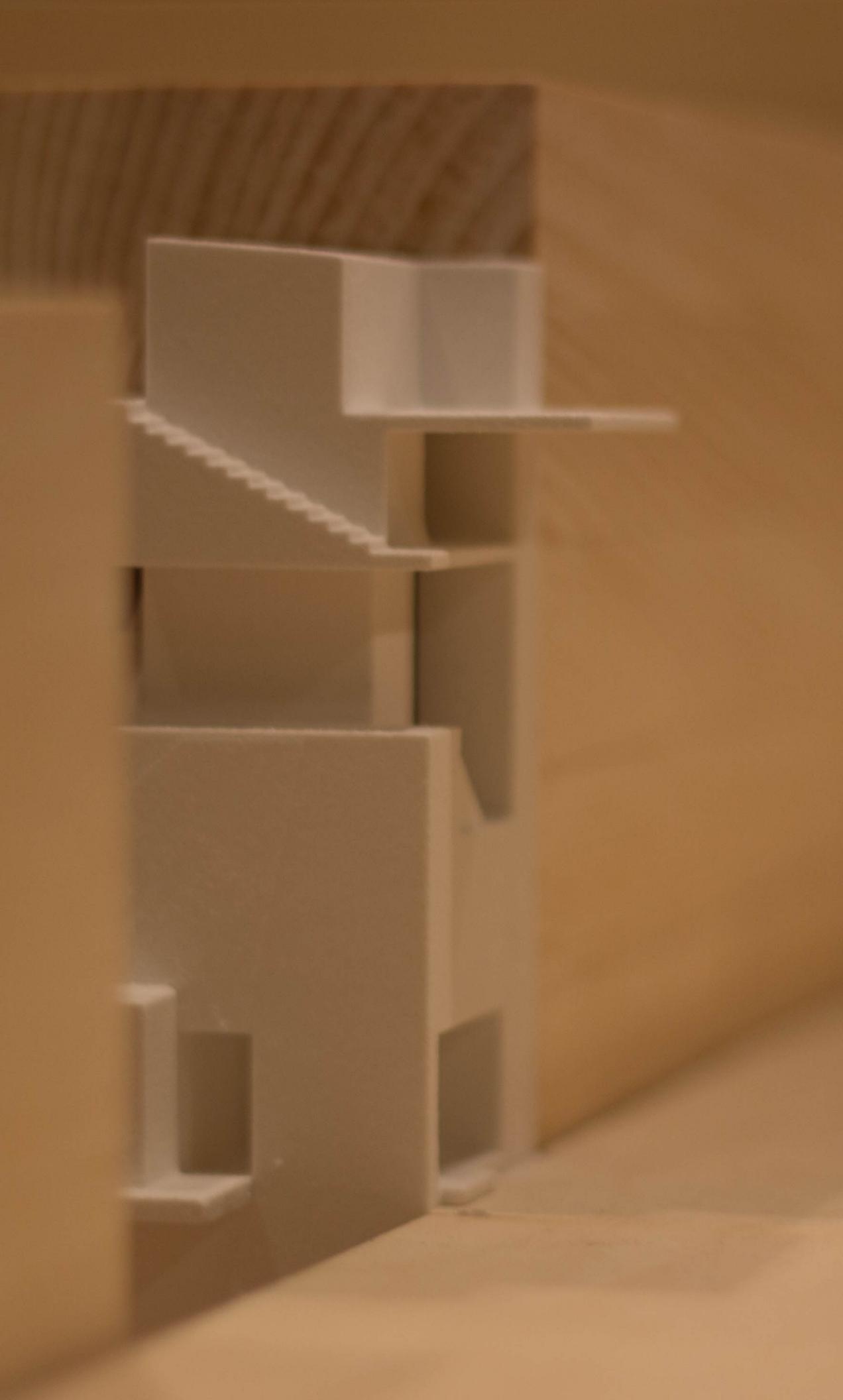


JOIE CHANG

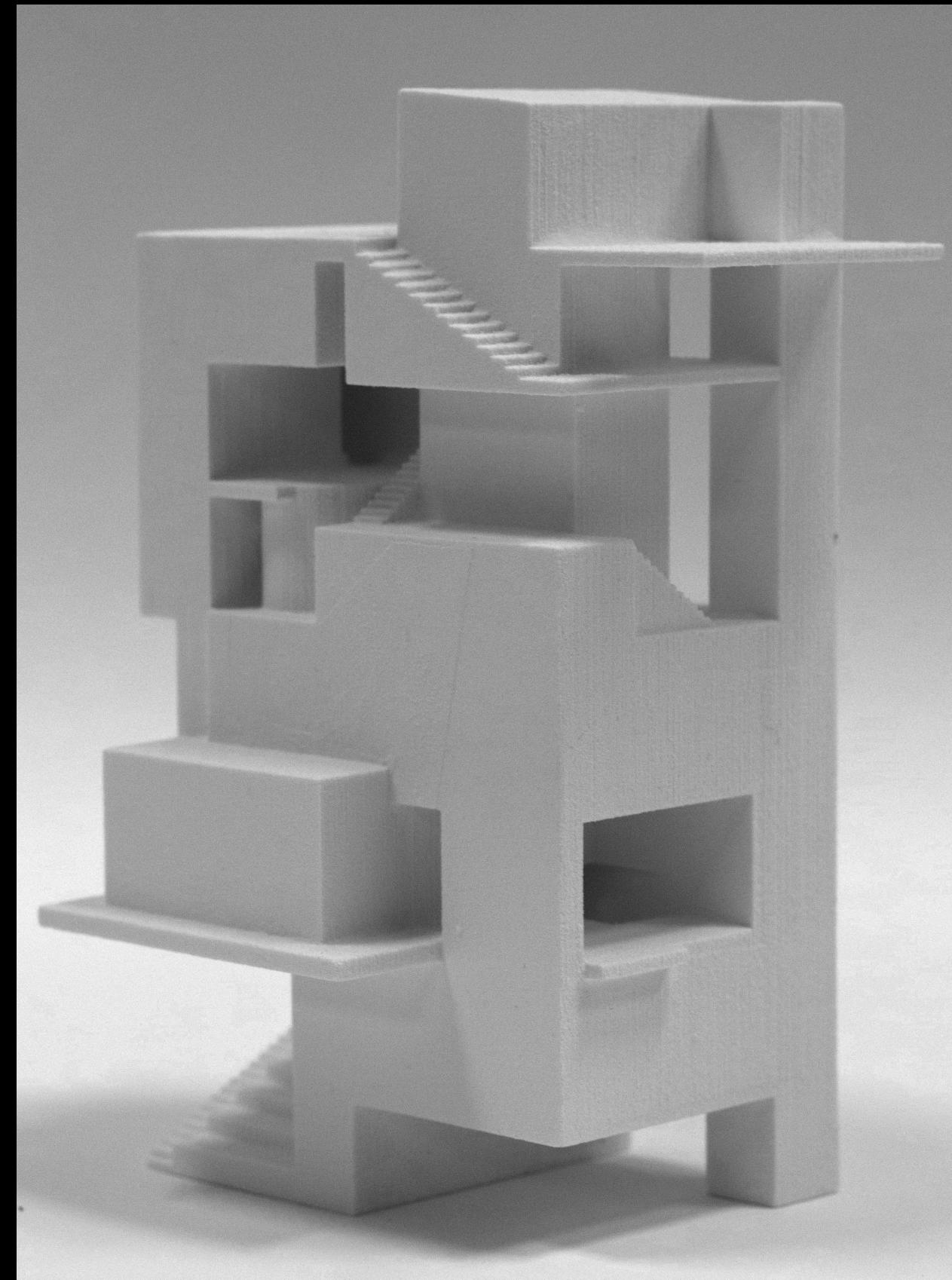
PORTFOLIO

Undergraduate Architecture, Design and Computation
MIT, 2017

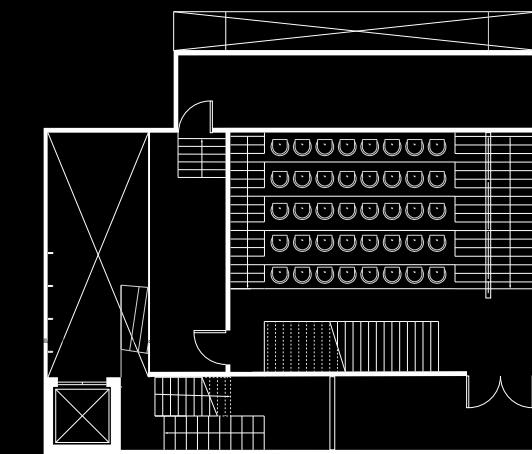
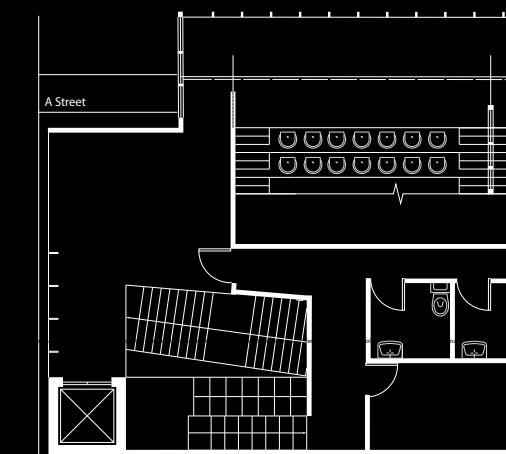
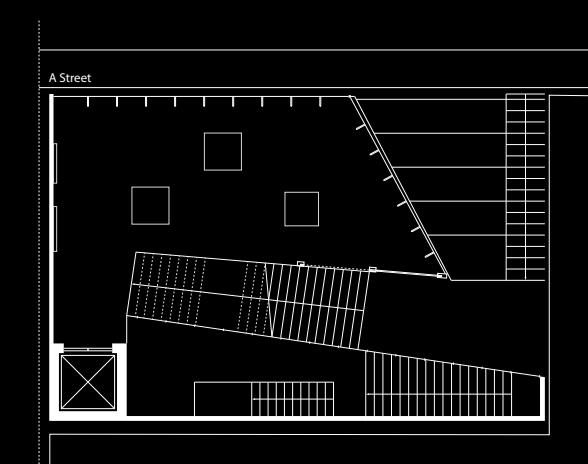


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1/16th Model of Promenade, ZCorp Print



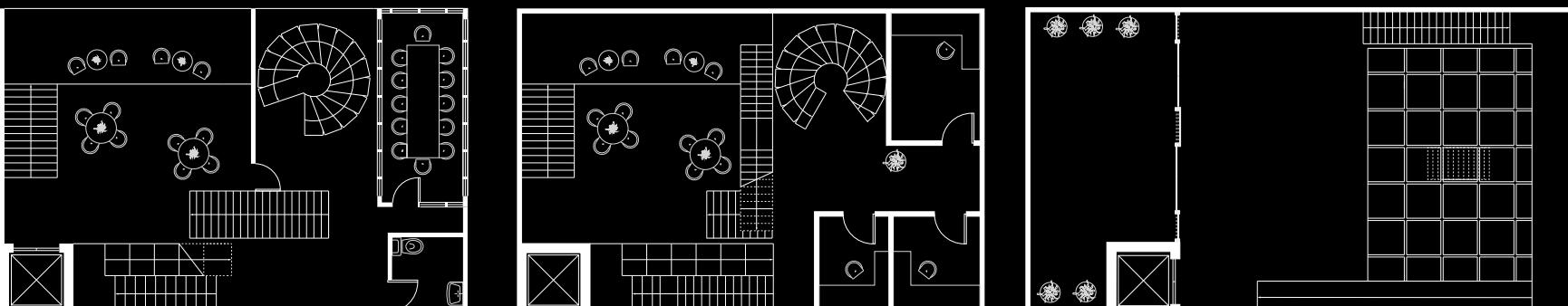
Promenade

4.023 Architecture Design Studio 1, Fall 2015

Given a site in South Boston at the intersection of A and Summer Street, we were to design a public space and art gallery building. Beginning from the two street entrances and elevation differences, I centered the theme of my building on the circulation as an experience.

Beginning at the lower A Street entrance, the building's staircase is open as public space and the temporary art gallery's large glass walls allow it to be viewed while ascending to the Summer Street level. This was to engage the public as it would be possible to see the changes in the gallery display even if the visitor was only using the staircase to go between the two street levels. One of the themes was the integration of circulation into program and rooms. In the performance hall, the public stairs to ascend further into the building or into the hall run along the same rake as the theater steps, blending the two spaces and keeping the hall an open experience.

The cafe similarly becomes an interesting space carved out by circulation, with the stairs wrapping around and giving two distinct levels of occupation. At the very top of Promenade is the public terrace intermingled with a permanent art gallery. The piece displayed was to be Do Ho Suh's Staircase V, a replica of his New York apartment stair in translucent red fabric, hanging from the ceiling.

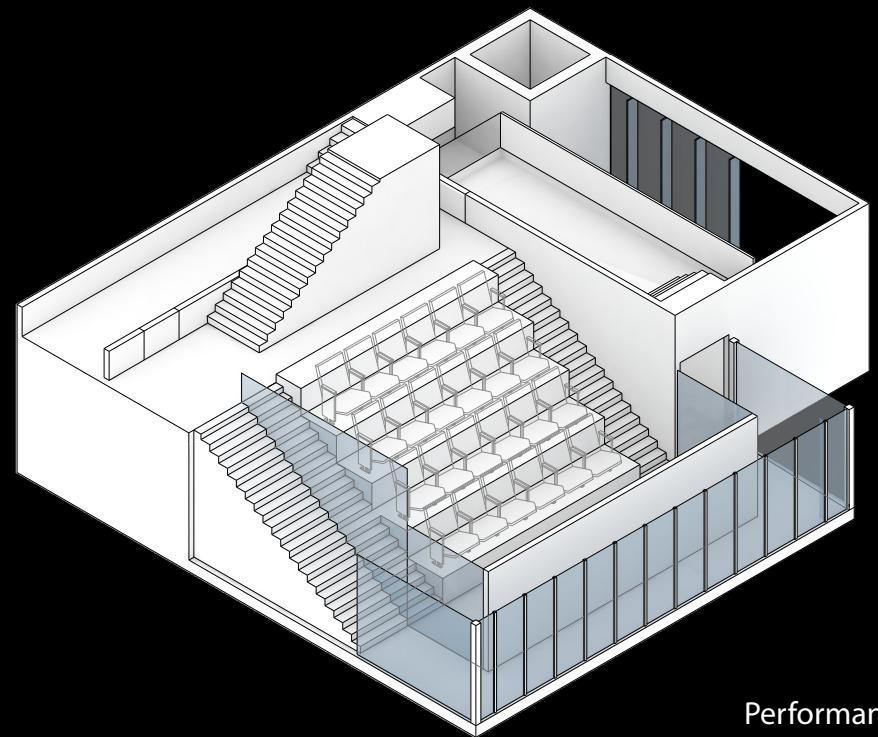


Plans

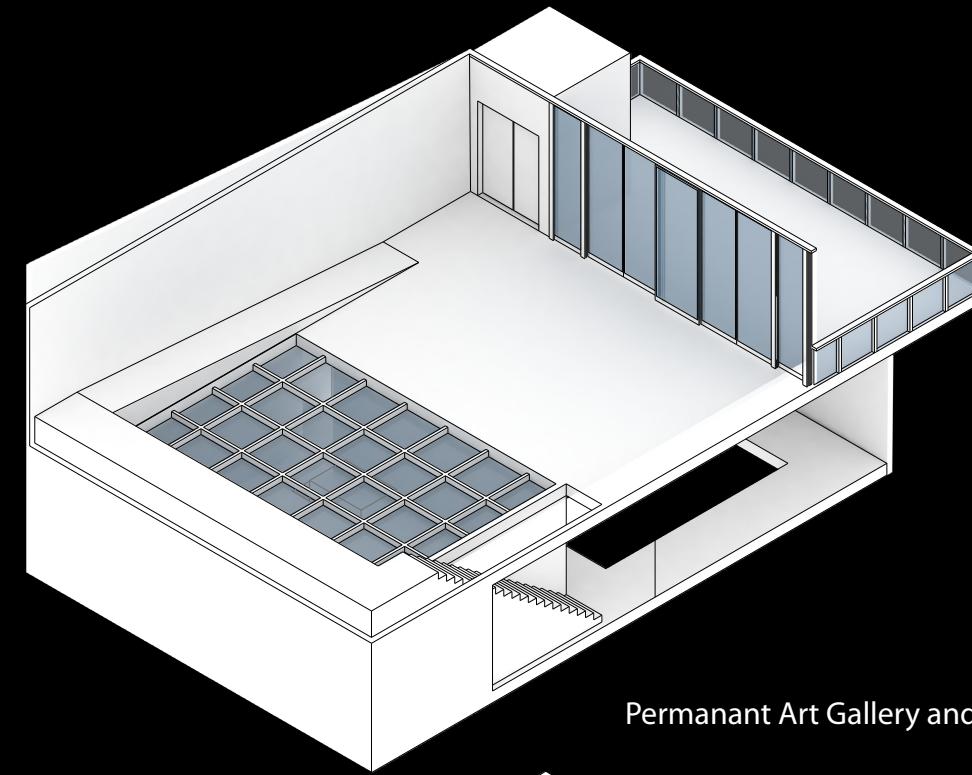


A Street

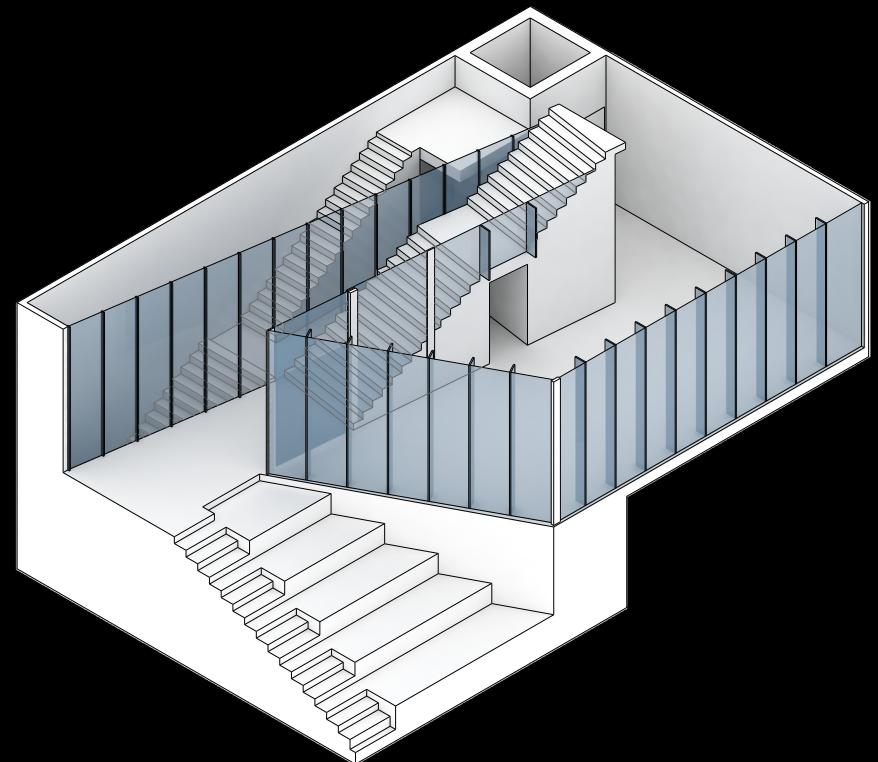
Rendered Axonometric Views



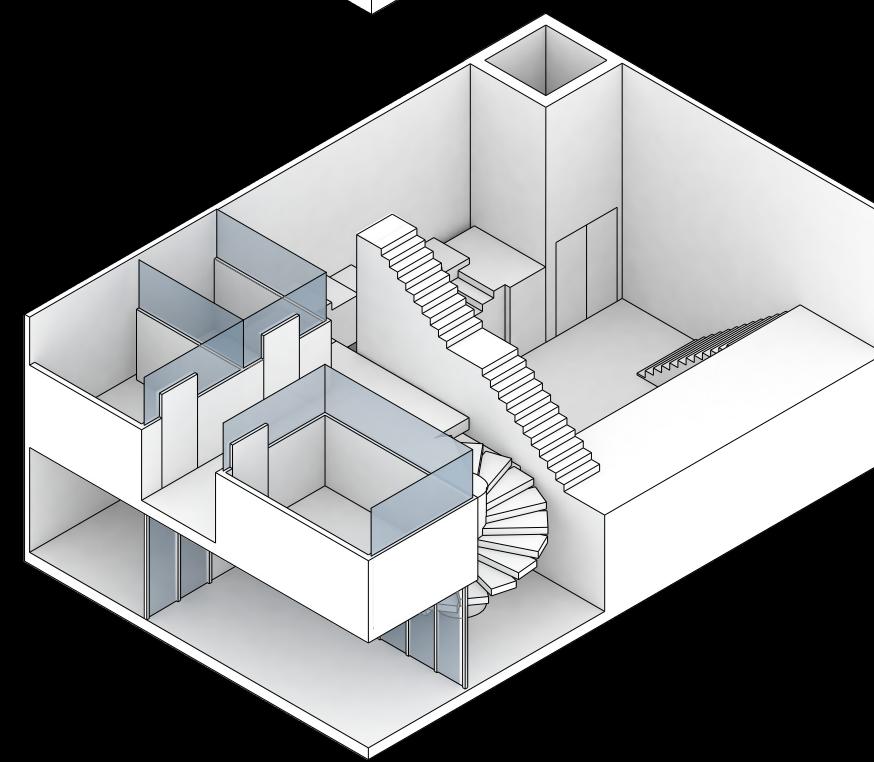
Performance Hall



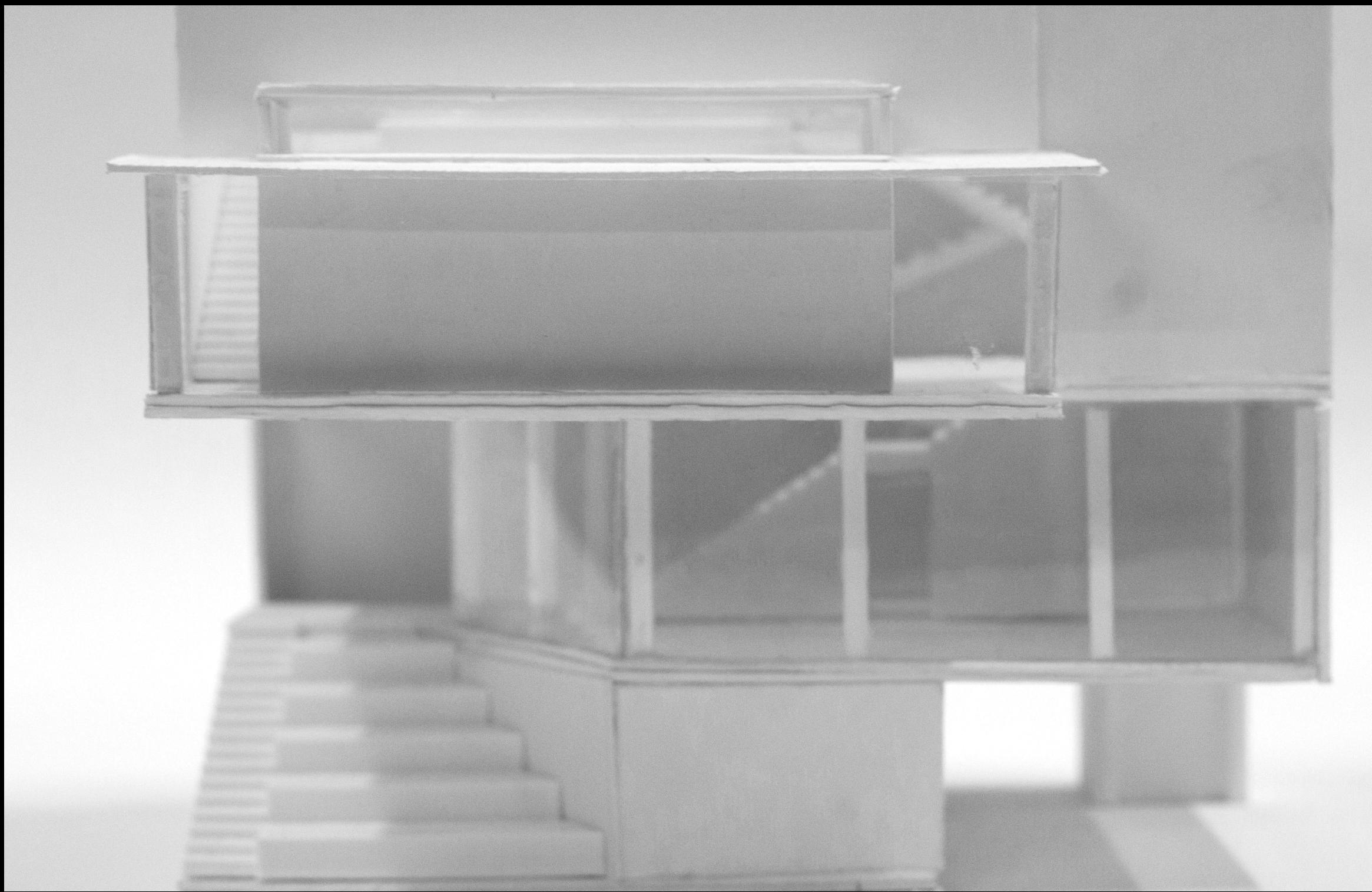
Permanant Art Gallery and Terrace



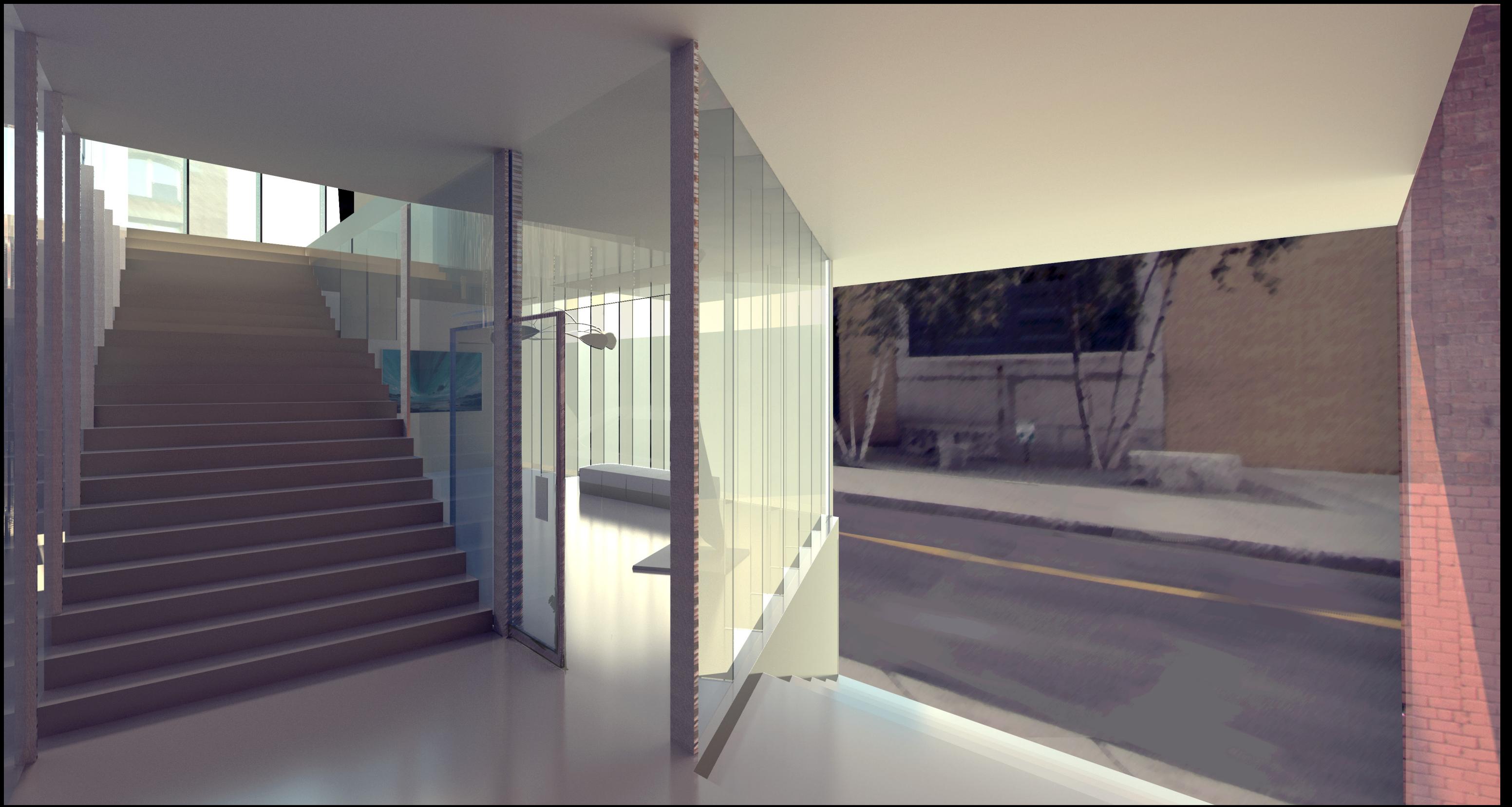
Temporary Art Gallery



Cafe and Offices



1/8th Model, Paper, Acrylic, Styrene (Performance Hall + Temporary Art Gallery Detail)



Temporary Art Gallery, Render



Performance Hall, Render



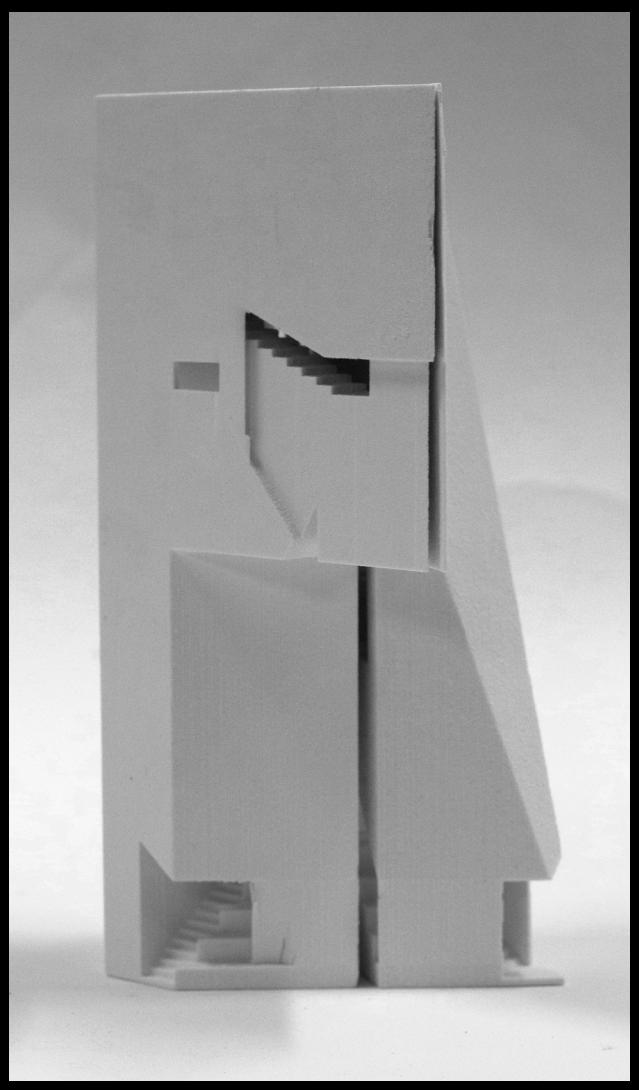
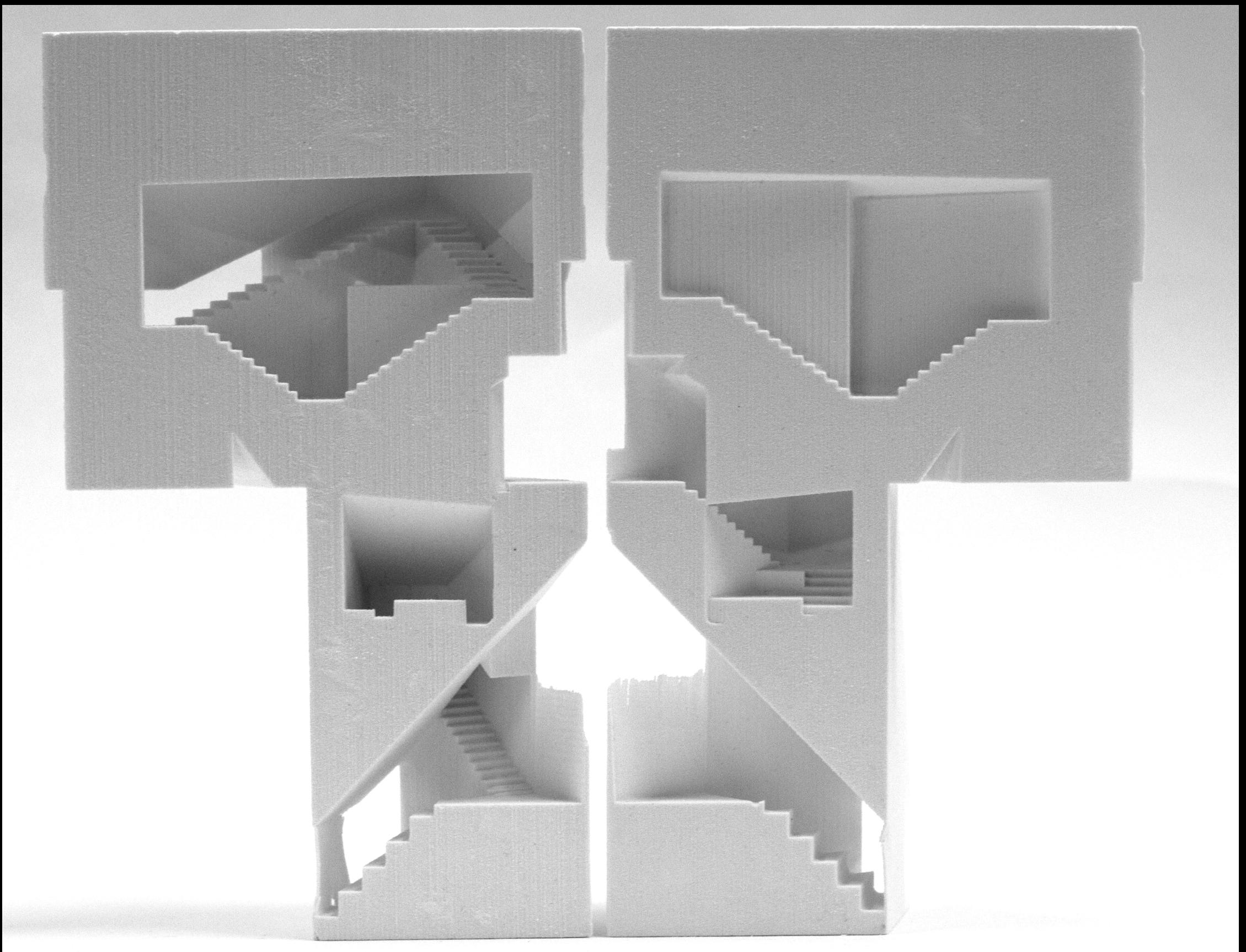


Broadened Drawing-Scape

UROP with the Design and Computation Group, Fall 2015

The Broadened Drawing-Scape project seeks to intermarry the intuitive and 'painterly' method of hand drawing with the high-precision and 'designerly' method of algorithmic drawing. The system intends to create a new process that preserves the richness and tactility of hand drawing and utilizes the powerful replication and editing tools of coding.

Under the guidance and in collaboration with Onur Yuce Gun, I scripted in Processing code that would use camera capture and be able to extract primitives from hand drawing. These primitives could then be manipulated in the code environment with commands I scripted such as arrays, rotations, and scaling. Then the design gets passed back to the hand drawing and the process continues. The entire process of manipulating code and doing drawings led us to new understandings of pattern usage, shape grammar, and new ways of creating drawings. The watercolor samples are examples of works produced through a singular primitive and run through this drawing process in the Broadened Drawing-Scape several times.



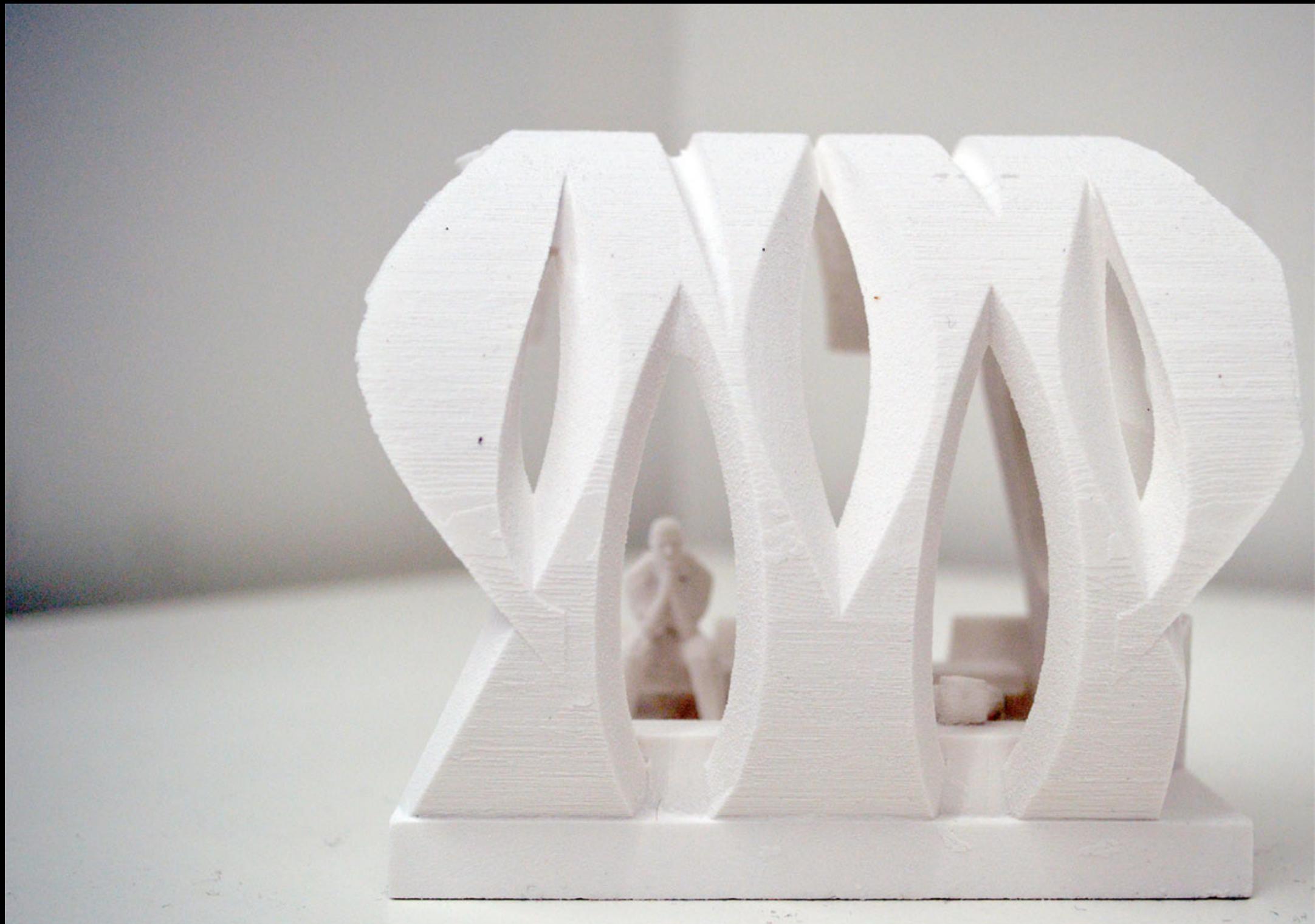


A Room with a View

4.023 Architecture Design Studio 1, Fall 2015

Constrained by an exterior form that was derived from a Japanese joint, I designed a series of rooms with specific views in mind. The project was an exercise in subtraction and carving out voids to create space, instead of through the placement of walls.

There were four rooms in total, a room with a view of the sky, one with a view of the horizon, one with a view of the ground, and finally one with natural light but no view. The progression of my circulation because the sky to the void to the horizon to the ground. Due to the limited space footprint and the heights of ascension, this project became a negotiation of stair space. In a twist, I then challenged the idea that stairs and rooms were separate entities. I asked if rooms then could be vehicles for upward motion or that stairs could be occupiable space with a program. The resulting subtraction created these sloped rooms that flowed from the top to the bottom, all the while directing the views necessary.

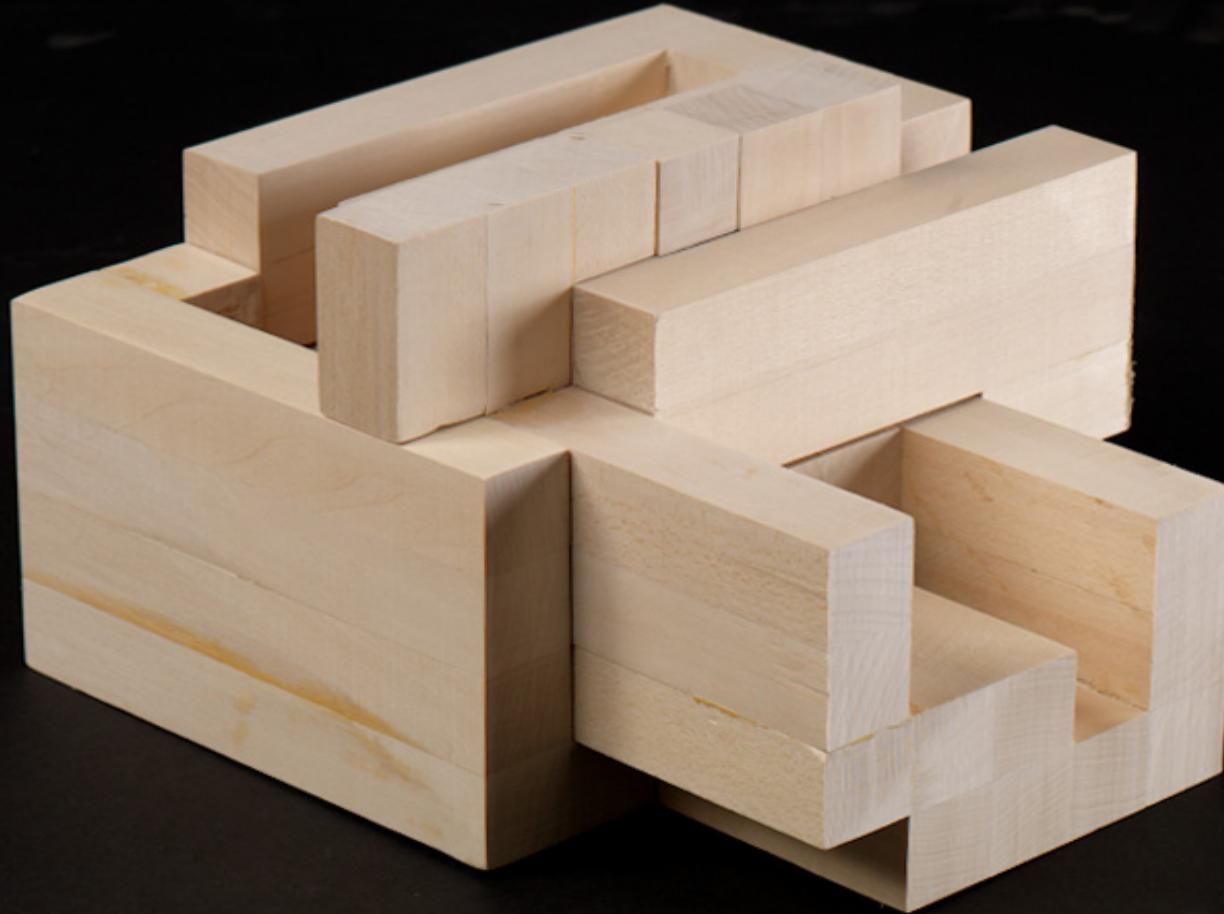


Ohm Bus Shelter

4.500 Intro to Geometric Modeling, Fall 2015

The bus shelter design provides shelter while still containing natural daylighting and evokes the environment around it. The ribs of the bus shelter were meant to be reflective and the space in between the ribs would be glass in order to frame the view that the inhabitants of the bus shelter would see. The ability to sit safely in the bus shelter with ones' back to the glass would nestle its inhabitants in any rain, snow, or sun.

The bus shelter involved geometric modeling in Rhino before importing to 3DS Max in order to make the render. This image represents my first experiences with rendering my own models and taught me the importance of lighting and staging in visualization an architectural space. Finally, the physical model was a powder 3D print from ZCorp and demonstrated my intent with the apertures and framing in the bus station.



Wooden Puzzle Cube

4.011 Intro to Architectural Design, Spring 2014

This wooden puzzle cube began as an exercise in abstracted movement. By rendering body movement of the basic salsa step into lines, I created the cuts that would determine the cube faces. By building small foam models, I iterated from 3" to 6" scale to create an interlocking and expanding pattern. The idea was that the cube would unfold and expand in a series of controlled movements that could be representative of the body motion it encapsulated.

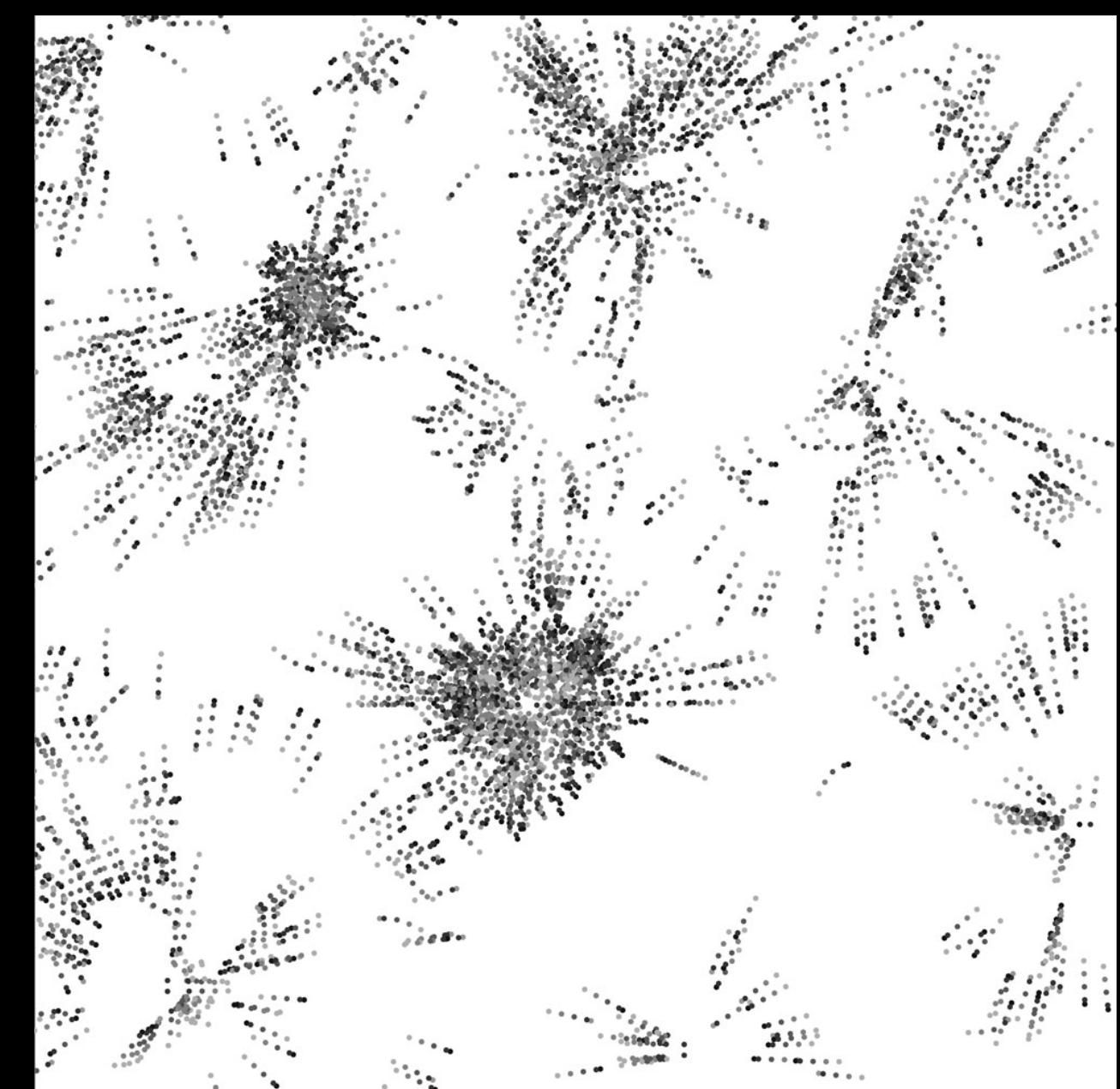
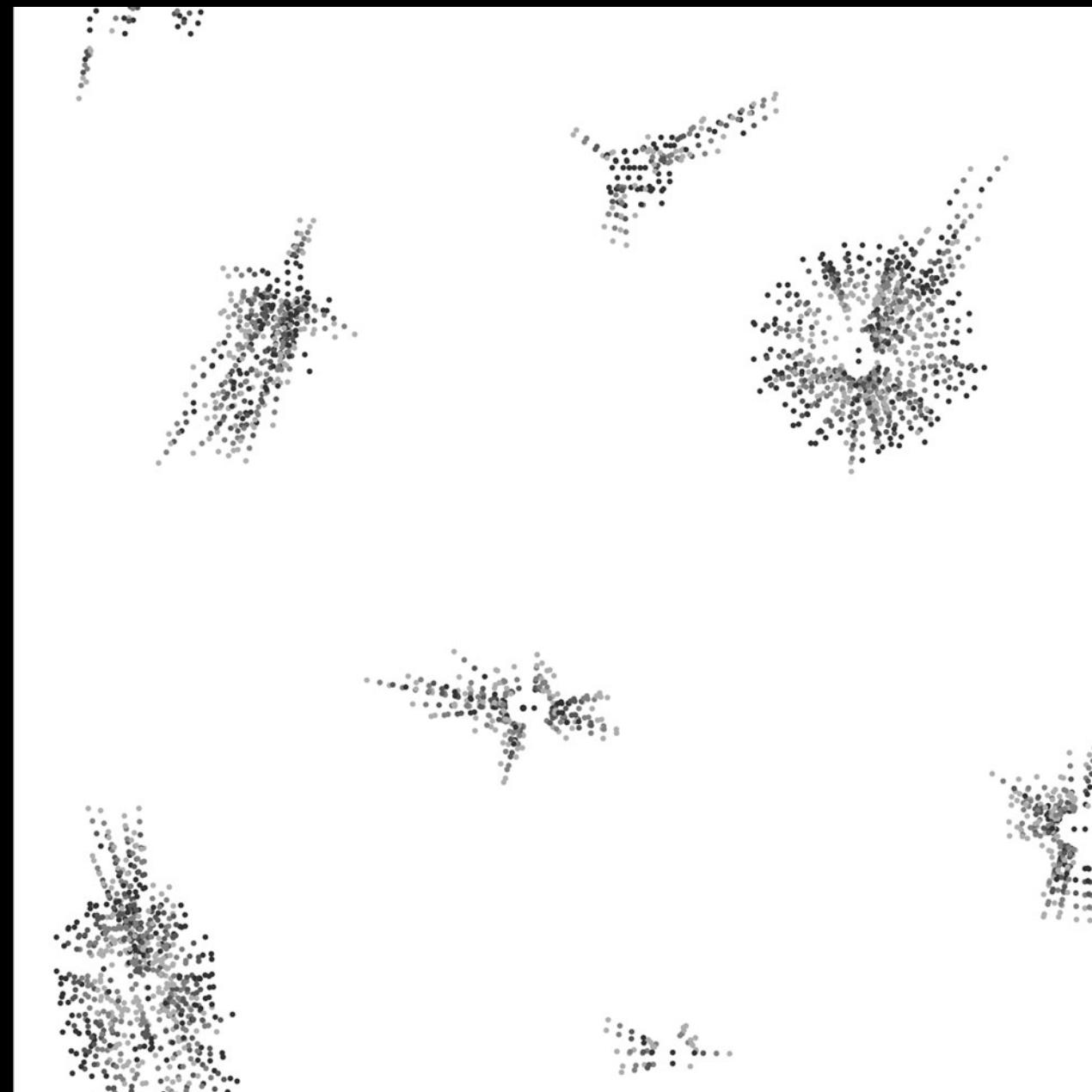
My cube consisted of three interlocking pieces that expanded linearly in two axes like an L-shaped motion to reveal hidden loops and steps in the cube. While being constrained by the face cuts and the regular nature of the material, I found solutions that created positive and negative spaces mirroring each other. I was also challenged on the materiality and craft of the project. Having to transition between foam and wood and between scales both pushed the design and created a number of challenges to overcome.

Self-Healing Hydrogels Simulation System

4.022 Architectural Design Foundations, Spring 2015

By investigating the behaviors of self-healing hydrogels, I created a visualization that would represent the equilibrium that hydrogen chains would need to 'self-heal' themselves. The principal was that the particles or mutables each contain a charge. As the limbs of the chain, they would bond from a parent grounding immutable in series.

The formed chain of mutables needed to maintain an equilibrium of charge to stay 'healed' else the bond would dissolve. By sending the reaction back into motion and breaking the chain, the mutables could form new, different arrangements with different immutables. Because not all bonds would dissolve simultaneously, dynamic chain reactions could be seen and the distance of neighboring chains had a direct effect on a chains' performance.



The system was written and visualized in Processing, a Java based language geared towards visualization, and is controllable between the threshold of equilibrium, number of mutables and immutables, velocity of the dissolving bond, etc. The series of images below are sequential frames of the program running and oscillating between equilibrium and reaction.

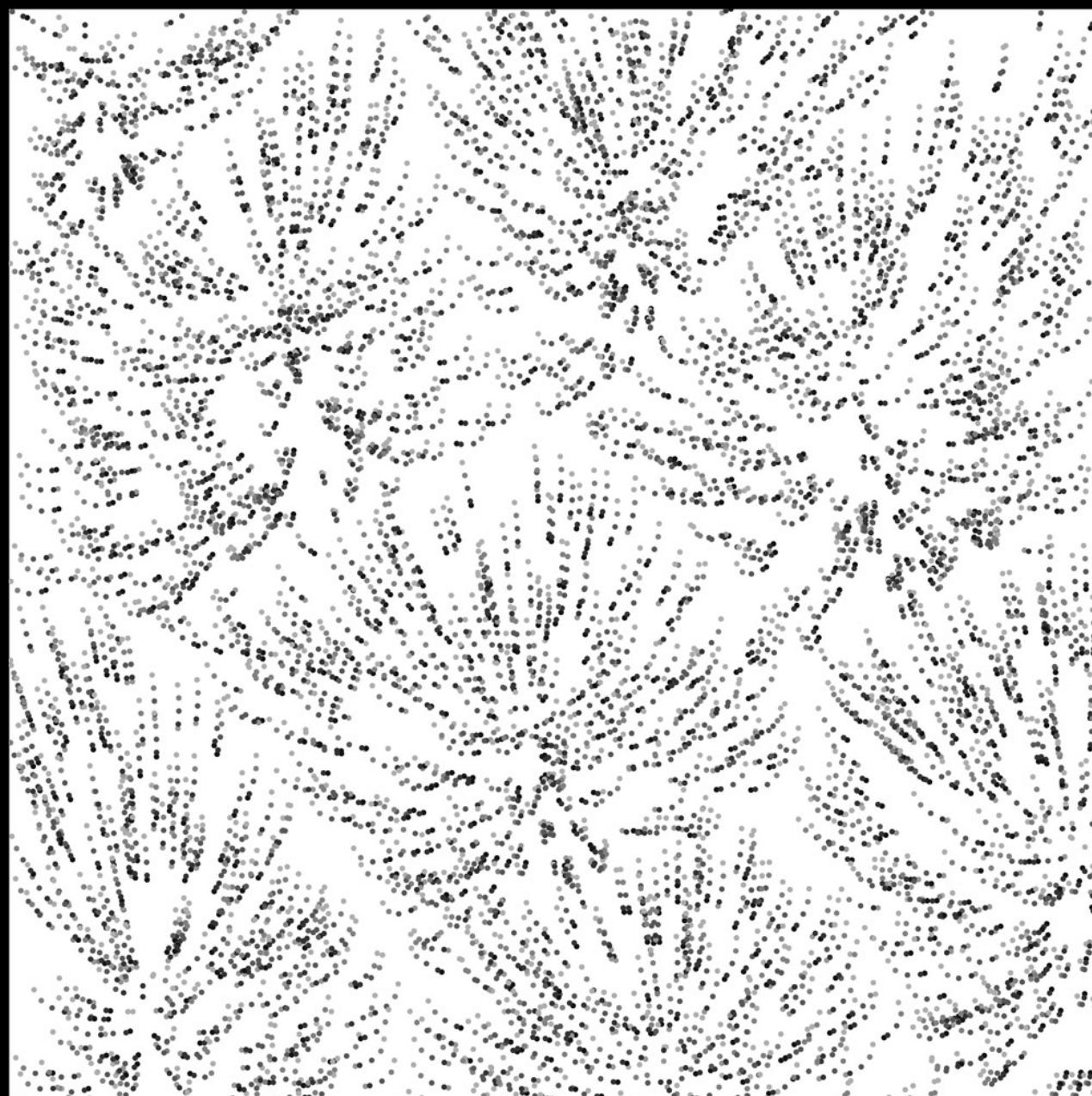
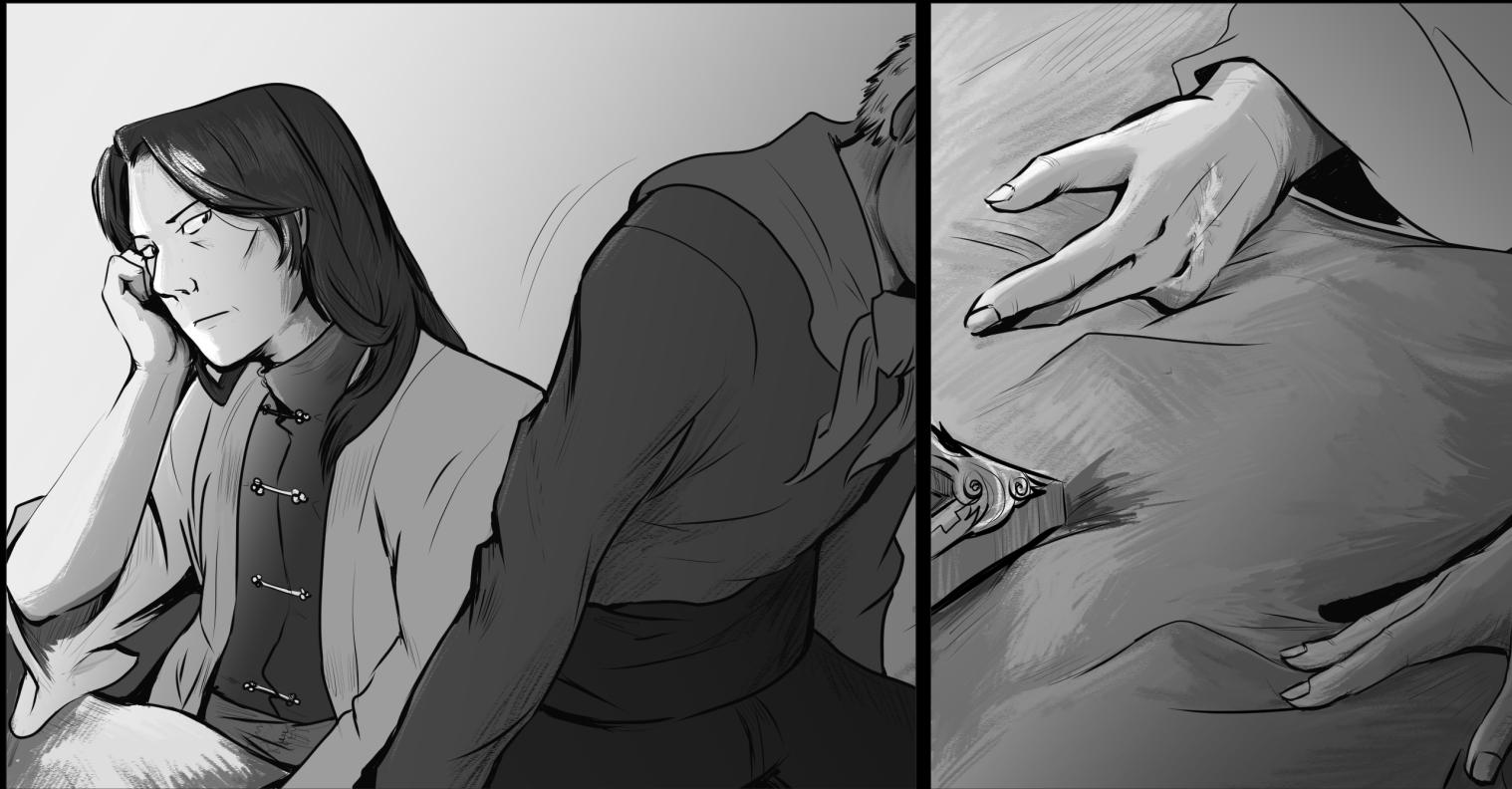


Illustration Value Keys.

Spring 2015

Done in Photoshop under the guidance of Leelah Wagner. They were intended to be integrated lessons in storyboard-ing and narrative compositional techniques with the explora-tion of light and shadow. Each value key is a rough in the painting process but stands as creative studies by them-selves.





Winds of Summer (Sample)
Winter 2016

Done in Photoshop. A section of my ongoing personal comic project exploring narratives about life after war, loss, and mentorship. Written with critique by Marjorie Liu.