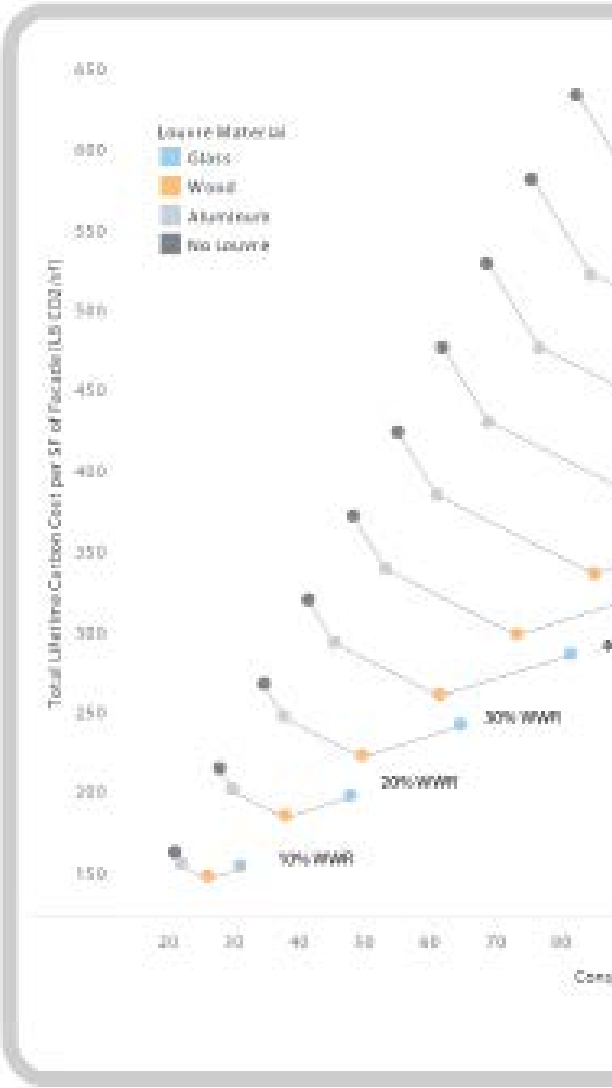
Louvre Orientation

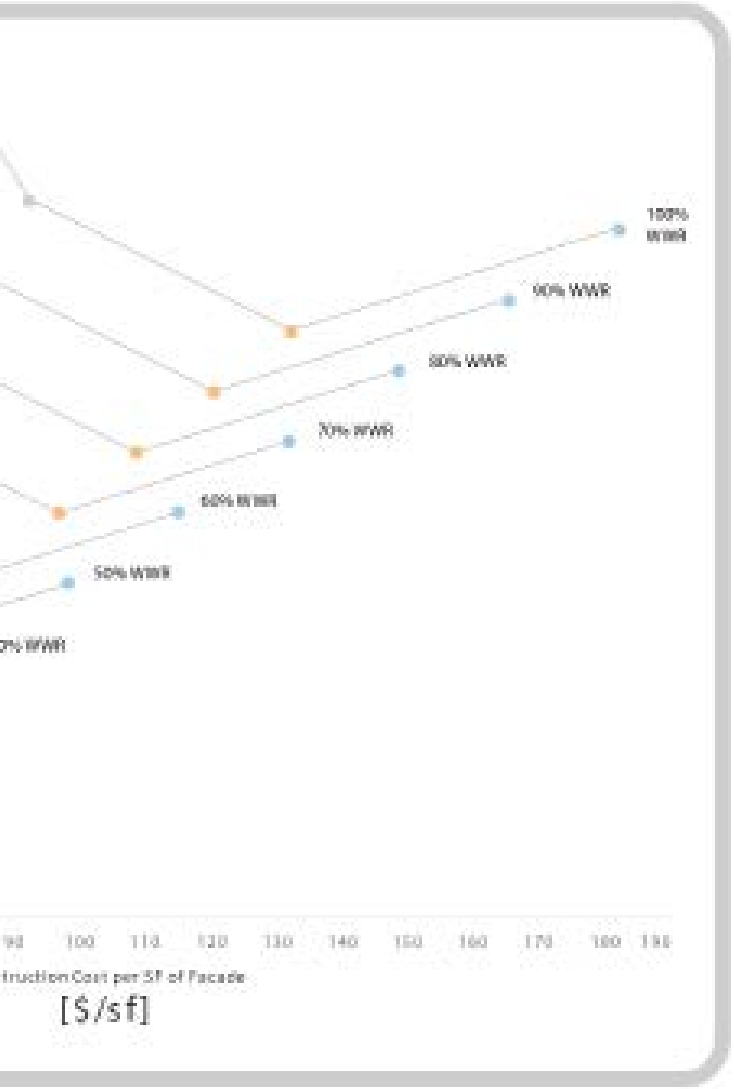
Horizontal

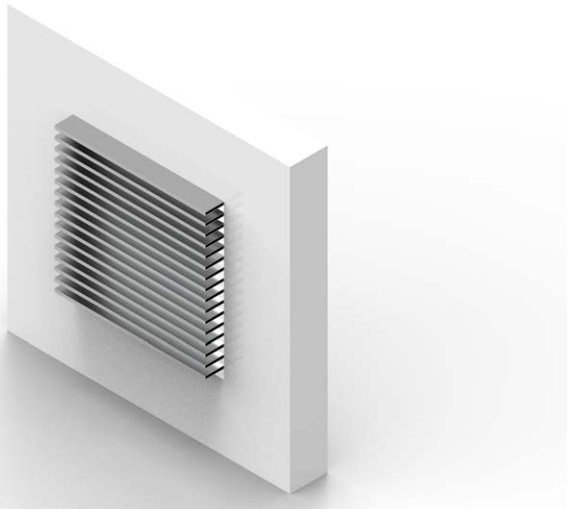
Location

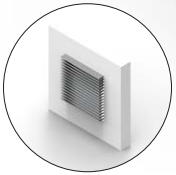
New Orleans











LOUVERS AND WWR SIMULATION

Summer 2019 Research Fellowship
Project Stasio 2019 Winner
Skills: Grasshopper, Diva, Tableau

The graphic displays the design variables in the model, how the shoebox model is laid out, and the final result of the study. The design variable table shows the inputs that generated the results, and they also double as the range of inputs that are available in the parametric grasshopper model. The set of shoebox models show the geometric output of the variables along with respective graphs that detail each louvre material types' relative carbon intensity and cost efficiency. The time of offset (when the total lifetime carbon footprint of a no louvre system exceeds the carbon footprint of a louvre system) is shown as the time when the slope of carbon values from the no louvre results for a given year exceeds the slope of values for louvre results in the same year. The final graph forms a quantitative decision tree for selecting a WWR and louvre type to reach carbon and cost benchmarks. The graph charts 4 different variables: total lifetime carbon cost per sq. ft. of the facade assembly (carbon intensity), construction cost per sq. ft. of the facade assembly (cost efficiency), louvre types, and Window-Wall Ratios. By displaying results through two quantitative axes, the graphic allows for decision-making on account of carbon and cost efficiency.