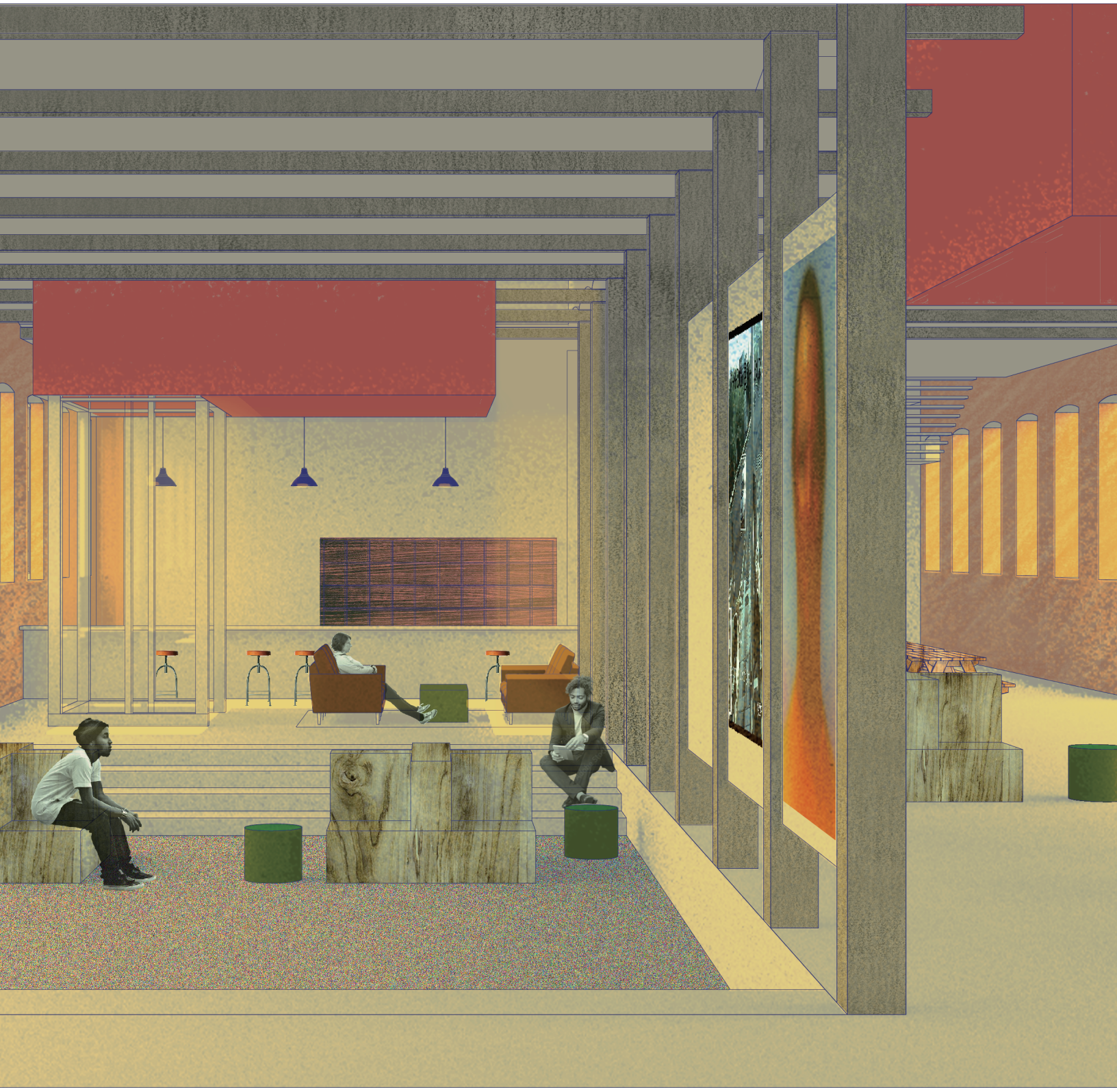

PORTFOLIO
RISD BFA Interior Architecture
Yiwei Chen

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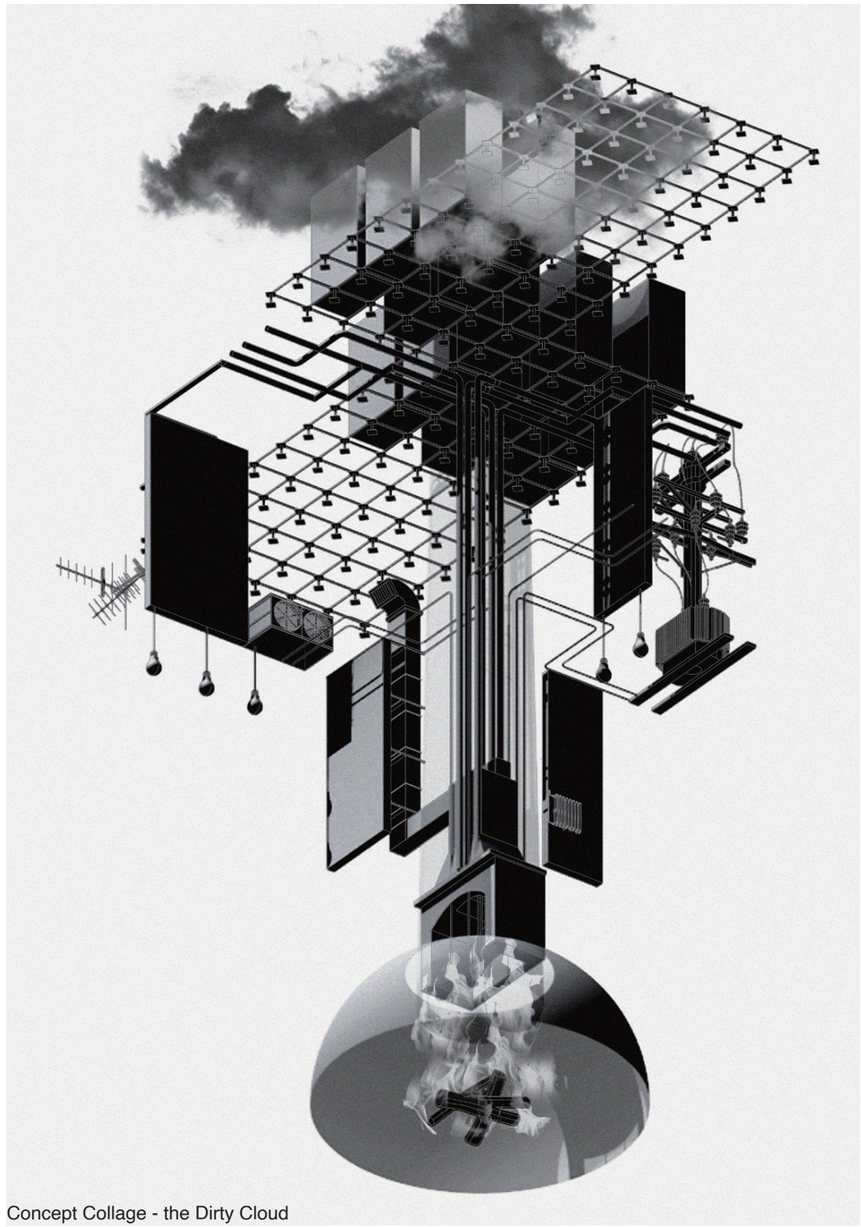
01 Data Center as the Contemporary Hearth

Architecture Adaptive Reuse

Project Type Academic
Date 2022 Spring
Instructor Professor Stefano Corbo
Location Providence, RI



Concept Collage - the Dirty Cloud

This is an architecture theory and history research based adpative reuse project of an exisiting data center.

Our perception of digital activities is often immaterial - the fire consumed is unnoticed when we experience it through the pristine screens and containers, or the omnipresent internet. Yet, they manifest in data centers that are devouring and accelerating energy use. Study on these buildings shows that they are highly secured and invisible from sight - the opaqueness of surveillance capitalism and the lack of public understanding. The extractive regime in the design of these buildings represents the early anthropocentric understanding of “fire” (energy source) being perpetual and inaugural.

The research part examines the trajectory of human energy development as an integral part of architecture, in order to investigate the underlying infrastructure supporting contemporary datalisation.

In the design, could architecture create a viable narrative that critiques and recognizes the environmental impact of digital technology? Could the data center tranform into a hearth that act again as a magnet for social connection?

Architecture Theory Research

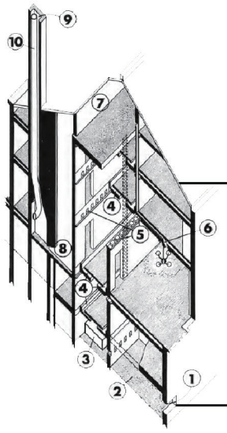
A Brief History of How Fire Shaped Built Environments

The Vesta Fire

In ancient mythologies, the shrine at Vesta predated all others; it had no inauguration, for it had always been.

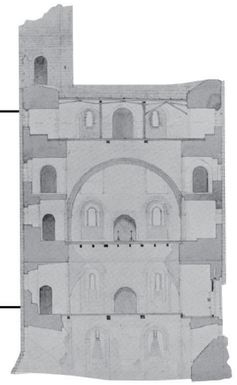
Gottfried Semple

“The first human groups assembled, formed alliances, and developed religious concepts around the domesticated fire - throughout all phases of society, the hearth formed that sacred focus around which took order and shape.”



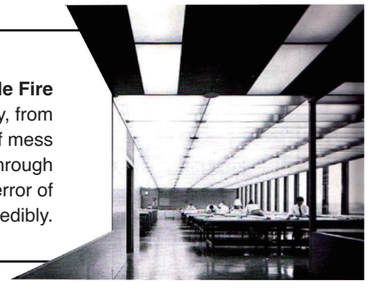
Fireplace, Chimney and Hearth

Interiors are designed to keep the heat. Cross-section of Norman castle at Hedingham in Essex(c. 1100), revealing the thickness of walls. They are thick on purpose so that they can store heat and radiate it back to the building.



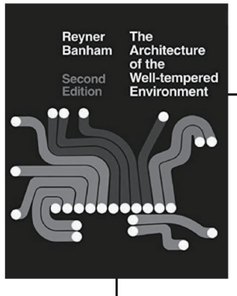
Heating Systems & Ventilation

The major concern for working and living conditions of men in industrialized societies was actually the problems of poor air and foul smells, which raised the issue of ventilation. Heating systems made of pipes behind the walls were developed leading to elimination of open flames indoor.



Electricity: the Invisible Fire

Providing solutions for both heating and lighting, electricity, from its very beginning, was considered as clean, cool and free of mess and residue for the users. It is a quick current coursing through infrastructures, rather than the raging messy snapping terror of uncontrolled fire. The use of energy was raised incredibly.



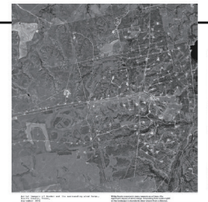
Architectures of Modernity

Technology in architecture entails an opposition of mechanism and culture. Infrastructures are created as subservient to services.

Data Centers

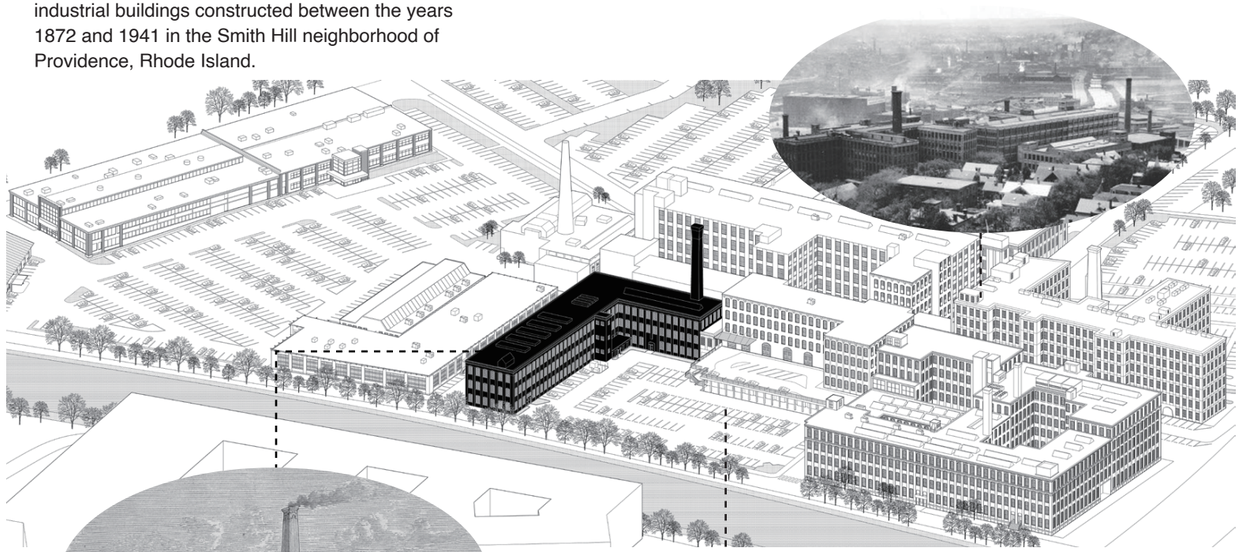
The fact that our online activities have a hefty carbon footprint is often neglected, is because the fire becoming invisible and unrecognizable to our human senses - it is repressed on our conscious level when we experience it through the pristine screens and containers, or the omnipresent internet, while the data centers have been consuming incredible amounts of energy, and mostly burning from “dirty” sources.

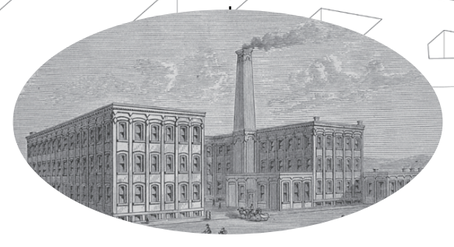
They are in extractive and non-stop regime with its architecture undesigned. They are highly secured and invisible from sight due to the opaqueness of surveillance capitalism and the lack of public understanding.



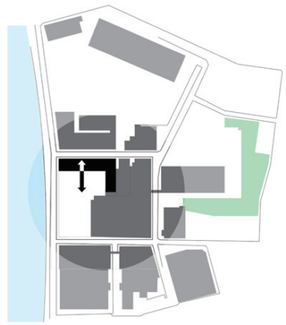
Exisiting Building

The site is a complex of large, red brick, multi-story industrial buildings constructed between the years 1872 and 1941 in the Smith Hill neighborhood of Providence, Rhode Island.

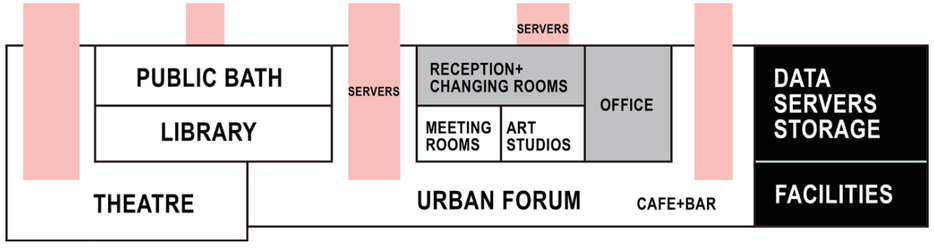




The building was used primarily as a warehouse and for pattern storage for the neighbouring foundry. After several adaptations it is now functions as a data center.



The parking lot could be transformed into a public space, a continuation of urban landscape from the interior.



Adding programs that promote sharing our resources, imagining alternatives, freedom to play, and democratic knowledge acquisition.

Library + Learning celebrates sharing, de-commodification, and democratisation of goods and ideas in a welcoming heart of a community.

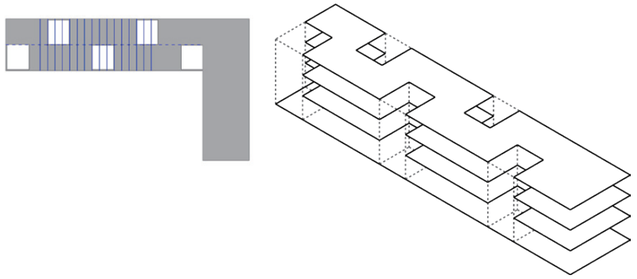
The Playground + Urban Forum initiates a deeper game connecting to the city while as a site of joyful and thoughtful experimentation.

Public Baths holds a space for intimacy, relaxation, encourages free conversations and collective activities; heat waste could be reused

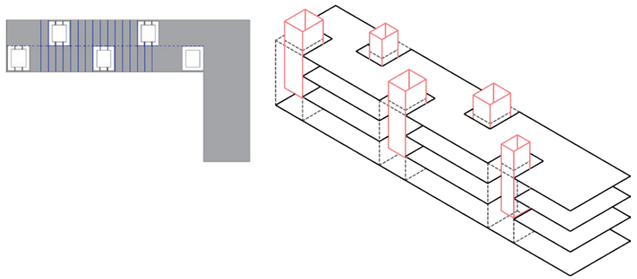
Performance spaces foster environments to imagine alternative

Exhibited Data Server Rooms invite the public to visit, open up discussion and reflect on the contemporary phenomenons

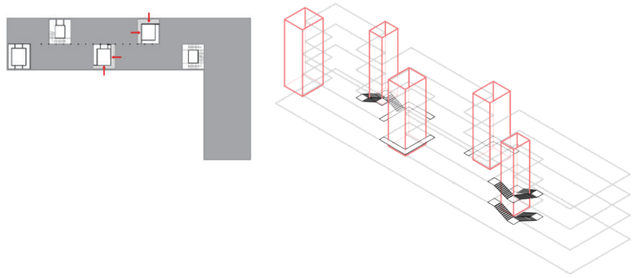
Design: Form



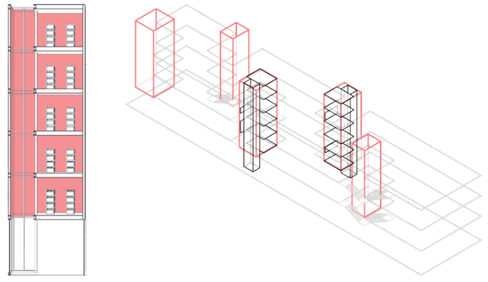
5 voids cut through the north-south wing of the building



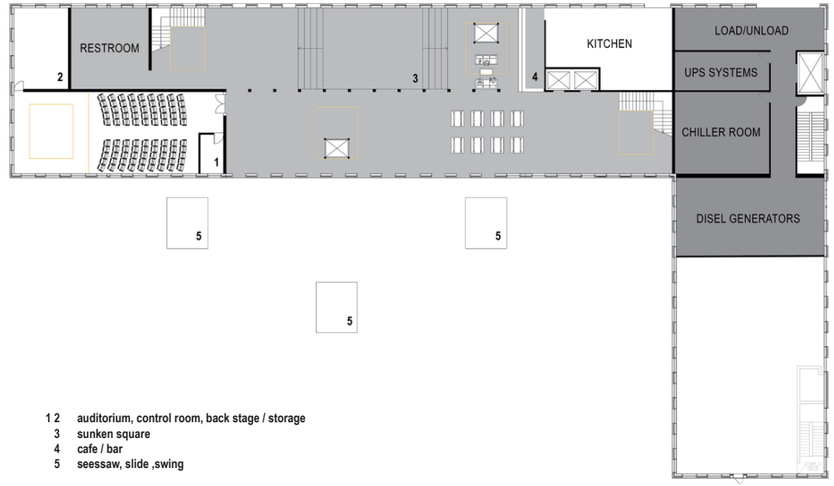
5 "chimneys" are inserted in the voids - hollow extrusions hold by the exisiting steel frame structures



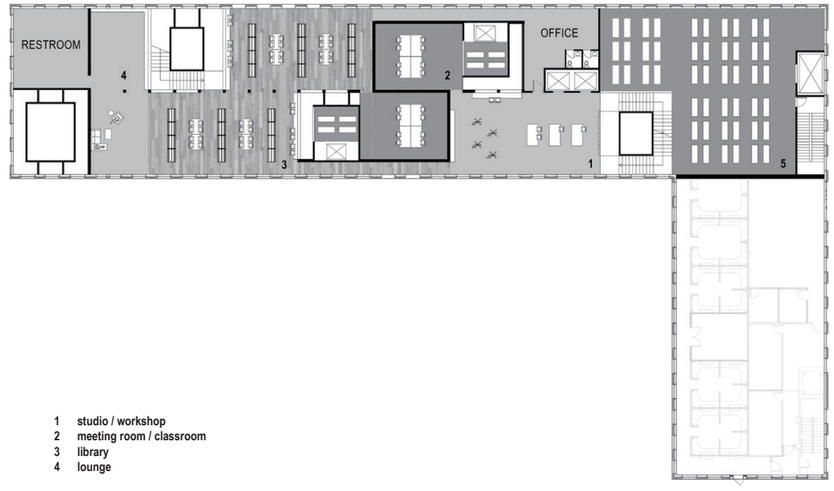
The offset space act as staircase core or skylights, or the floor is extended to get more circulation space on the plan.



2 "chimneys" functions as data server rooms with elevator access on the first floor; Corresponding windows are designed to exhibit what is going on inside

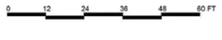


1 2 auditorium, control room, back stage / storage
3 sunken square
4 cafe / bar
5 seessaw, slide ,swing



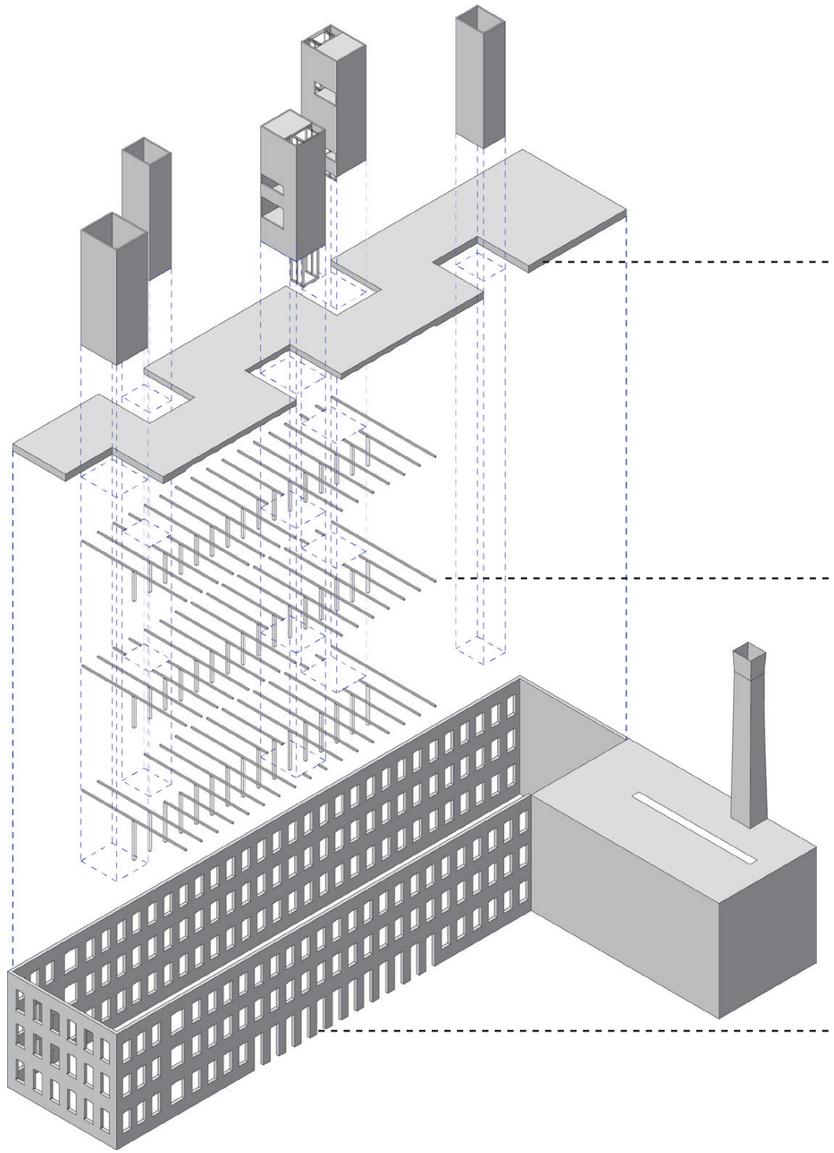
1 studio / workshop
2 meeting room / classroom
3 library
4 lounge

0 ramp up entrance
1 2 3 open baths
4 5 6 7 special baths
8 massage room
9 sauna room
10 resting area



Structure

the combination of a horizontal and of a series of vertical permeable spaces

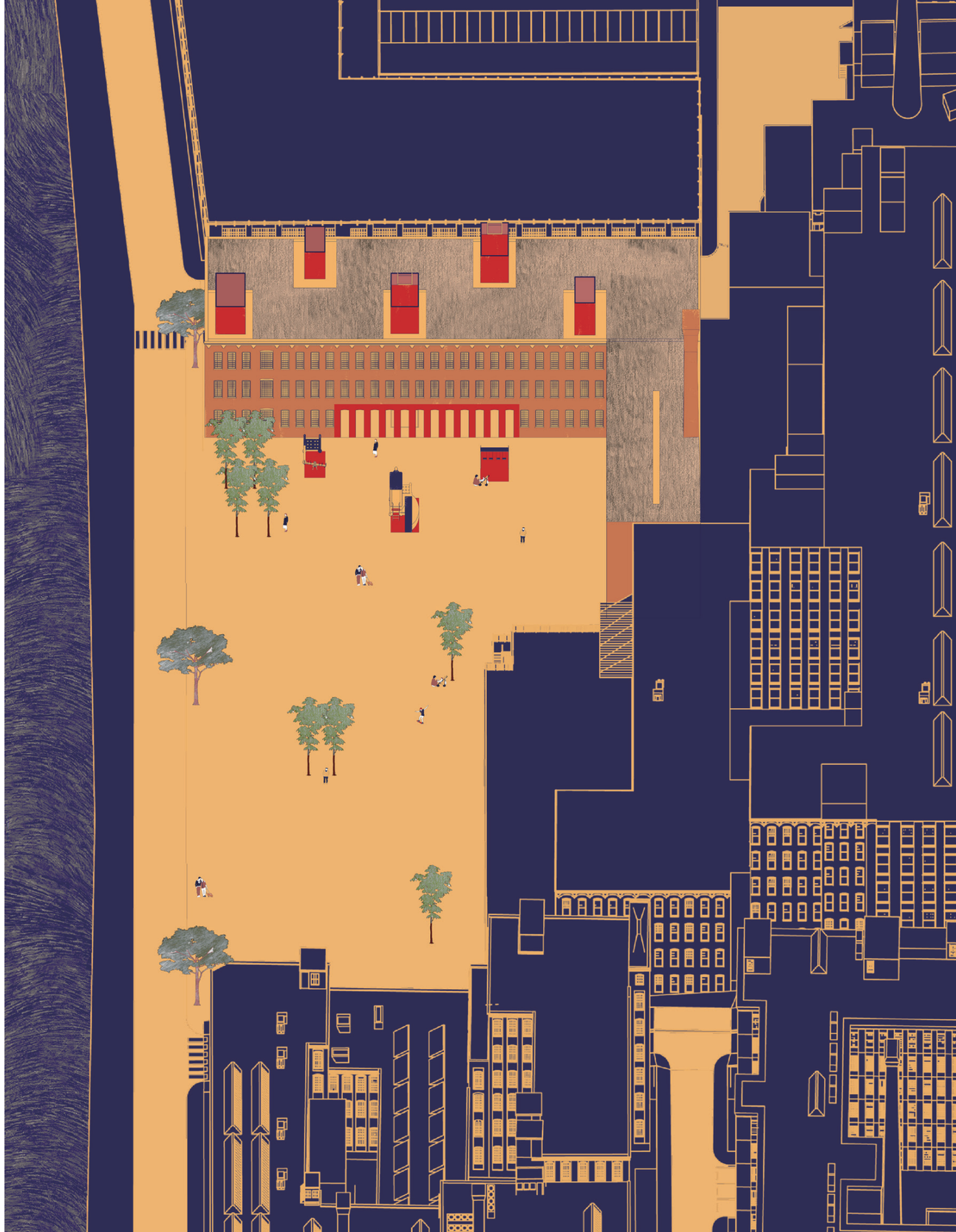


Concrete flooring and rooftop

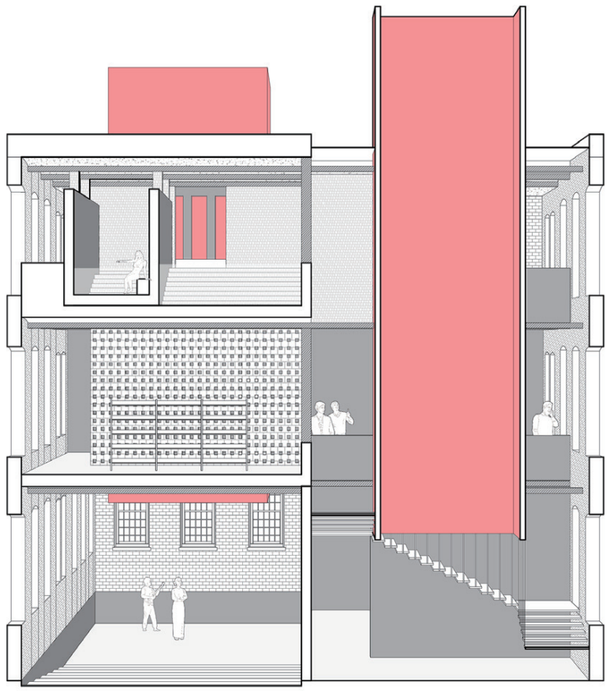
The original steel frame structure could be cut with openings according to the new design and provide structurual support for the "chimneys".

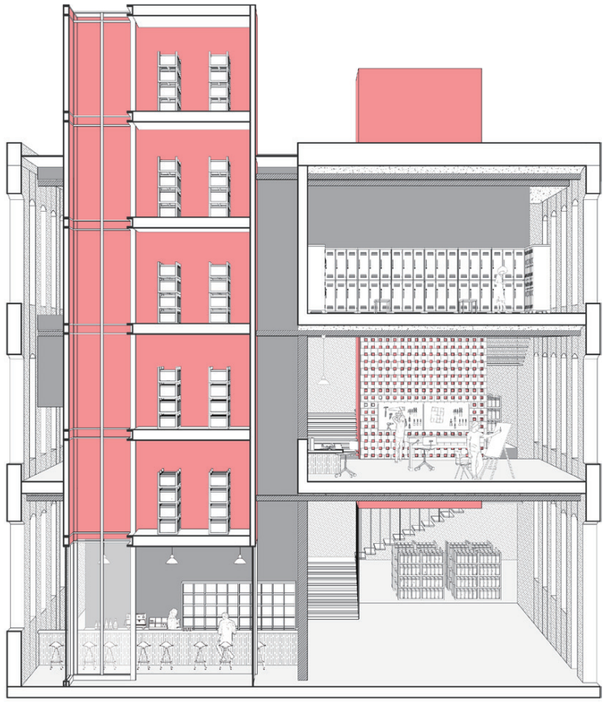
Preserves the brick facade with simple interventions. Some windows are cut open as entrances.

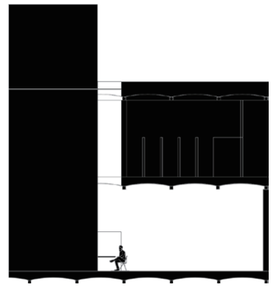
The "chimneys" and the entrance are painted bright red to attract visitors, create a sharp contrast with the dull industrial surrounding and represent a significant change to the urban environment. This expressive moment echoes with the industrial chimneys around and gives the building's identity - leisure, playful and fun.



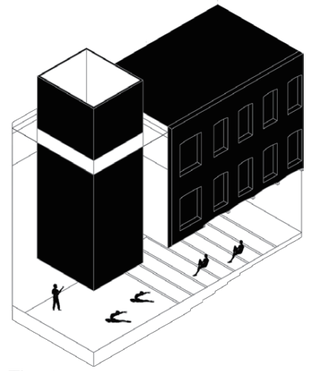
Rich variations of social interactions are designed.
Some space has higher degree of enclosure with deep, narrow skylights; whereas some has a open balcony type of relationship where people can see each other.



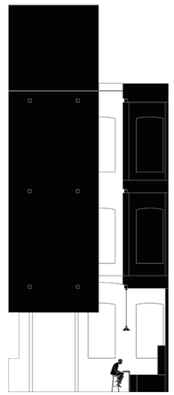




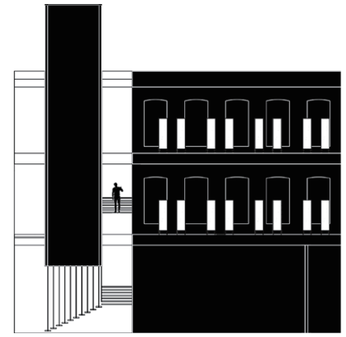
Reading room with only the skylight



Theatre space

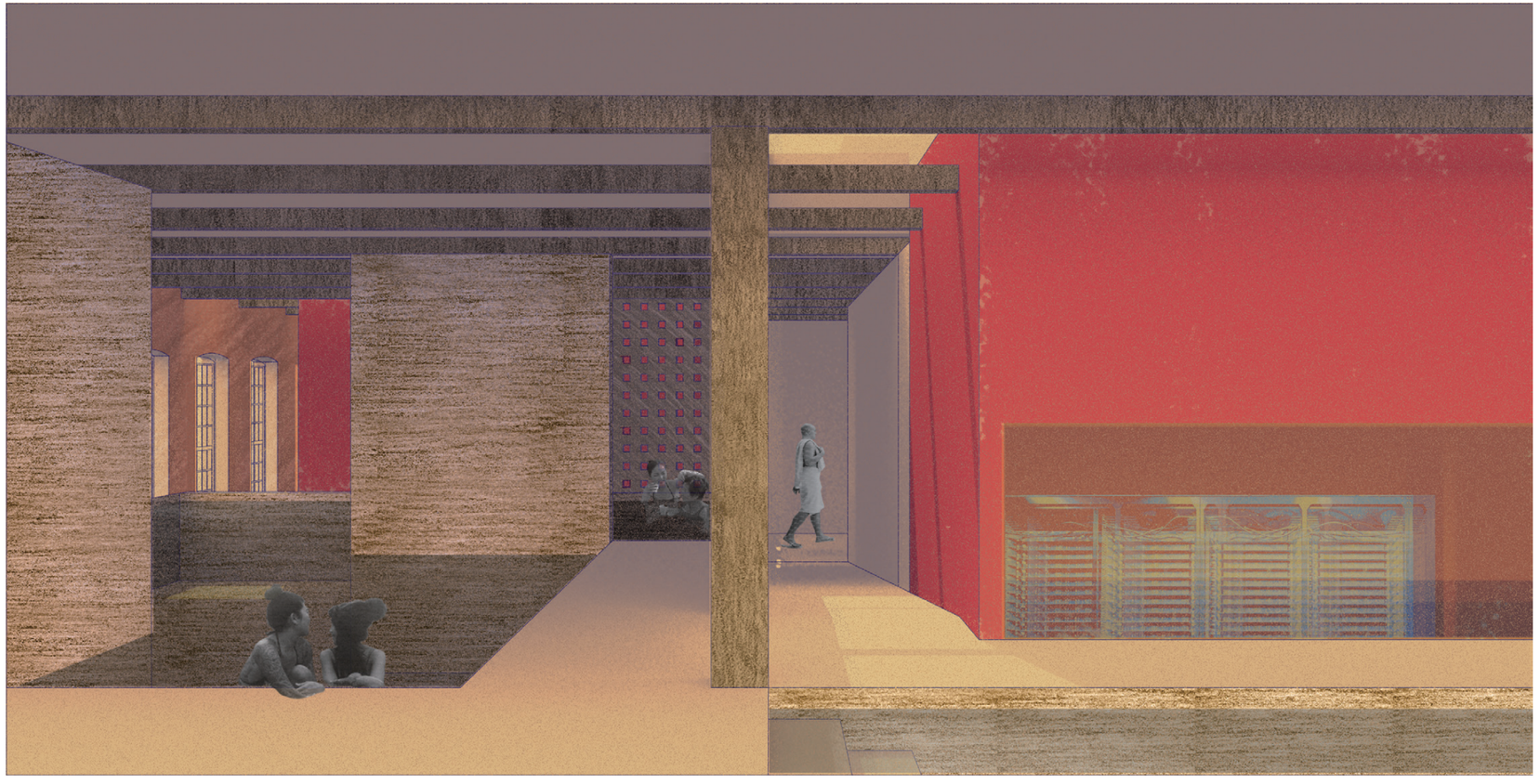


Bar sitting with direct skylight on top



Staircase cores spiraling up alongside the server rooms

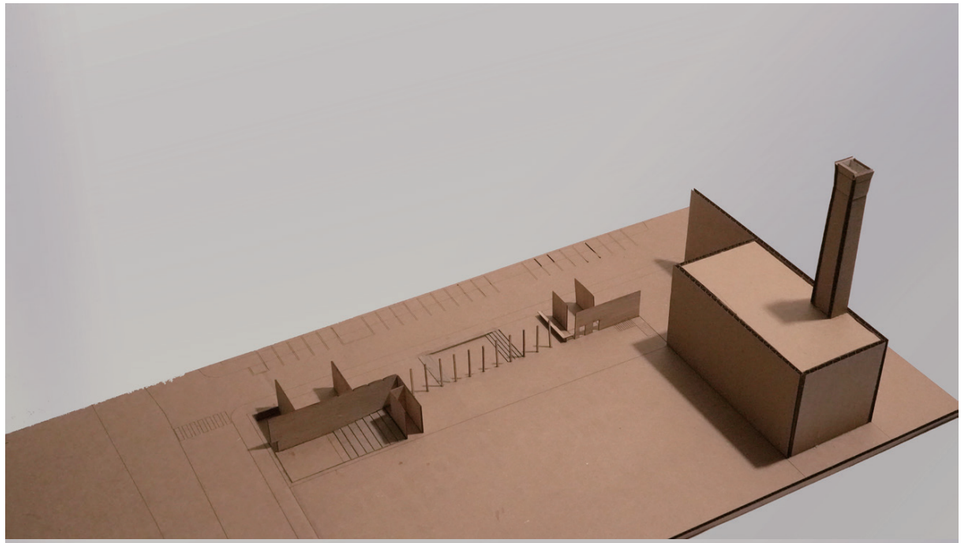
The reading room with only the skylight creates a silent, enclosed ambience.

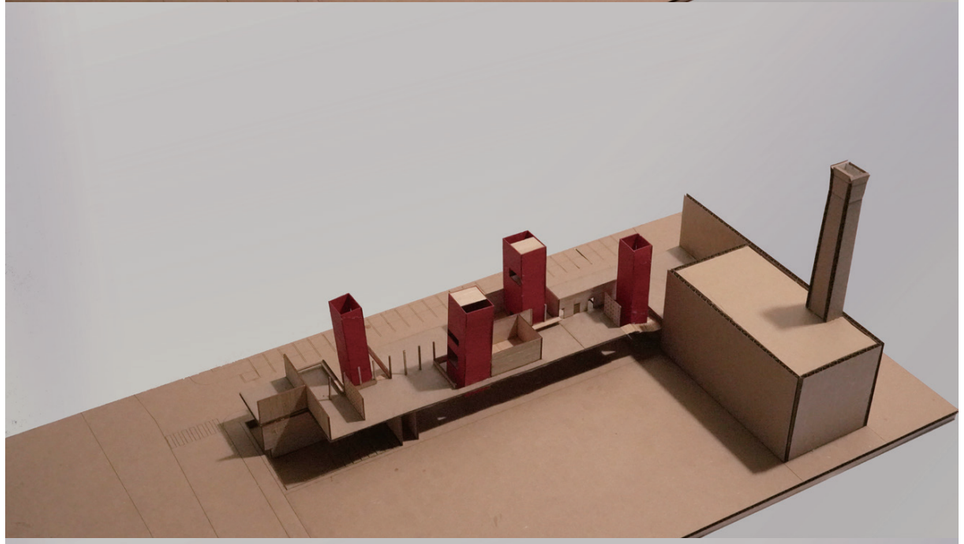


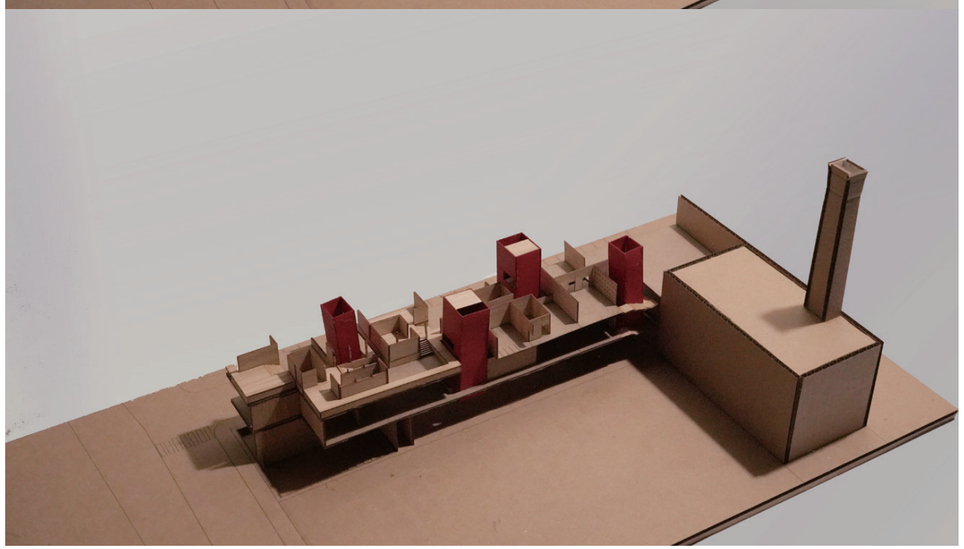
A long narrow corridor leads into the bath.
Visitors can see the data servers working from the server room "chimneys".

The urban forum on the ground floor initiates a joyful and thoughtful continuation of the city landscape.
Exhibition and events that are open to all could be hold here.

Model 1:200







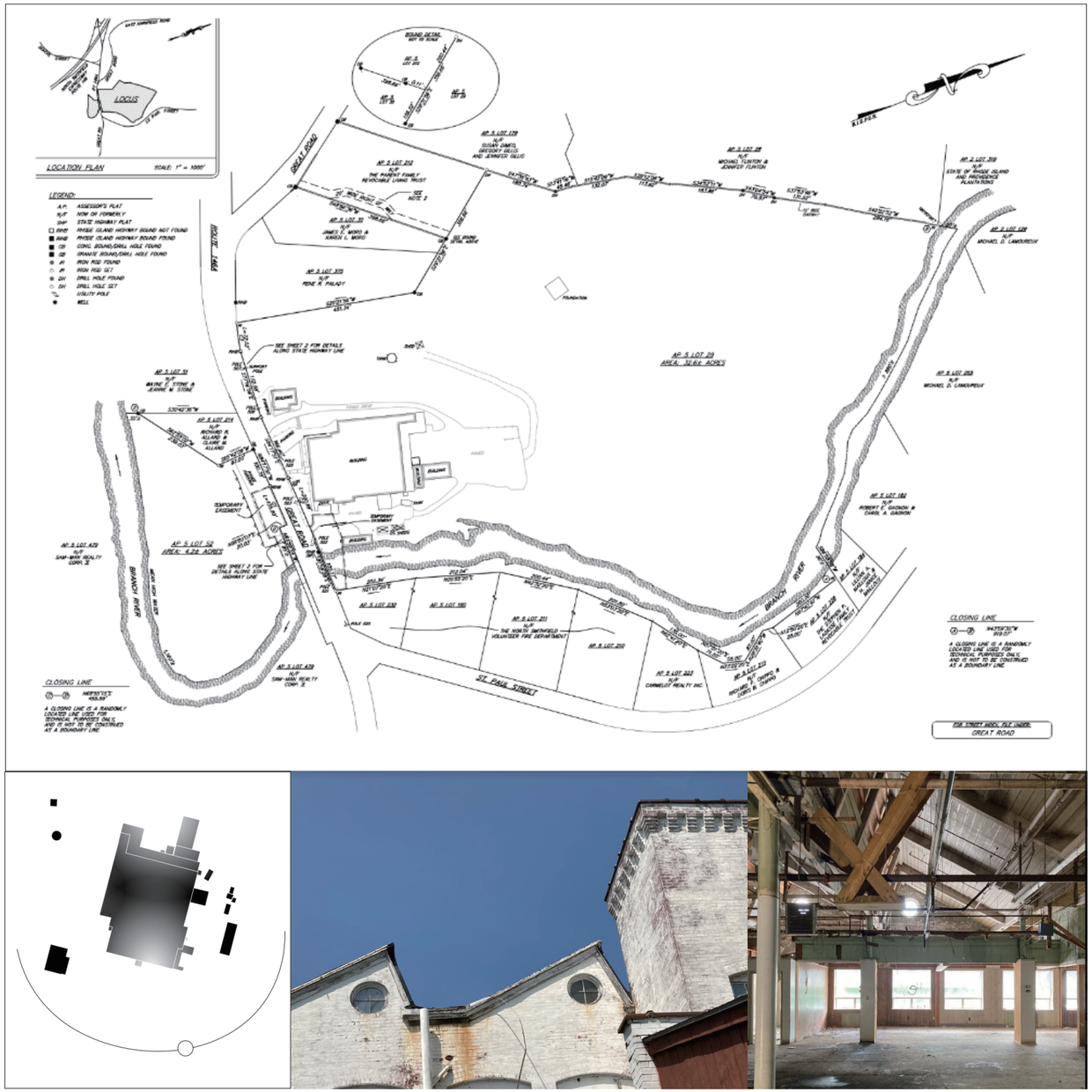
02 Under the Sawtooth Roof

Adaptive Reuse + Affordable Housing

Project Type Academic, In collaboration with NeighborWorks organization
Date 2021 Fall
Instructor Professor Elizabeth Debs
Location North Smithfield, RI

Andrews Mill (1918), listed on the National Register of Historic Places, is a single-story brick weave shed featuring a concrete foundation and a sawtooth roof with openings on the north side rows. It was built for the weaving and finishing of worsted cloth. The site has sloping topography and adjacency to the Blackstone river.

The client, NWBRV is looking for a design that holds 92 families with 2 parking spaces for each.



North Facing Service Wall

South Facing Public Stone Gate Facade

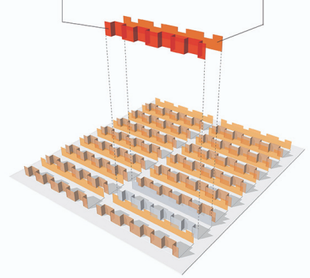


Figure 1: Shanghai Lilong, Diagram of the difference between the sub-lane facades

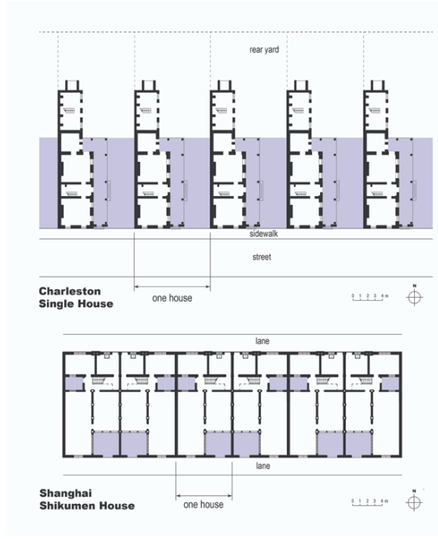
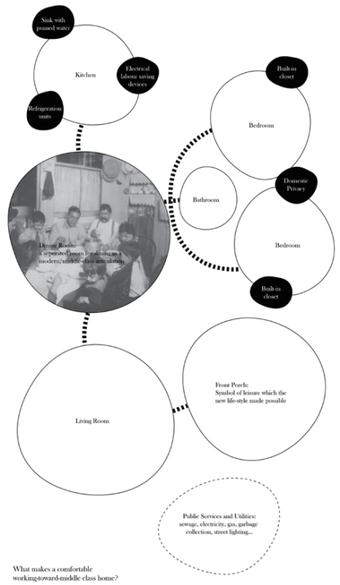


Figure 2: Comparison

Critical Studies on Housing Culture



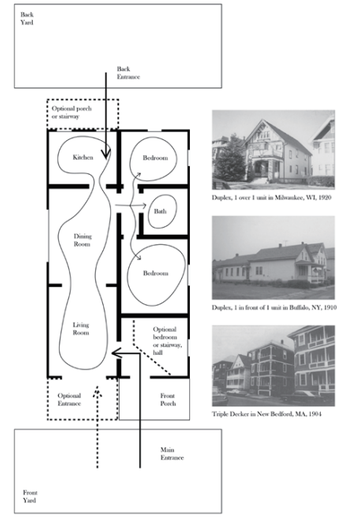


Figure 3: Examining American Housing Standards. Author's drawings.

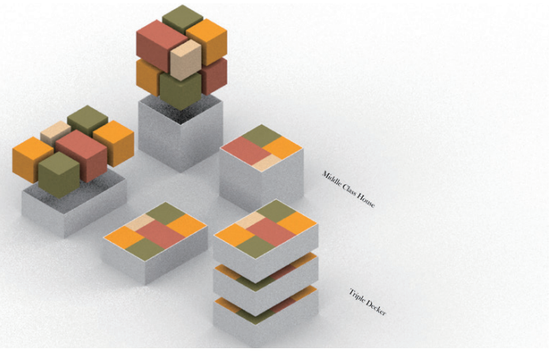


Figure 4: Idea of property and privatization. Author's drawings.

The comparison between these examples illustrates how the shape and form of architecture can guide different social relationships. The Charleston house encourages social manners between neighbors along shared property lines across a garden space. In contrast, the Shanghai house establishes social interaction at the front and back, with neighbors presenting themselves at the stone gate and kitchen door. These social opportunities are reinforced when the formal meets the informal, public overlaps with private, and sunlight illuminates the shadows. Lilong villages, therefore, promoted human interaction as a direct response to neighbors. The morphology and layout of these dwelling presented a rich condition for a particular type of social life that is often lost in contemporary. (Fig. 1&2)

Whereas in my study on New England housing traditions, a typical household wishes to own rooms for a complete set of domestic functions as a modern, middle class articulation. (Fig. 3&4)The idea of privatization and ownership is dominant in most housing designs - for example, in a triple decker house made of three identical floor plans stacked, the household who owns the house could profit by renting out the two other floors. A roof marks the boundary of a owned property.(Fig. 5)

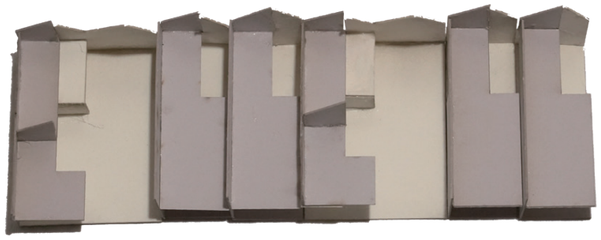
The COVID-19 pandemic continues to highlight the complicated issues caused by the lack of social exchange in housing cultures - isolation, mental loneliness, and lack of neighborhood support structure. As people spend more time in their homes, domestic spaces are given important roles that directly influences the residents' well being, facing situations like changing natures of working remotely, requirements for multi-family health safety protocols, and need for accessible social spaces in smaller scales. All of these prompt me to look for a more social, economic, community-based value designed into housing. Could the sawtooth roof be seen as a gesture of roofs next to one another, a co-living scenario?

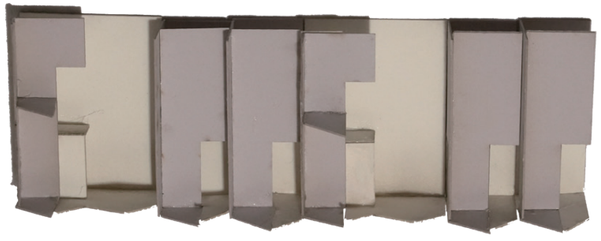
*Reference:

Peter Wong, *Chinese Puzzle: the Shifting Patterns of Shanghai's Shikumen Architecture*
Thomas C. Hubka and Judith T. Kenny, *Examining the American Dream: Housing Standards and the Emergence of a National Housing Culture*

Pattern Study

Patterning public and private modulars to develop the design



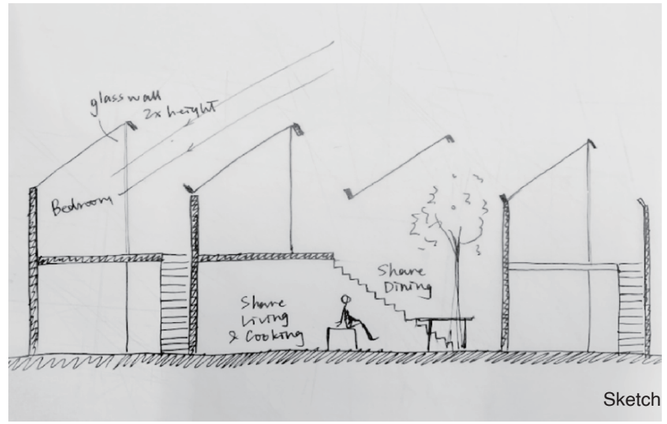


The pattern language codifies the interaction of human beings with their environment, and determines how and where we naturally prefer to walk, sit, sleep, enter and move through a building, enjoy a room or open space, and feel at ease or not in our garden. It combines geometry and social behavior patterns into a set of useful relationships, summarizing how built form can accommodate human activities.

- Nikos A. Salingaros, UNIFIED ARCHITECTURAL THEORY

Design Principles

Sawtooth high/low point
Exisiting bay size
Closure: each unit has private view
Double height sun spaces strategy
Each bedroom has access to natural light
Double height for shared spaces
Staircase and built in furnitures as partition
/adding to spatial interest



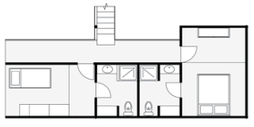
Sketch

Housing Types

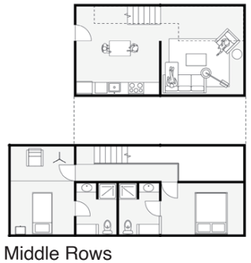
Side Rows
3b3b
1091 sq ft
6 spots in lot

Side Rows
2b2b
876 sq ft
10 spots in lot

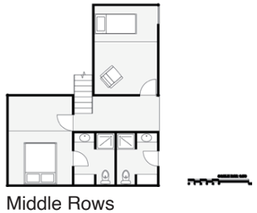
Side Rows
2b1b
560 sq ft
4 spots in lot



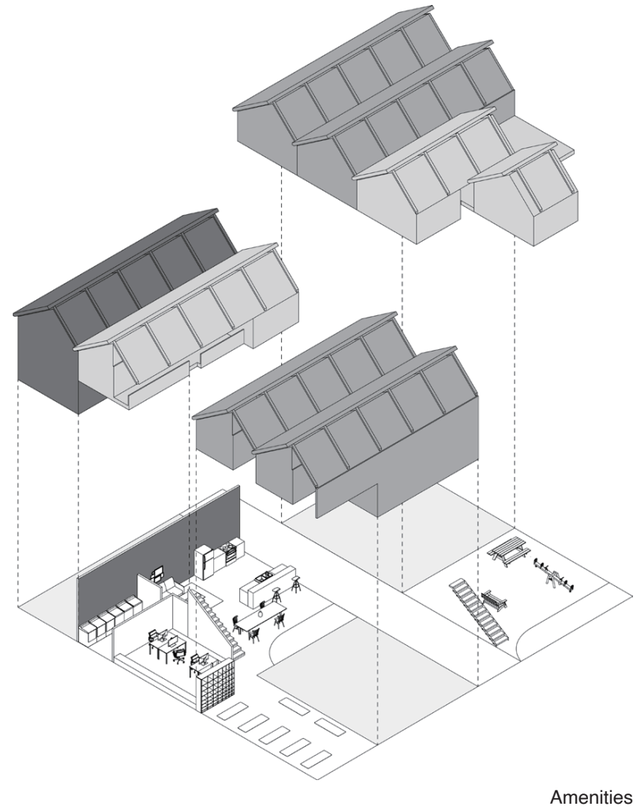
Side Rows
1b1b
214 sq ft
12 spots in lot



Middle Rows
2b1b
870 sq ft
12 spots in lot



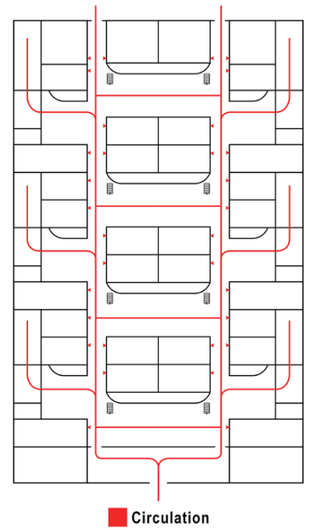
Middle Rows
1b1b
214 sq ft
16 spots in lot

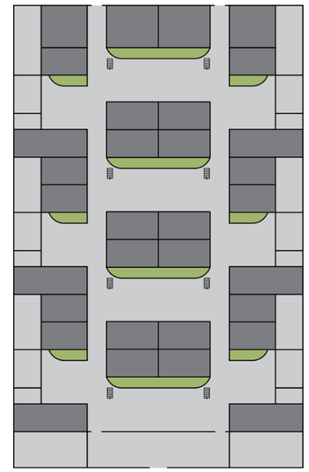


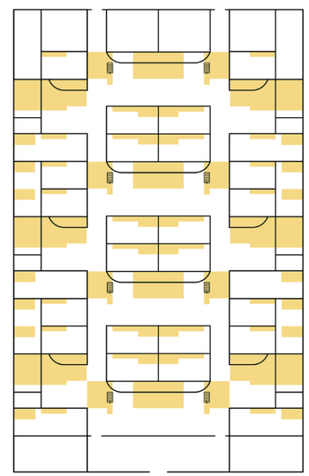
Amenities
6 laundry rooms
6 home offices
6 shared dining+kitchen
10 lounge area
indoor greens
fitness
yoga
recreation rooms

Plan

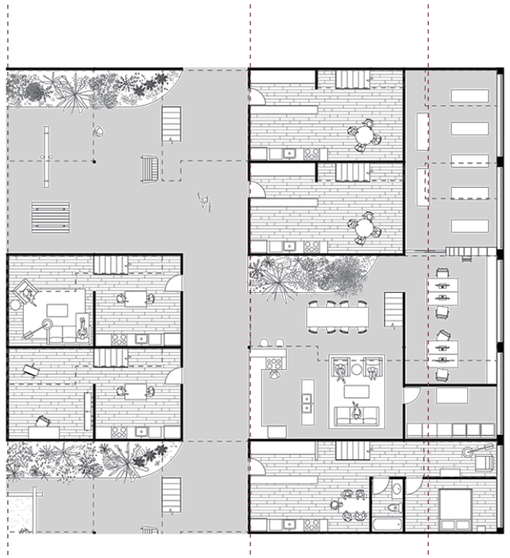
basement for parking
0 5 10 20 30 40


Circulation


Public Space
Private Space
Greens

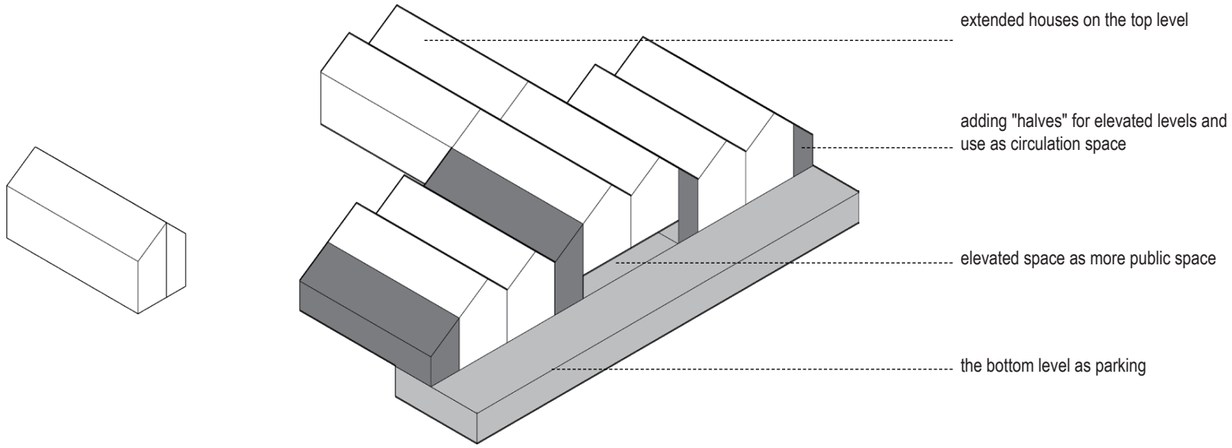

Access to Skylight on 1st Floor

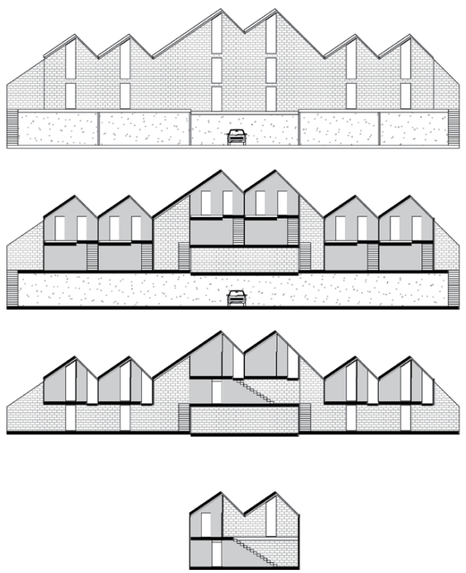
Design Details

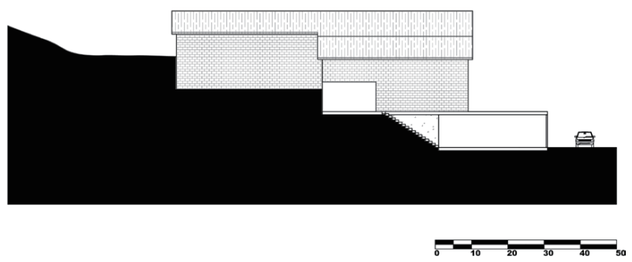


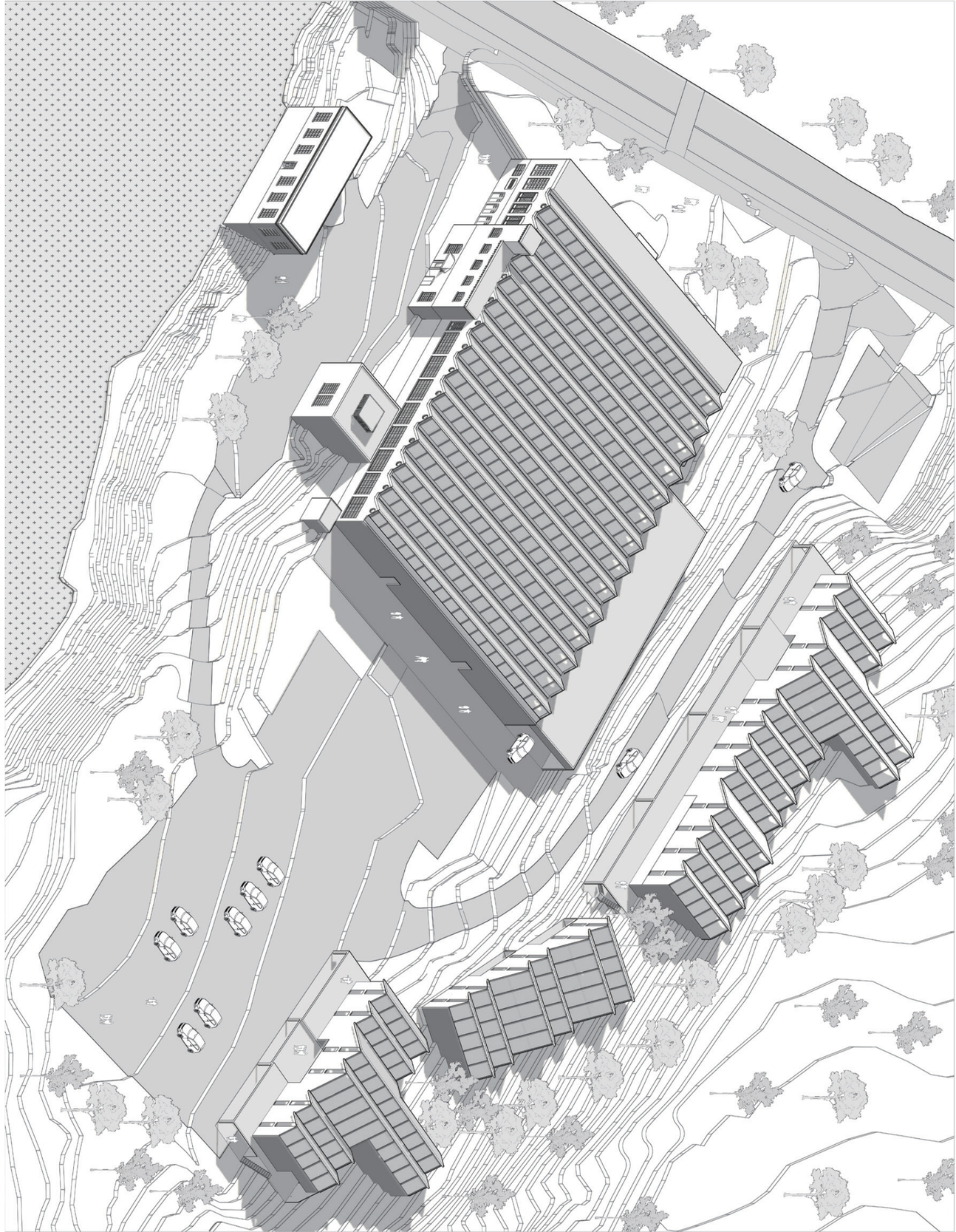
Additional Units

More units are added outside. The original aggregation could be modified and form complexes that have variation in height which to fit the sloping topography.









03 Magician of Light: Loie Fuller

Exhibition Design

Project Type Academic
Date 2021 Spring
Instructor Instructor Dorian Juncewicz
Location Marie-Josée and Henry Kravis Studio, MoMA

Loie Fuller
1862-1928
Dancer, Actress
Theatrician, Inventor
Female Artist

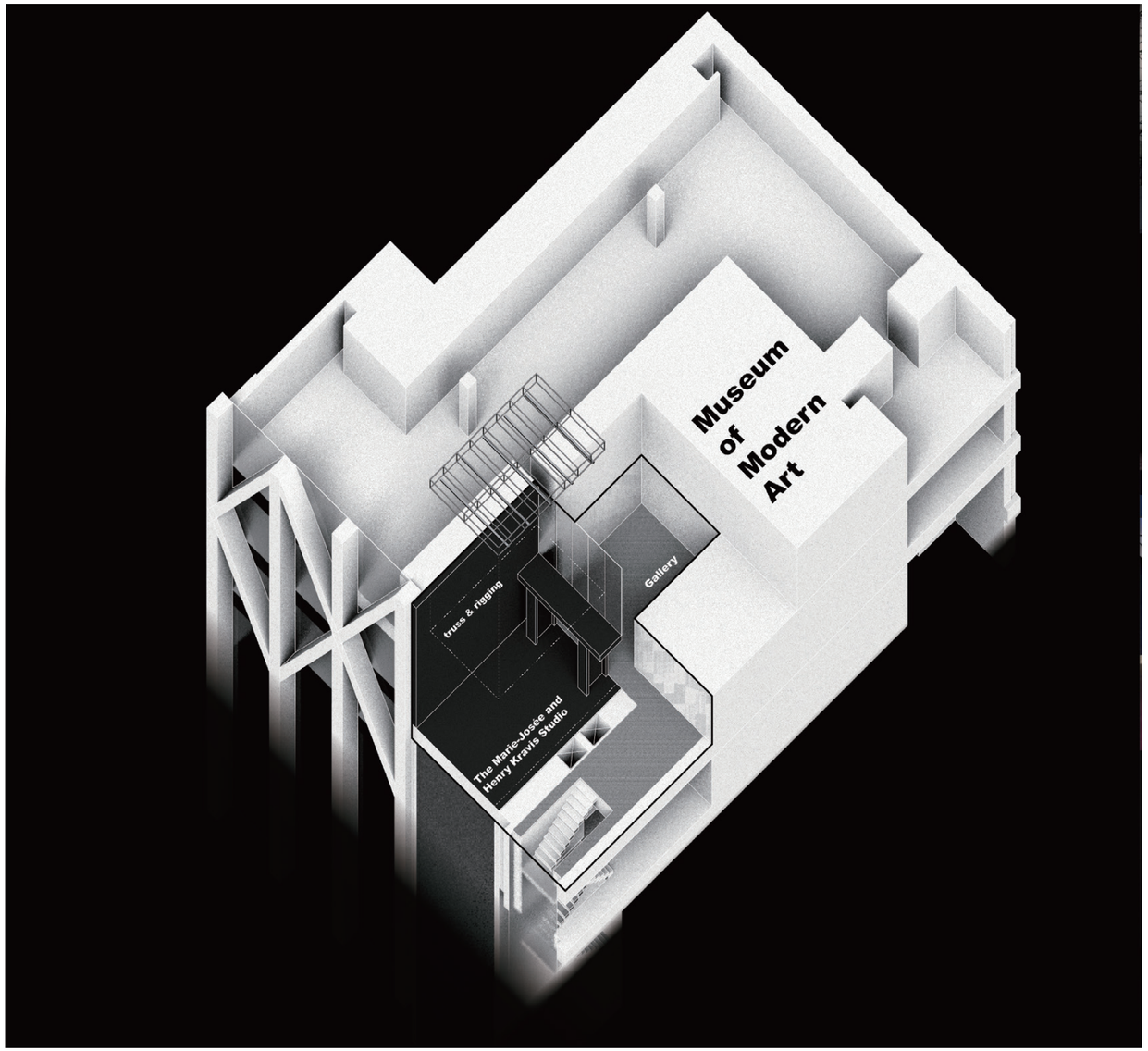
Loie Fuller is a most celebrated dancer and theatrician of the fin de siècle. Often viewed through the lens of abstract invention and experimentation, Loie is disembodied from her work. Her gendered modern subjectivity and emotional expressions are neglected in the mesmerizing performances.

In this exhibition, I try to renarrate her works of art by revealing her as legendary life story and powerful offstage persona. Loie's own theatrician techniques are utilized in the exhibition to guide the visitors into her re-imagined inner world.

Research & Ideation

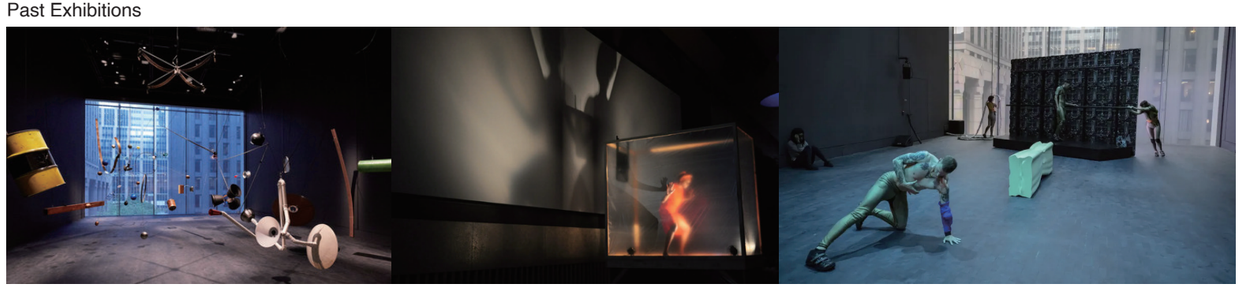
Artifact Design
the first phase of the project is to design an artifact for Loie Fuller and it inspired me to do an exhibition that tells a multi facet story about her

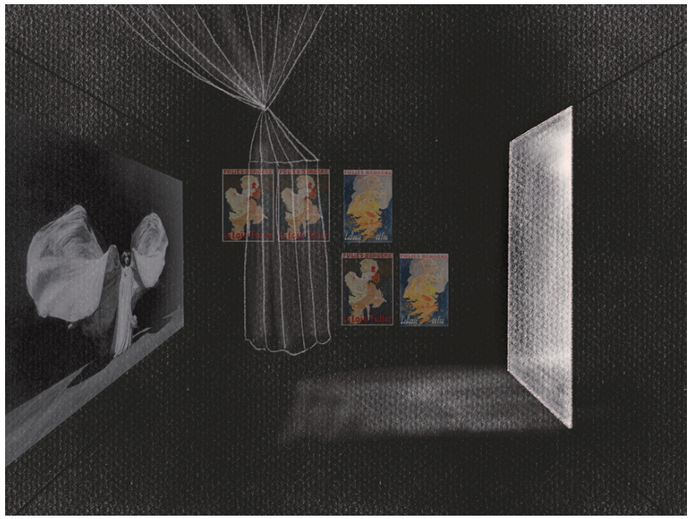
Site: Marie-Josée and Henry Kravis Studio



- Double height multi media theatre adjacent to gallery space
- Intimate, focus experience with works
- Position live art in the broader narratives of art history

Past Exhibitions

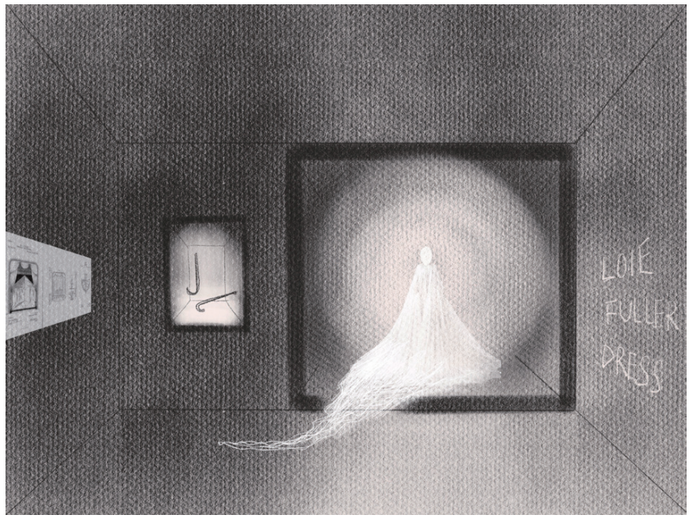




1 An entrance showing how Loie Fuller was celebrated and represented as legendary dancer

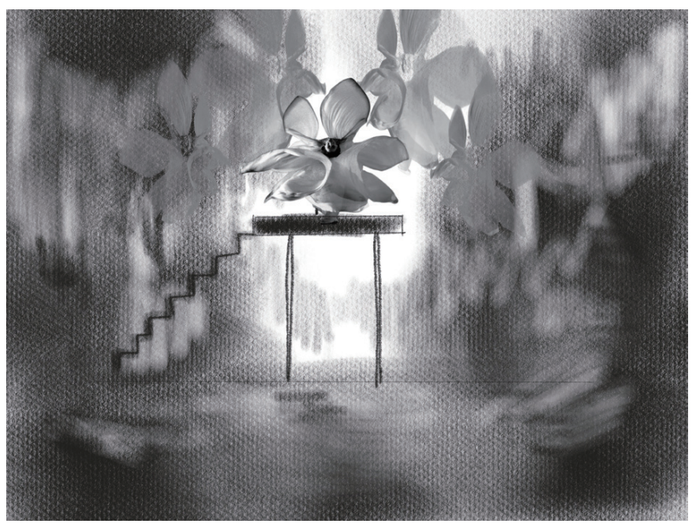
2 A personal album, revolving around people in her life: family, sponsor, and rumored lesbian lover... A place where you can always revisit and take in.

3 In 1892, Loie Fuller packed her theater costumes into a trunk and, with her elderly mother in tow, left the United States and a mid-level vaudeville career to try her luck in Paris.

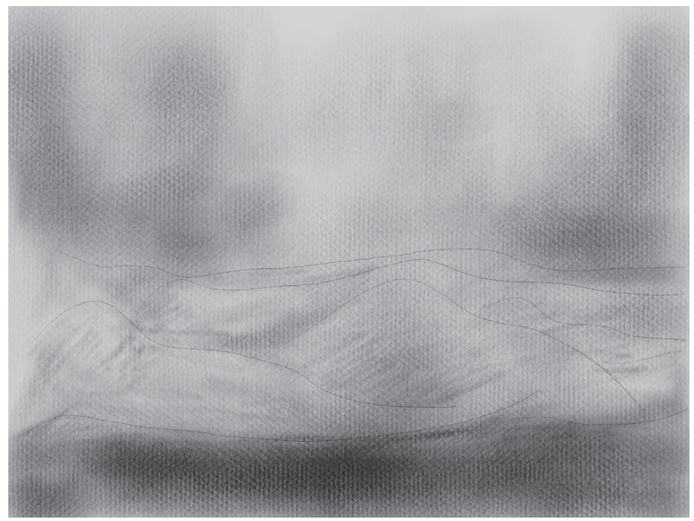


4 Showcasing her theatrical innovations, such as how her silk dress was made with concealed rods, her dancing and lighting techniques and sketches of her stagecraft that she had patented herself

5 Vanishing under her voluminous beguiling dress, Loie Fuller has a stout and seemingly ungraceful appearance judged by the contemporaries.



6 Fire dance has a furious, raging and intense emotion quality. The climax in the exhibition



7 The peaceful ending part is Loie Fuller's La Mer (The Sea) - hundreds of square feet of silk mimicking the lapping waters of the sea, originally a visualization of Debussy's music.

Development & Iterations

Concept:
- Narrate Loie Fuller's life story through visitor experience
- Re-imagination of Fuller's works
- Using Fuller's own inventions/techniques to illuminate the space
- Giving emotional qualities to her dances as part of her life storytelling
- Colorful lighting/projection + monochrome spatial structures
- Goal:
- A mixed theatre + exhibition experience
- Multi-perspective storytelling for a critical/comprehensive understanding for Loie Fuller

① Modern Female Actress & Dancer

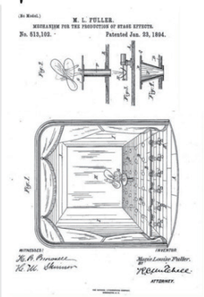
Bio

Stories

Audio?

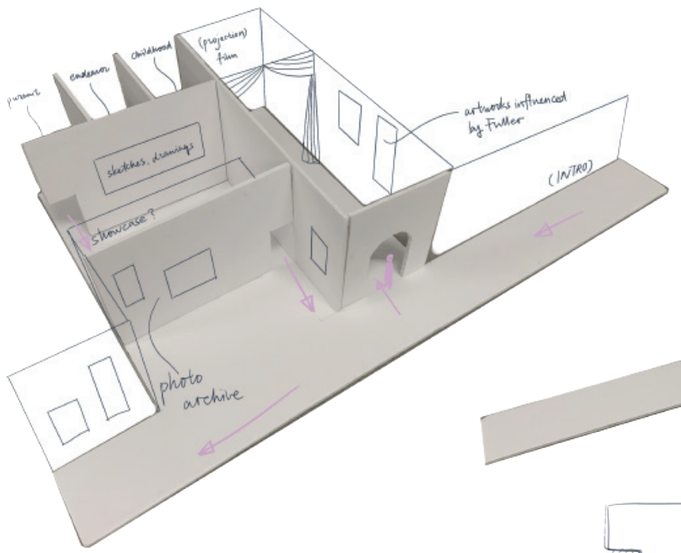
② technology

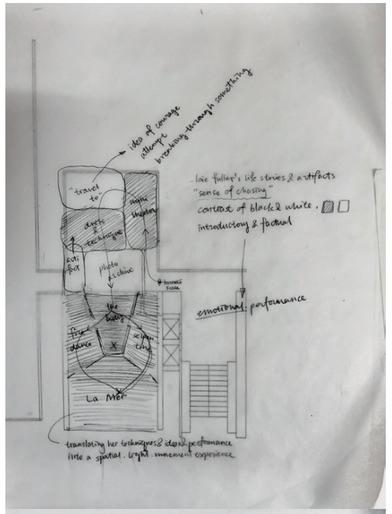
anachronistic space (futuristic) for her modern gender expression

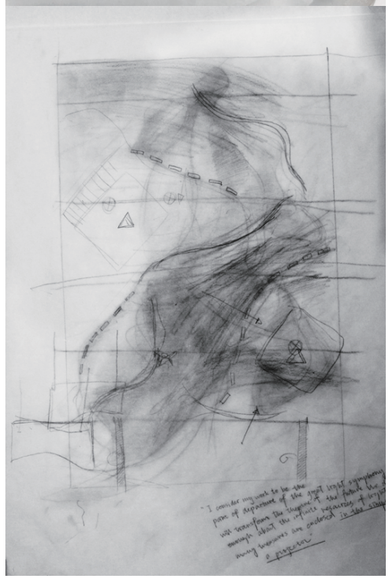


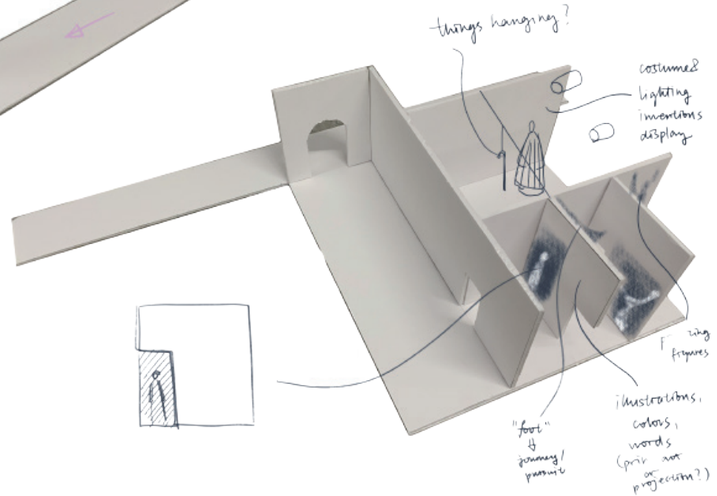
hologram as a way to abstract the body

③ Fashion Orientalism & Commodity Culture





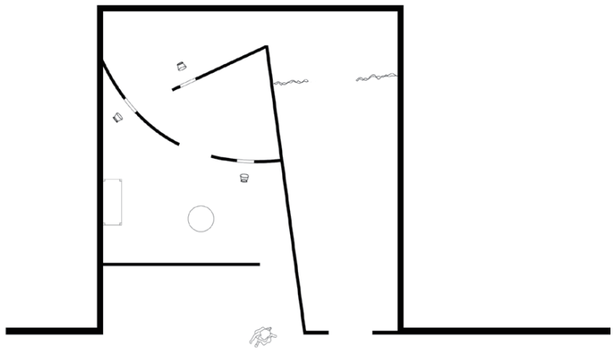


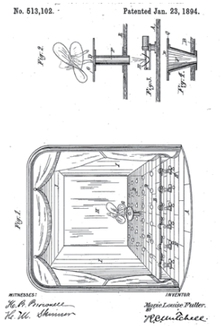


Rich materials like rigged large silk fabric, reflective surfaces, transparent panels, lighting and projections are used in the theatre part to give the audience an immersive representation of her work. Her stagecraft technologies are expansive, filling the whole space.

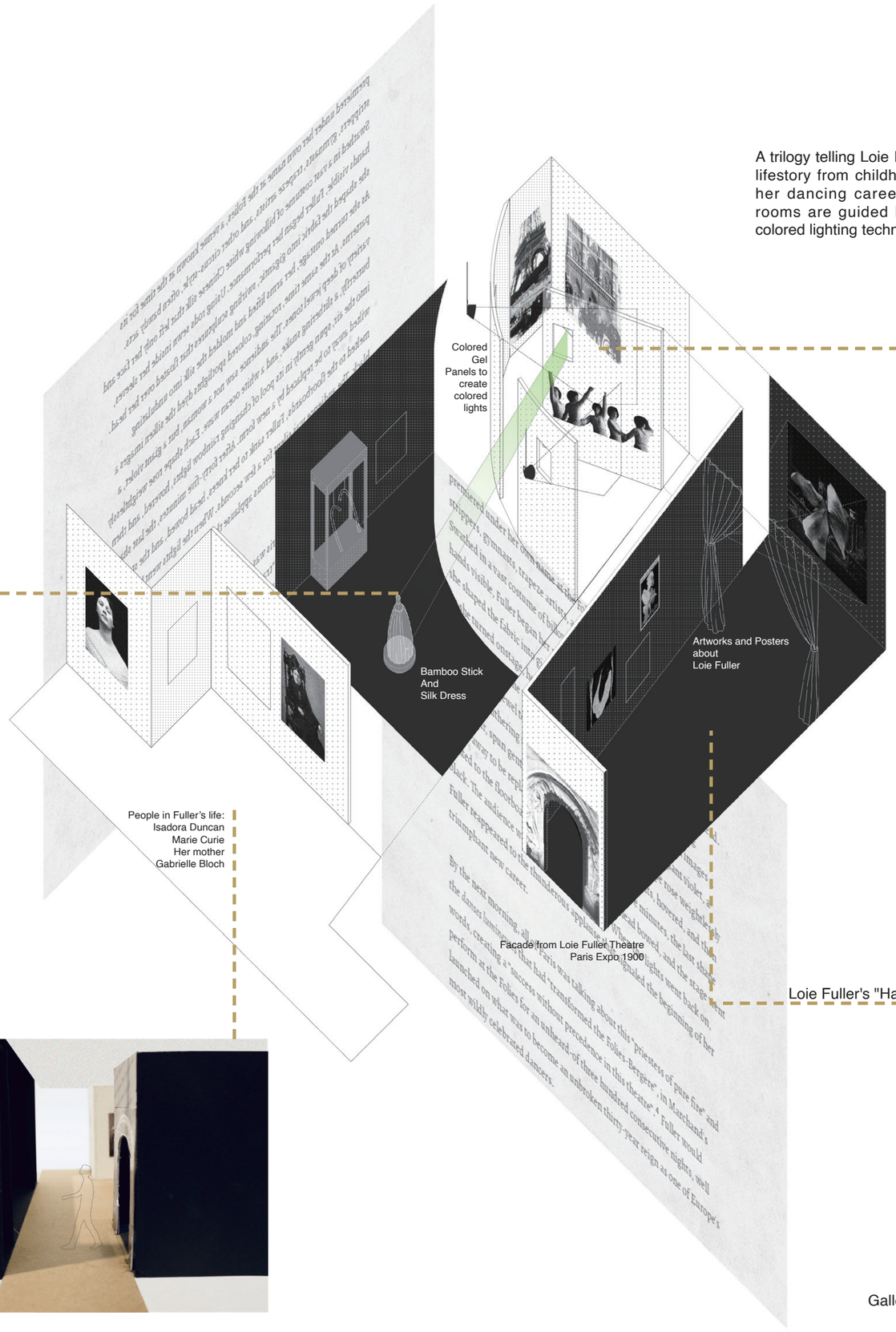
Gallery Space Design

Idea of flipping through a storybook

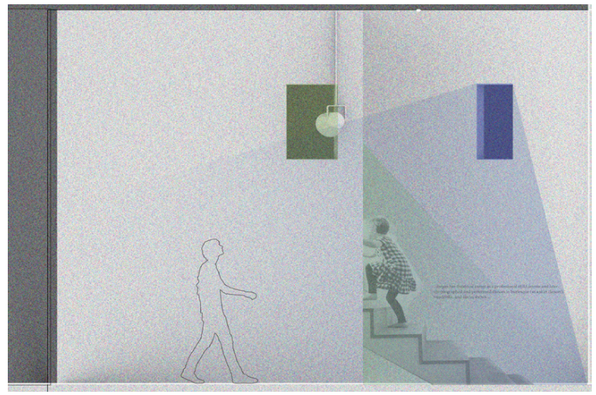


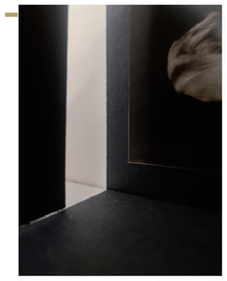


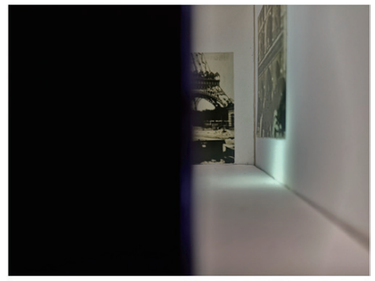
Showcase of Loie Fuller's stagecraft techniques after the visitor have experienced them in previous sections

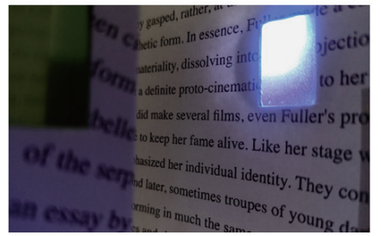


A trilogy telling Loie Fuller's lifestory from childhood to her dancing career. The rooms are guided by her colored lighting technique.

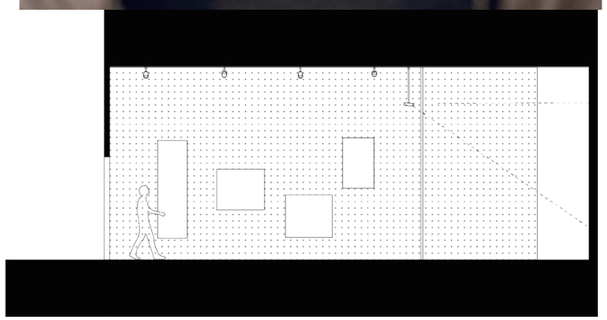








Loie Fuller's "Hall of Fame"

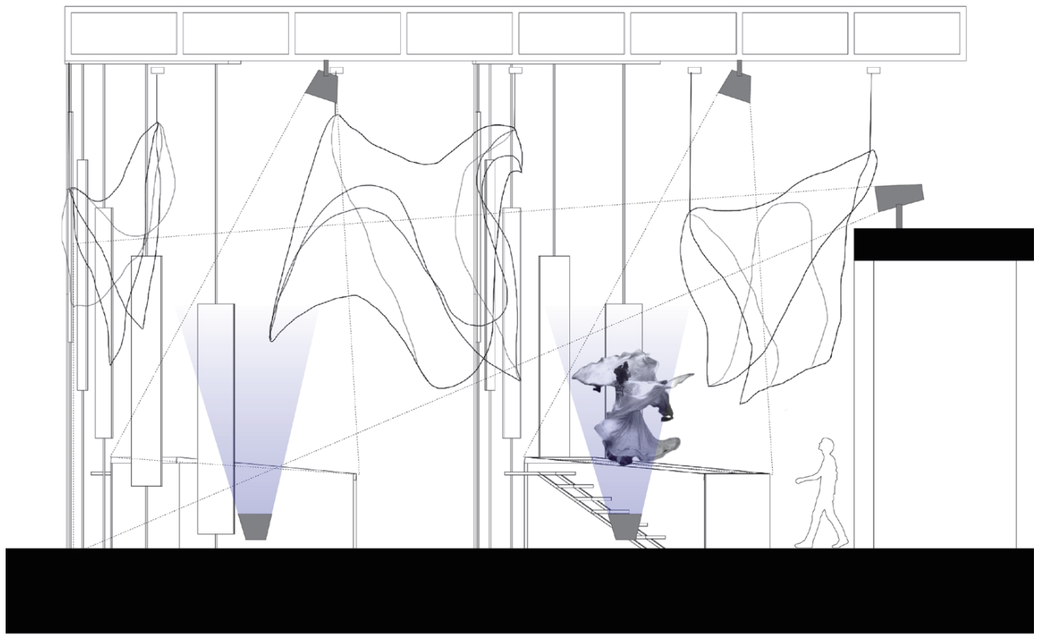


Gallery Section

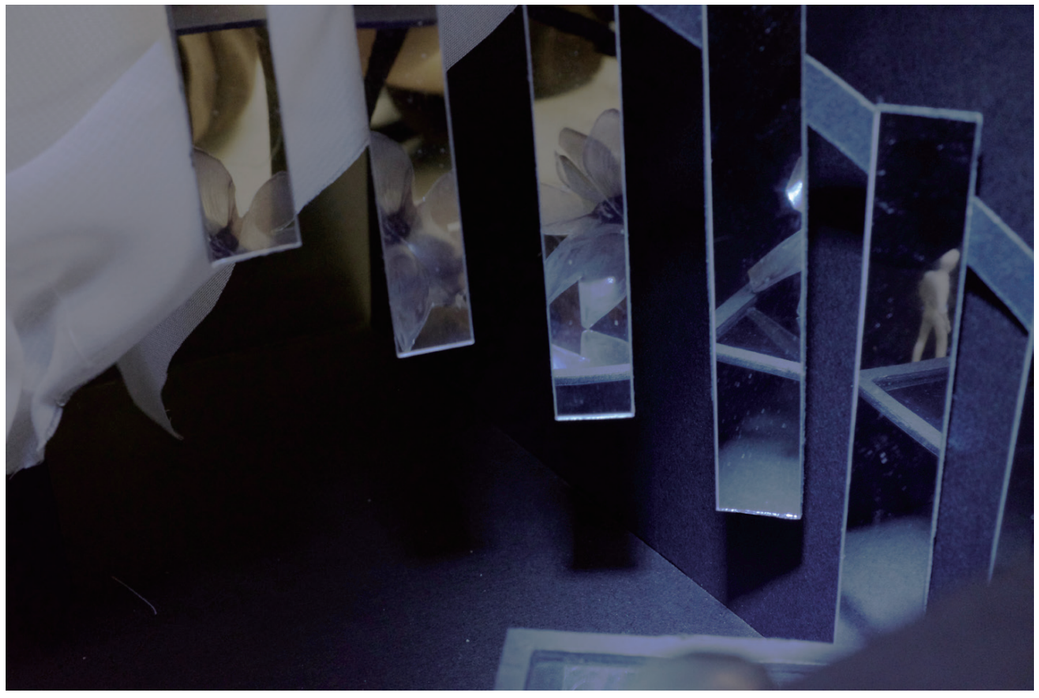
Photo Album of important people in Loie's Life

Theatre Space Design

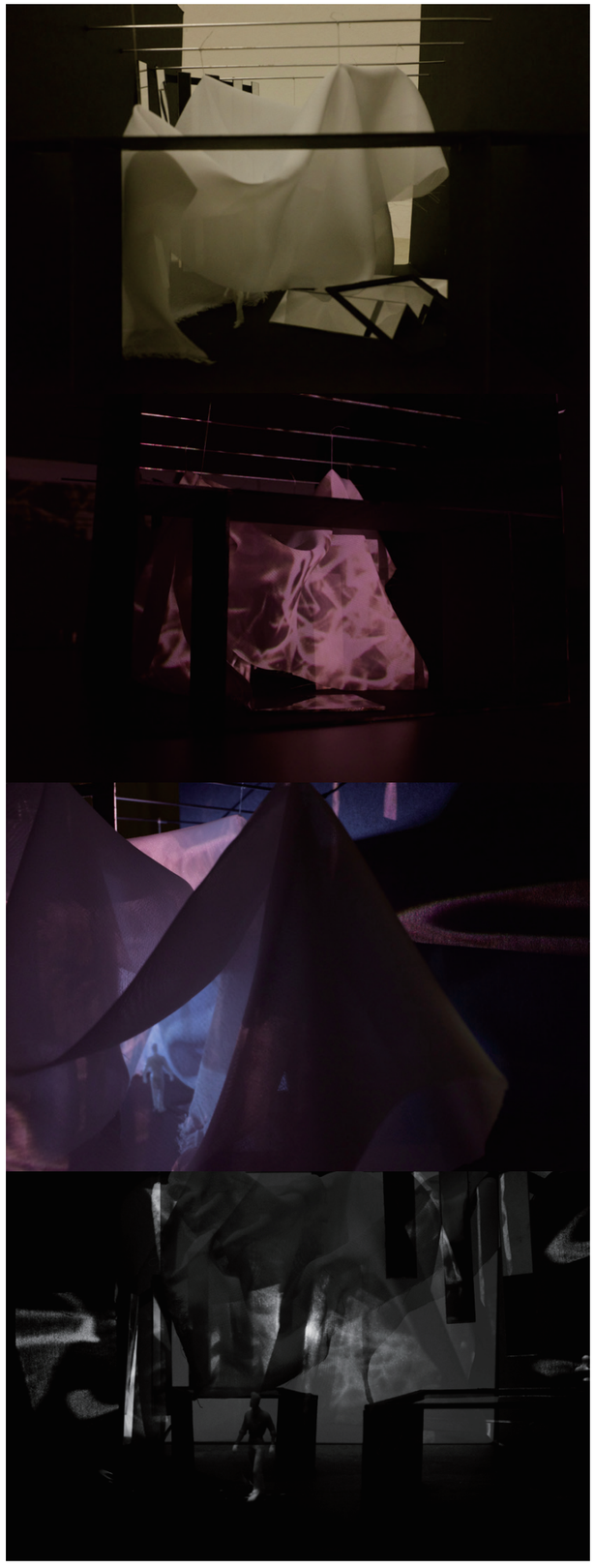
A immersive translation of Loie Fuller's works

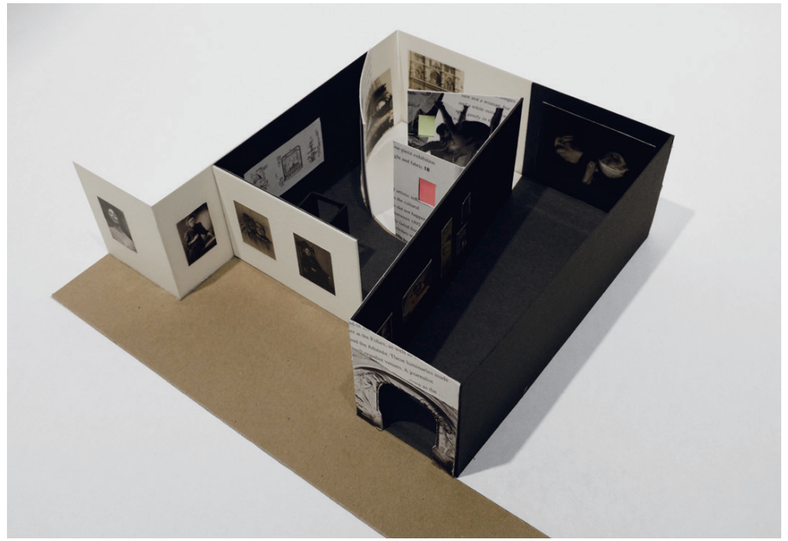


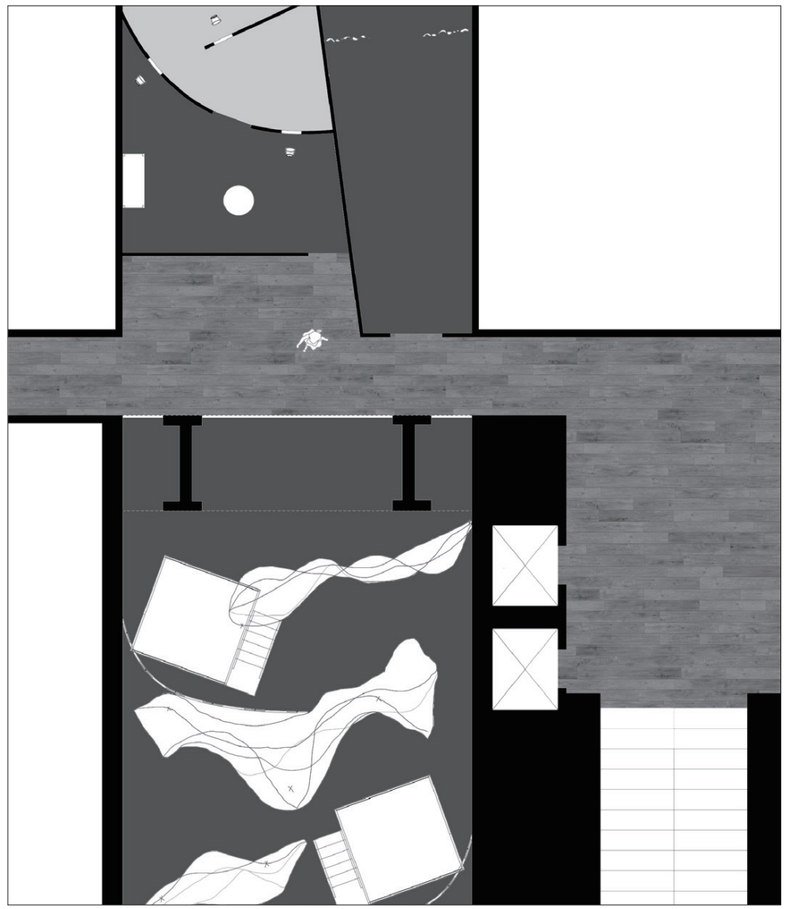
Colored Light Underneath Tilted Glass Stage



Mirrors surrounding the stage for fragmented and multiperspective reflections



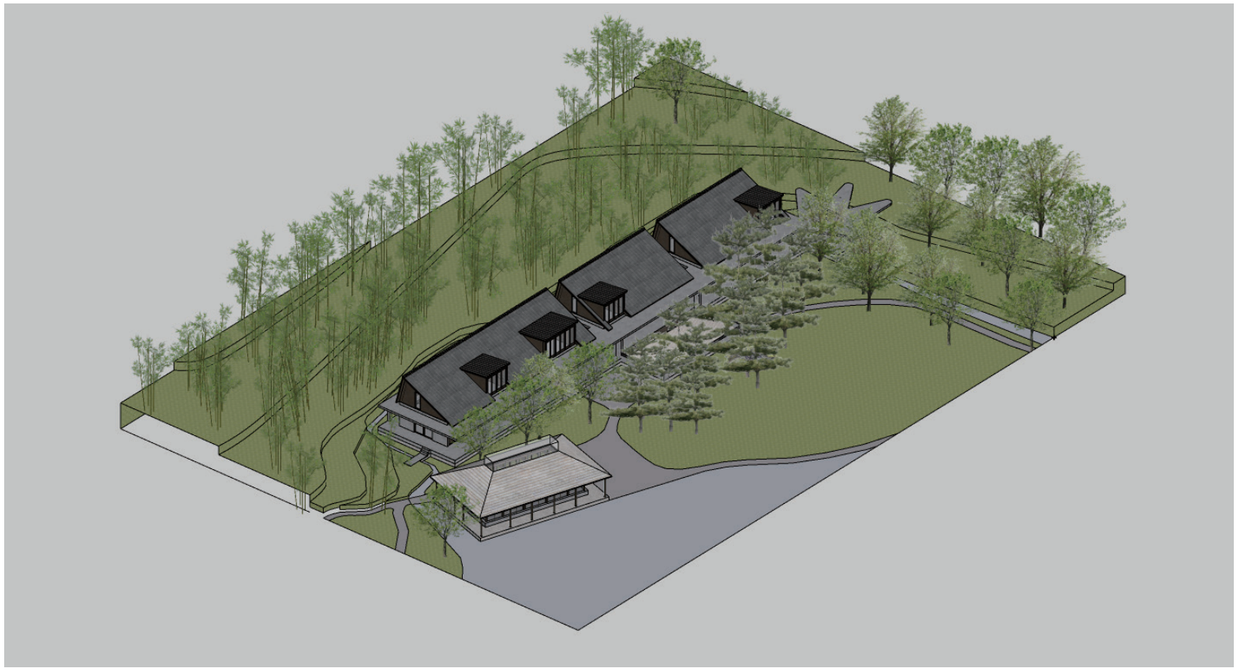




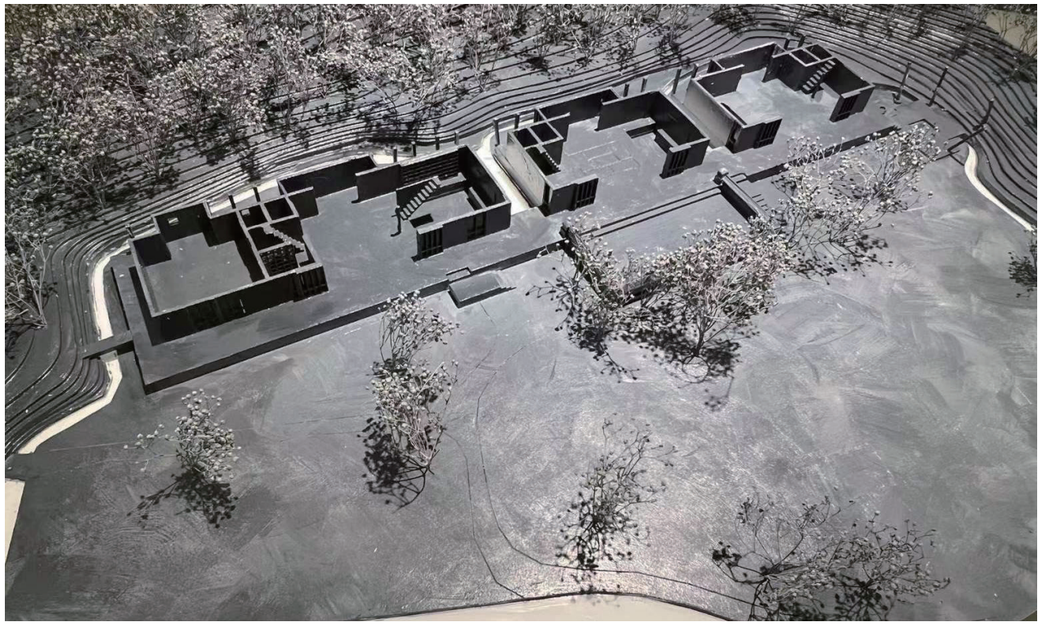
04 The Villager's Home + Stage in Paddy Field

Professional Work for Atelier Archmixing

Project Type Internship
Date 2021 Summer
Company Atelier Archmixing
Contribution Digital Model, Physical Model, Concept Development, Drawing Fixing
Location Mount Jiuhua, Anhui, China

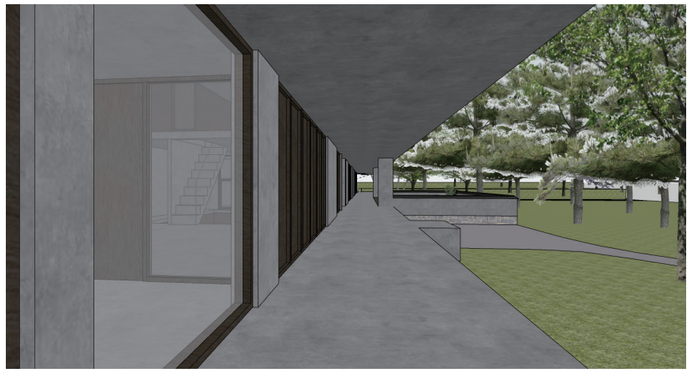


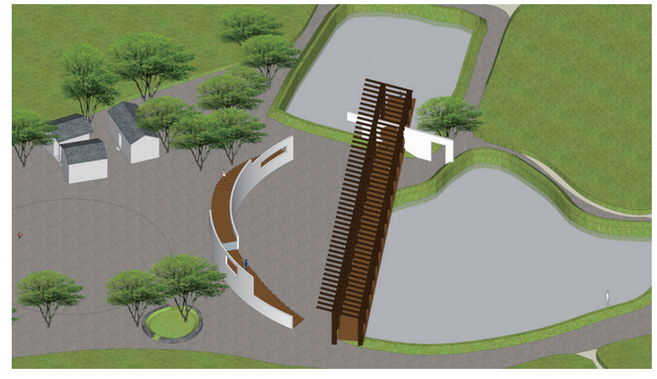
Contribute to SketchUp modeling, physical model making and drawing fixations for the Villager's Home project. The project is a duplex of a residence and a gallery. The design is inspired by traditional Anhui architecture and it would be part of a upcoming culture tourism business program.

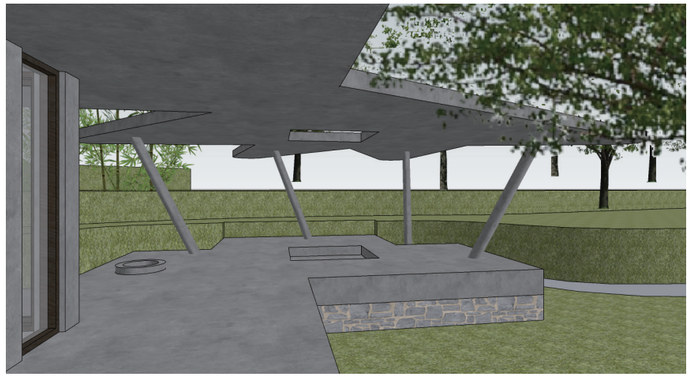


Stage in Paddy Field

Concept development for a performance and event space at the center of the site. My idea was to create a playful structure that can activate multiple perspectives as well as a resting / audience corridor.







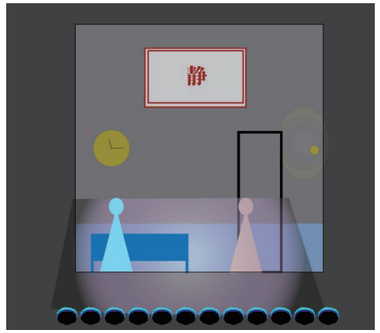
05 Secret Love in Peach Blossom Land

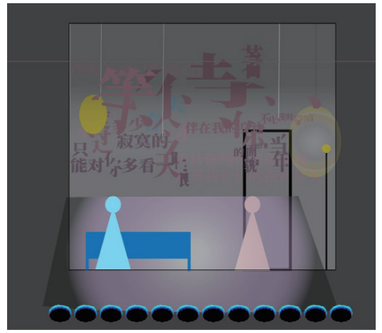
Theatre Set Design

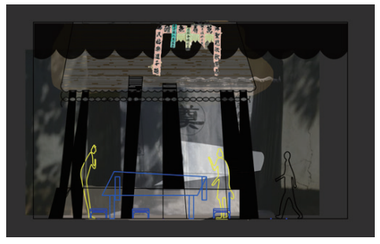
Project Type Student Theatre Production
Date 2022 Spring
Instructor Instructor Alexander Haynes, Professor Sara Ossana
Role in Team Design Team Leader

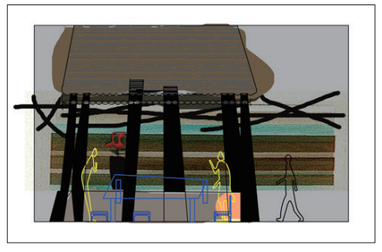
Originally written by Stan Lai, this play starts with two drama troupes arranged to have a rehearsal at the same time by mistake; one of the workshops is playing the early-modern tragedy Secret Love, and the other one is playing the period comedy The Peach Blossom Spring based on a classical poem. Since they have only one stage for their rehearsals, issues and conflicts follow. Secret Love for the Peach Blossom Spring creates a unique experience of stage play by mixing up the costume and modern, sorrow and delight.

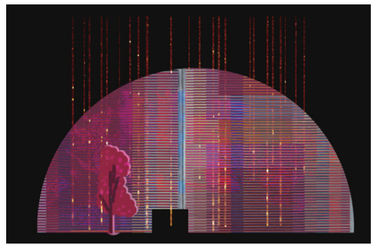
Tone, Colors and Vibe by the team

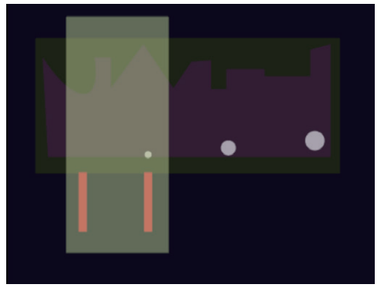


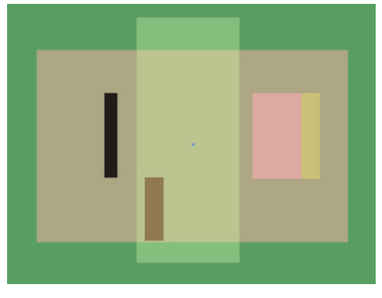


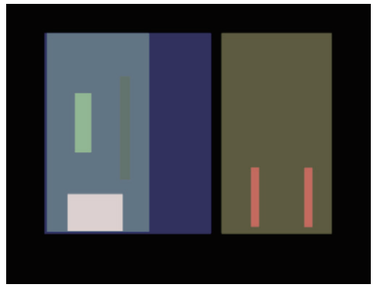


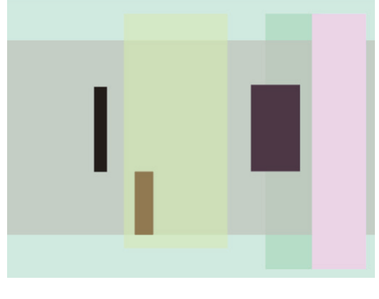


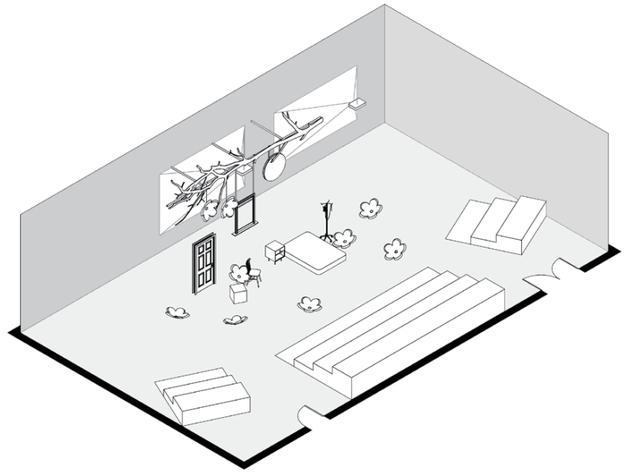


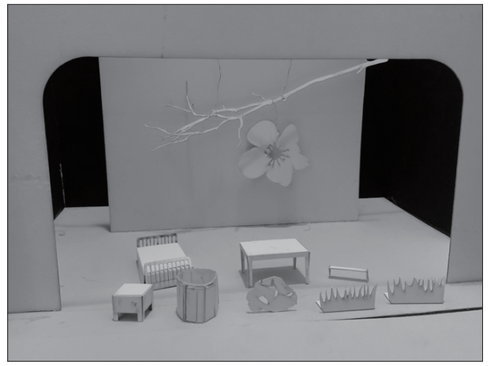


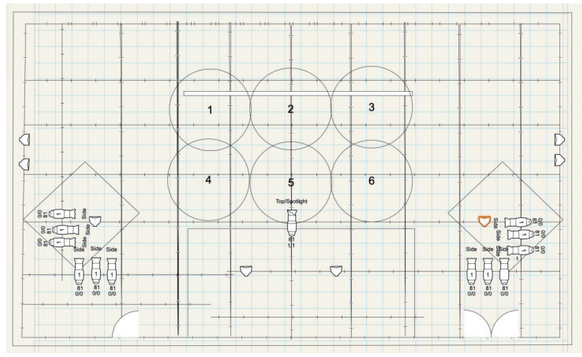




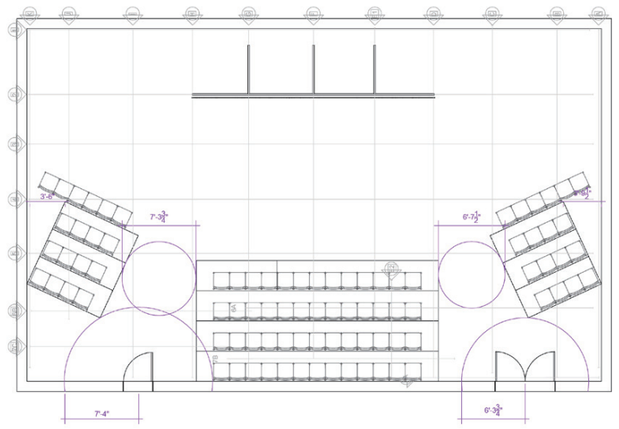






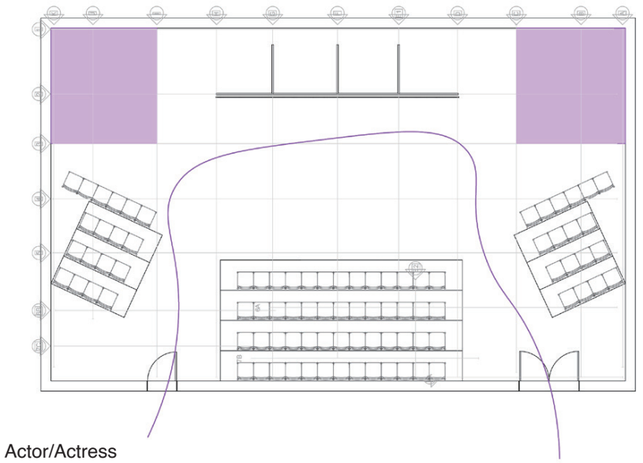


Lighting Plan by team's light designer

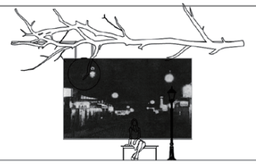


Seating Plan

The meta structure of the play inspired us to make it as immersive as possible.



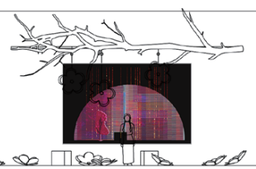
Actor/Actress



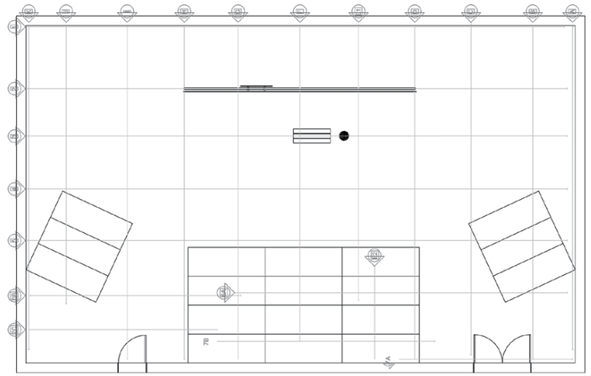
Scene A: Shanghai
Bench
Street Light (Battery, no plug)

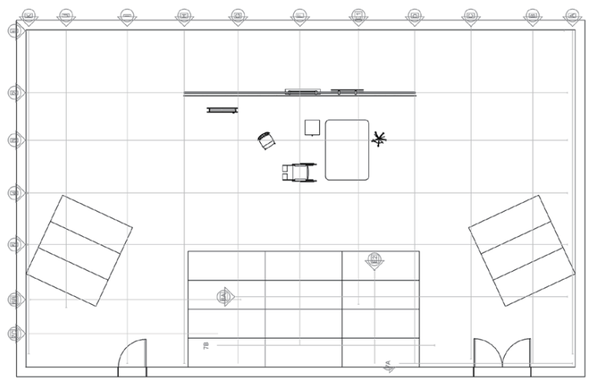
Scene B: Hospital
Door on wheels
Chair
Wheelchair
Window
Sign(Moon)
Side Cabinet
Bed
Medical IV Pole

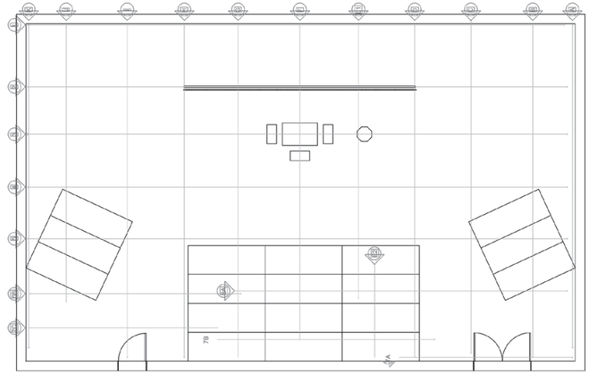
Scene C: Tao's Home
Table
3 Stools
Side Table

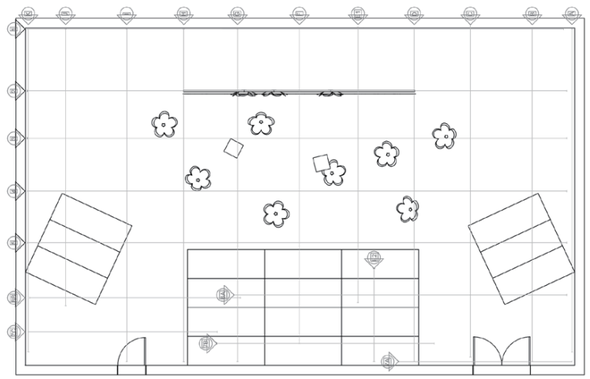


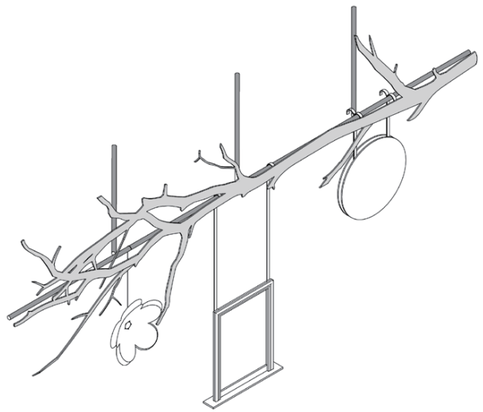
Scene D: Peach Blossom Land
3 Peach Blossoms Hanging
8 Peach Blossoms
2 Theatre Boxes

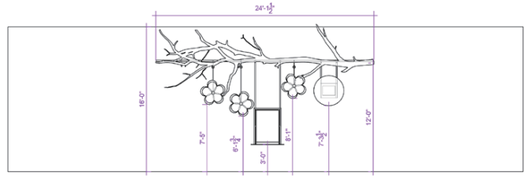


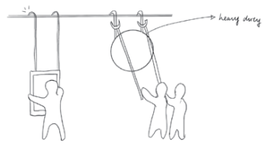




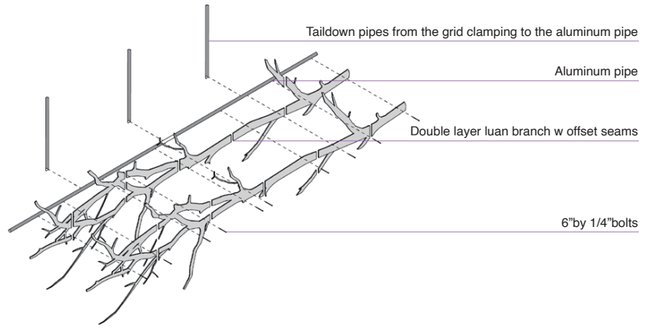


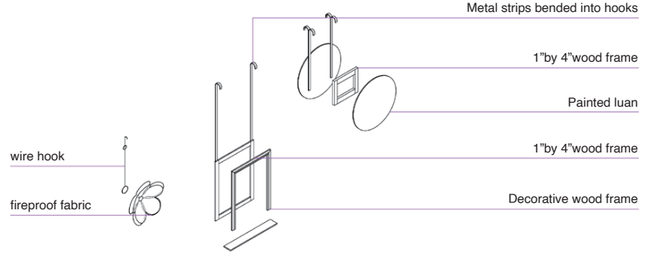






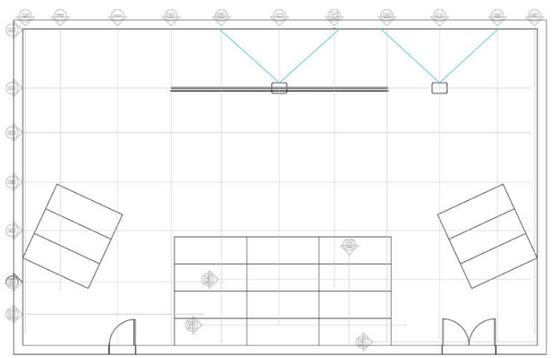
Construction

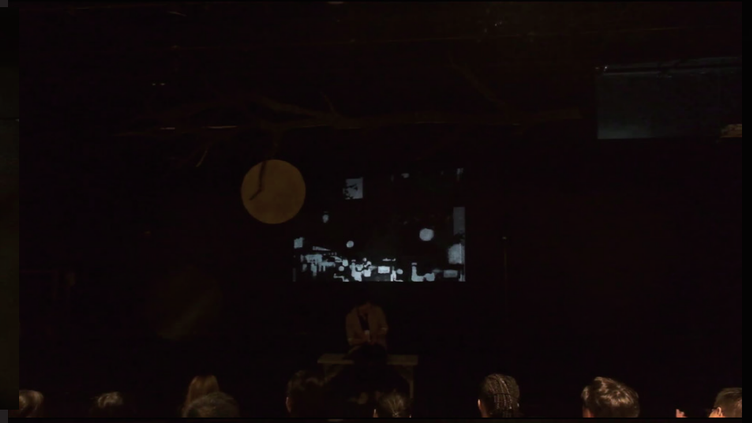


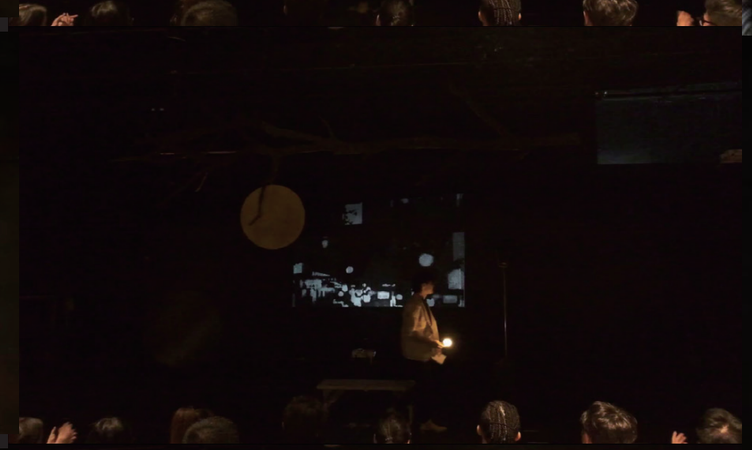


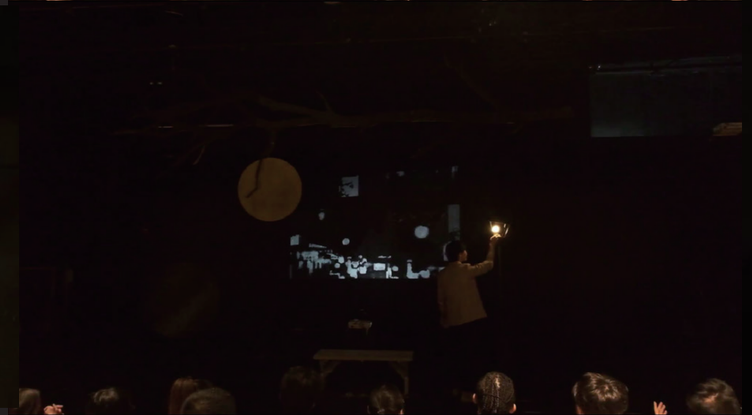
Design for a changeable set system - the interaction of the backstage crew becomes part of the play; what is on the branch marks the conflicts and overlaps of the scenes

2F for backdrop(operating from control room)
approx 40ft hdmi/power cords needed
2C for subtitles







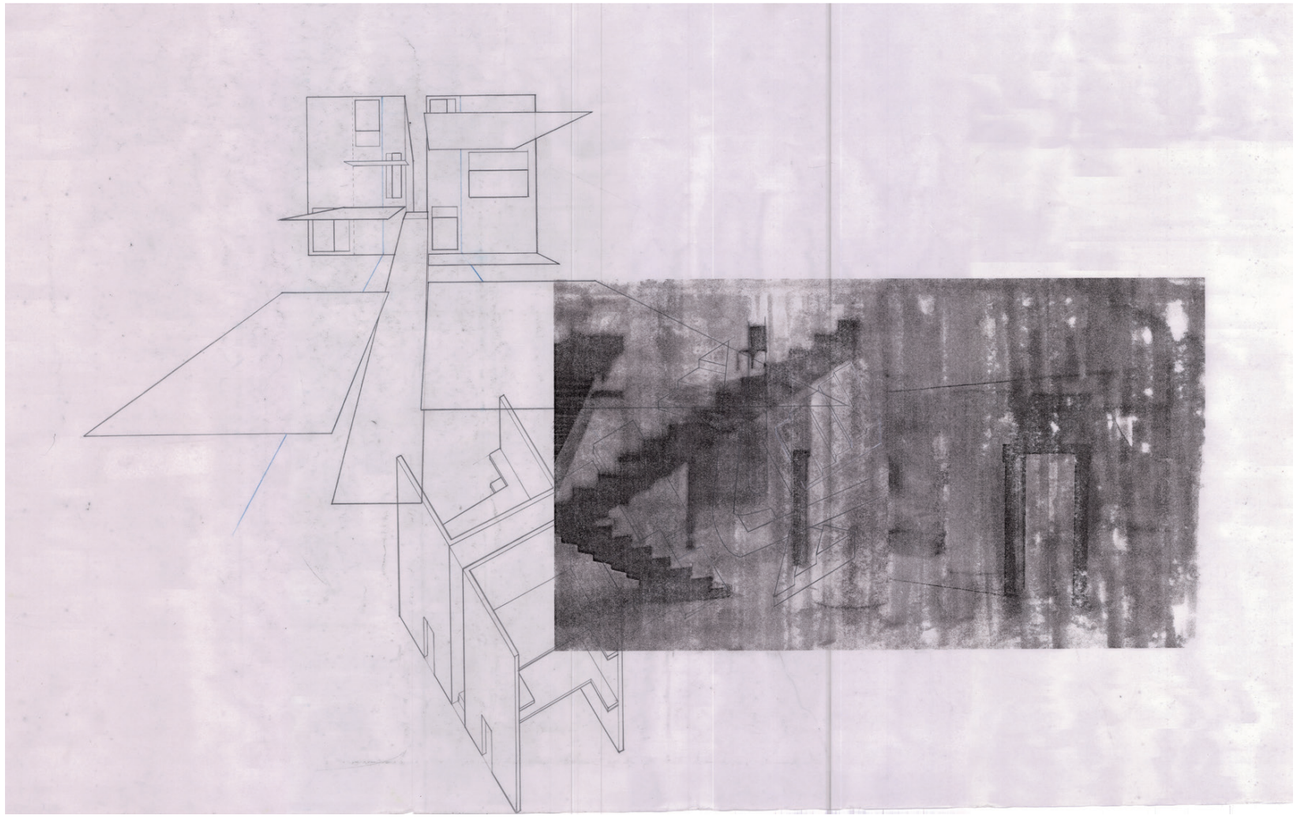


Team Photographer's Photos

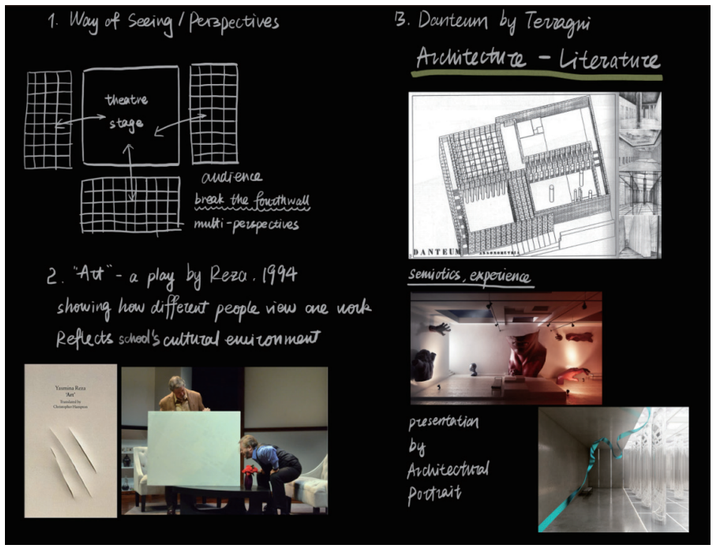
06 The Palimpsest Theatre

Conceptual Interior Architecture

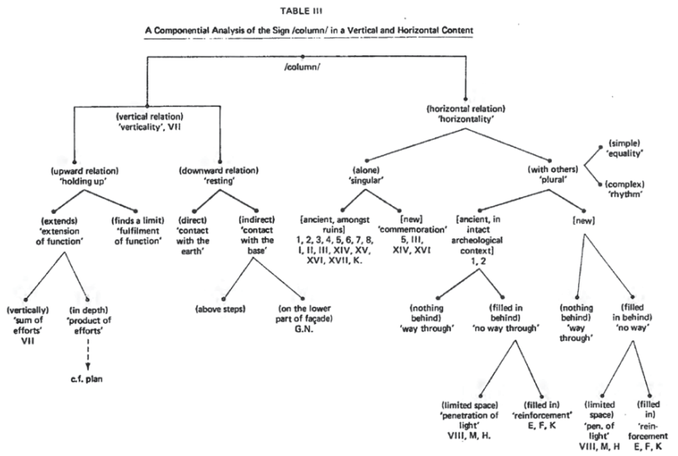
Project Type Academic
Date 2020 Fall
Instructor Professor Wolfgang Rudorf, Professor Eduardo Duarte
Location Providence, RI



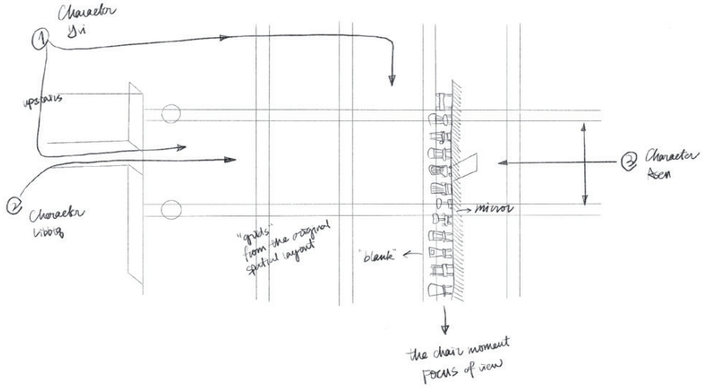
Transforming furniture major studio spaces into a theatre. The site is a historical neo classical style bank building that has underwent series of adaptations. These clashing features give the interior a unique dynamic that inspired me to do a design that palimpsests the past stories of the building.

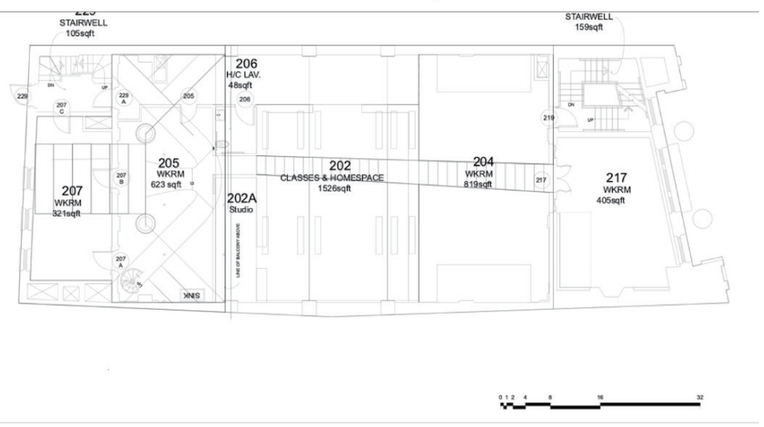


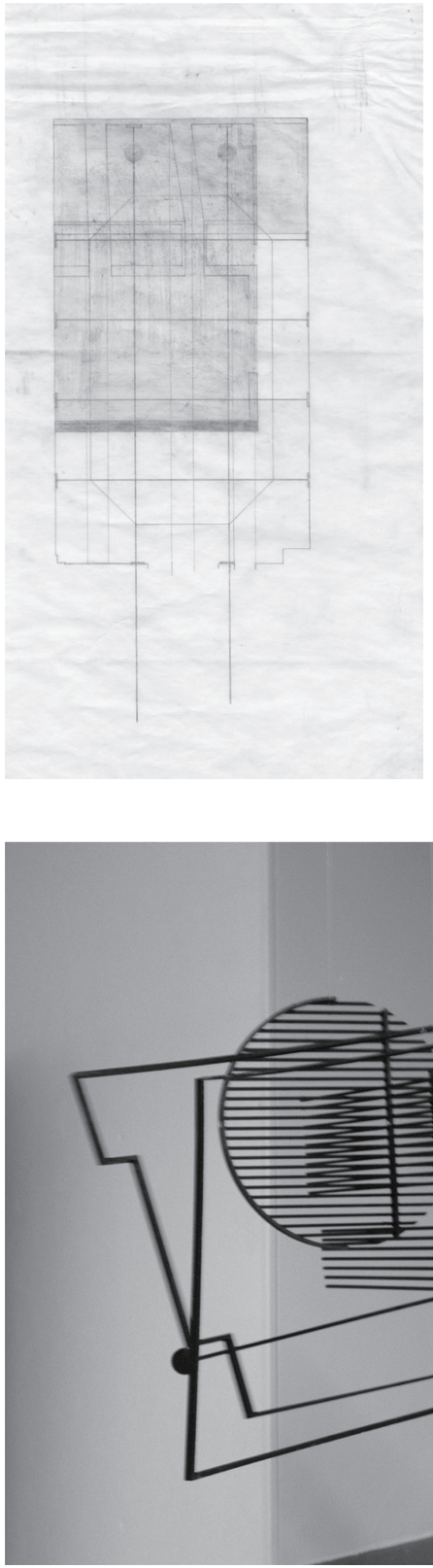
Umberto Eco
System on Architecture Semiotics

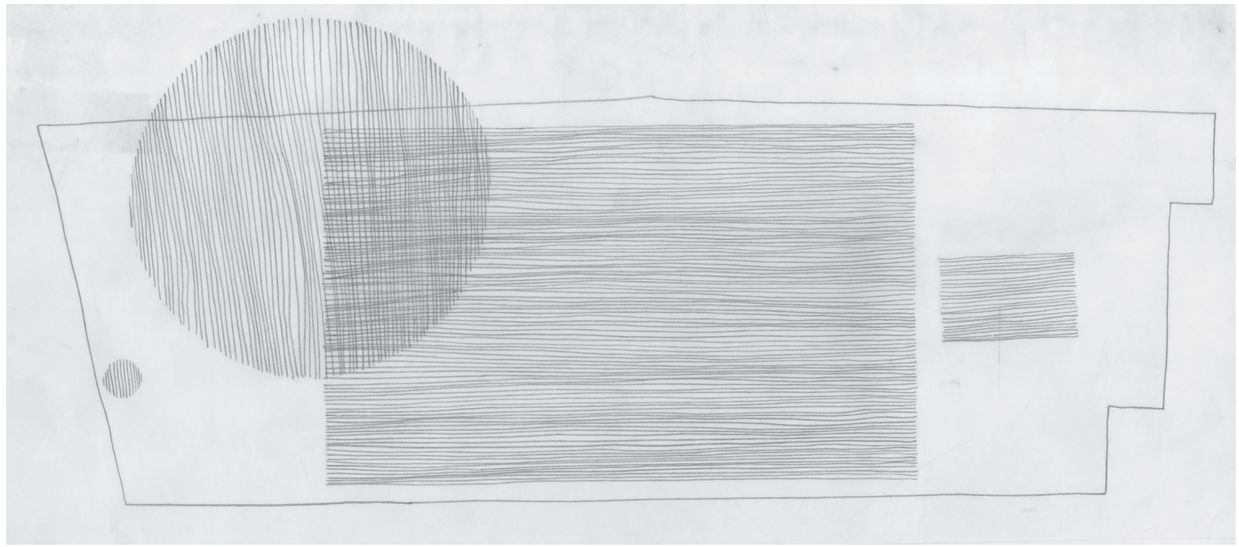


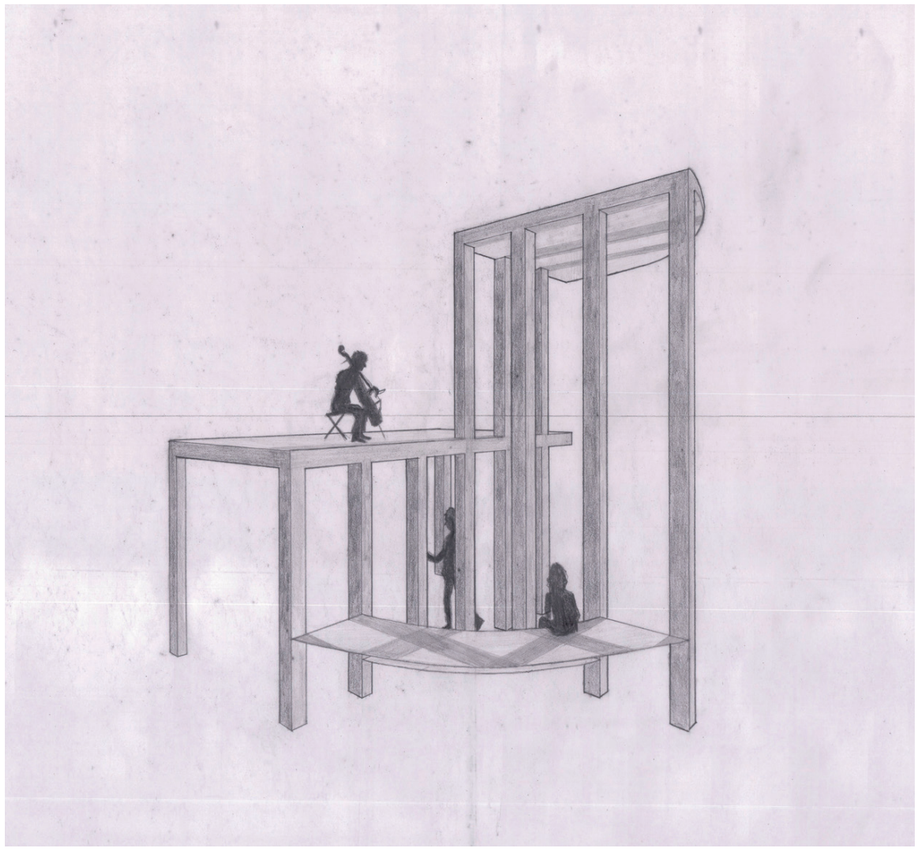
Inspired by the French play *Art*
to create three ways through the space

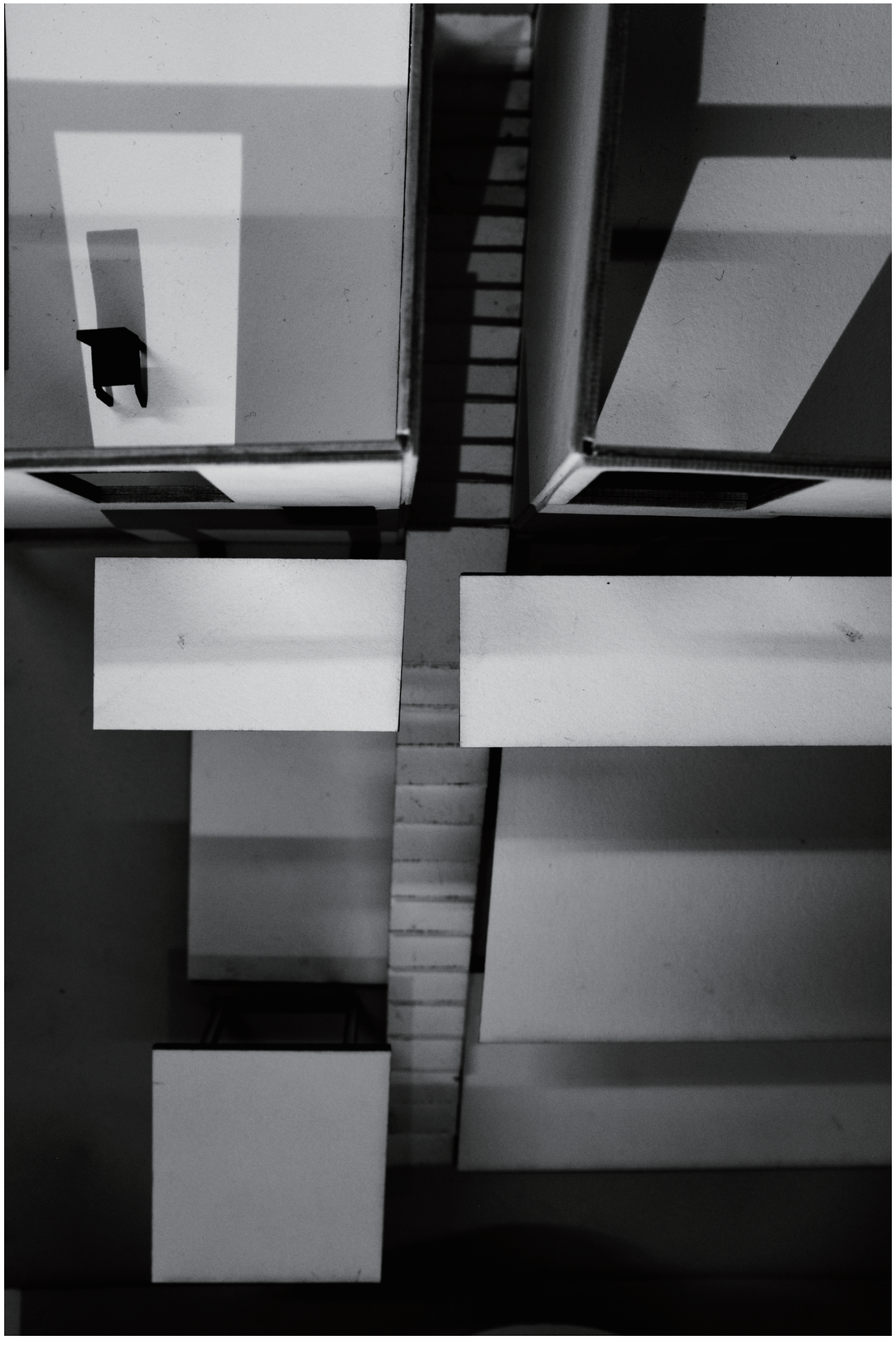


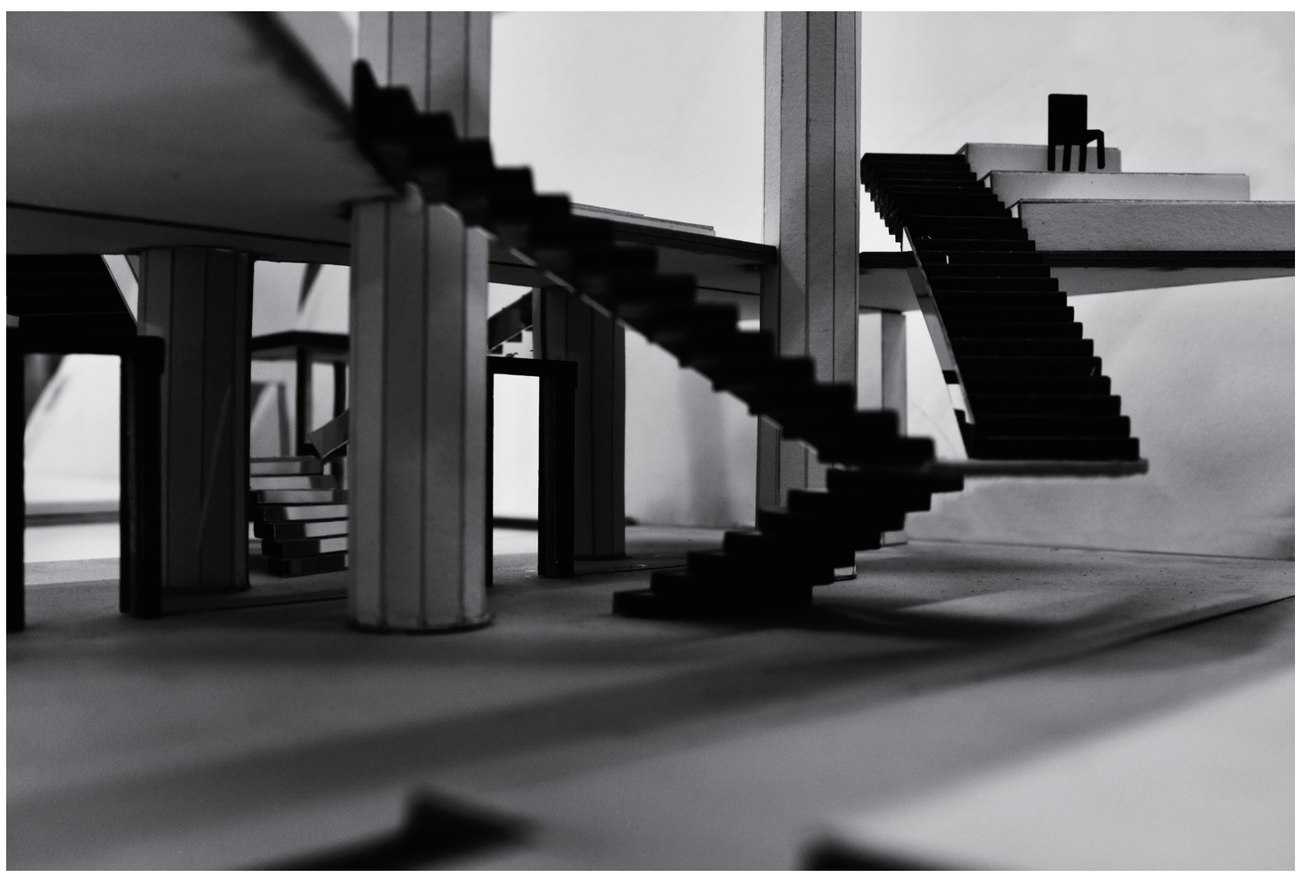








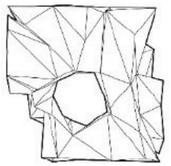


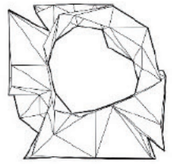


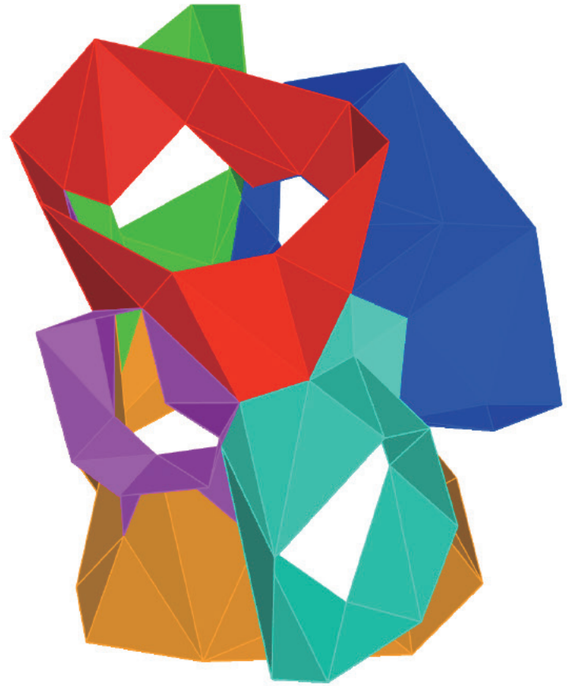
07 Optical Break

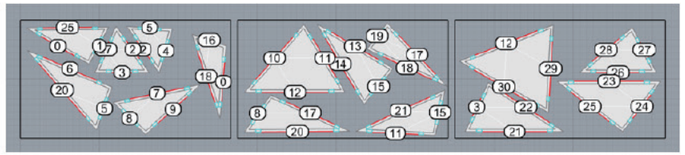
Installation

Project Type Group Project
Date 2021 Spring
Contribution Idea Development, Prototyping, Fabrication
Location Providence, RI









Exploring faceted geometry to create a unique language about perspectives. Colorful yarn stcitches add playfulness to the form.