

YUXIN HU
PORTFOLIO

SELECTED WORKS 2019-2020

Master of Science in Advanced Architectural Design
Columbia University Graduate School of Architecture, Planning and Preservation
2020 Candidate

YUXIN HU

Address: 511 west 113th street, apt 72a, new york, 10025
Phone: +1 6463848352
Email: yuxin.h@columbia.edu
Website: linkedin.com/in/yuxin-hu-21a80b192/

EDUCATION

Columbia University / New York

Master of Science in Advanced Architectural Design Degree expected May 2020

Zhejiang University / Hangzhou

Bachelor of Architecture Sept. 2014 - June 2019

- 2014 - 2015 First-Class Academic Scholarship
- 2015 - 2016 Third-Class Academic Scholarship
- 2015 - 2016 Zhejiang University Real Estate Foundation Scholarship
- 2015 - 2016 Design and Research Institute of Zhejiang University Scholarship

Singapore University of Technology and Design / Singapore

Exchange Program Sept. 2015 - Dec. 2015

- Core Studio 1 Outstanding Design Award

EXPERIENCE

SOM / Shanghai - Intern

· Project development; Drawing; Rendering; Modelling on May 2018 - Aug. 2018
Shanghai Huangpu Old Town Urban Design and Xi'an Beilin District Huzhu Road Urban Design

Singapore University of Technology and Design / Singapore - Research Assistant

· Design; Research; Experiment; Project management on Jan. 2018 - Mar. 2018
Sombra Verde: A Bamboo Pavilion for Singapore Urban Design Festival and SUTD Open House 2018: Parametric Furniture Design and Fabrication

LYCS Architecture / Hangzhou - Intern

· Diagram drawing; Construction drawing; Project development on July 2017 - Sept. 2017
Yiwu Foreign Languages School

Design and Research Institute of Zhejiang University - Intern

· Construction drawing on May 2017 - July 2017
Henan Song County Downtown Urban Interface Renewal Design

SKILLS

Software

- Revit
- Autocad
- Rhinoceros
- VRay
- Grasshopper
- ArcMap
- Adobe Creative Suite

Technical + Craft

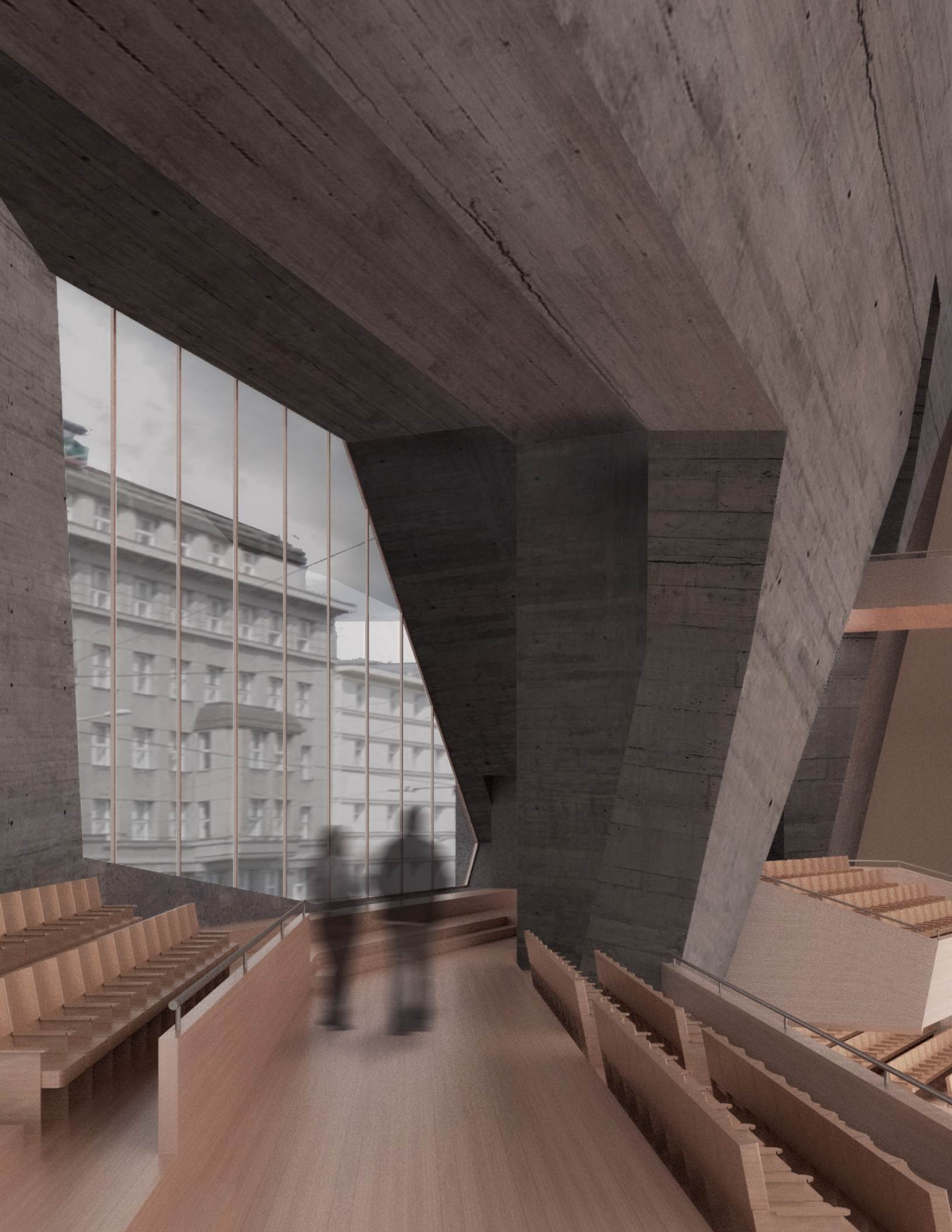
- JavaScript
- D3.js
- Hand-Modelling
- Hand-Drafting
- Laser Cutting
- 3D Printing

Language

- Chinese (Mandarin)/ Native
- English / Professional
- Japanese / Basic

CONTENTS

01	ARCHITECTONICS OF MUSIC <i>Concert Hall Design in Prague, Czech Republic</i>	01
02	MOTION <i>A Museum without Gallery? Art Museum Design in Manhattan, New York</i>	11
03	SHARING <i>Towards a New Rural Landscape in Djerba, Tunisia</i>	21
04	Algorithm and Urbanism <i>Urban Data Exploration, Modelling and Visualization</i>	32
05	Advanced Curtain Wall <i>Curtain Wall Design in Manhattan, New York</i>	36
06	Super Tall <i>Infographic Analysis of Super Tall Life Safety and Core Elements</i>	38
07	Rethinking BIM <i>Lever House Facade Design With Adaptive Components in BIM</i>	40



01

ARCHITECTONICS OF MUSIC

Concert Hall in Prague

GSAPP Advanced Studio 6

Tutor: Steven Holl, Dimitra Tsachrelia

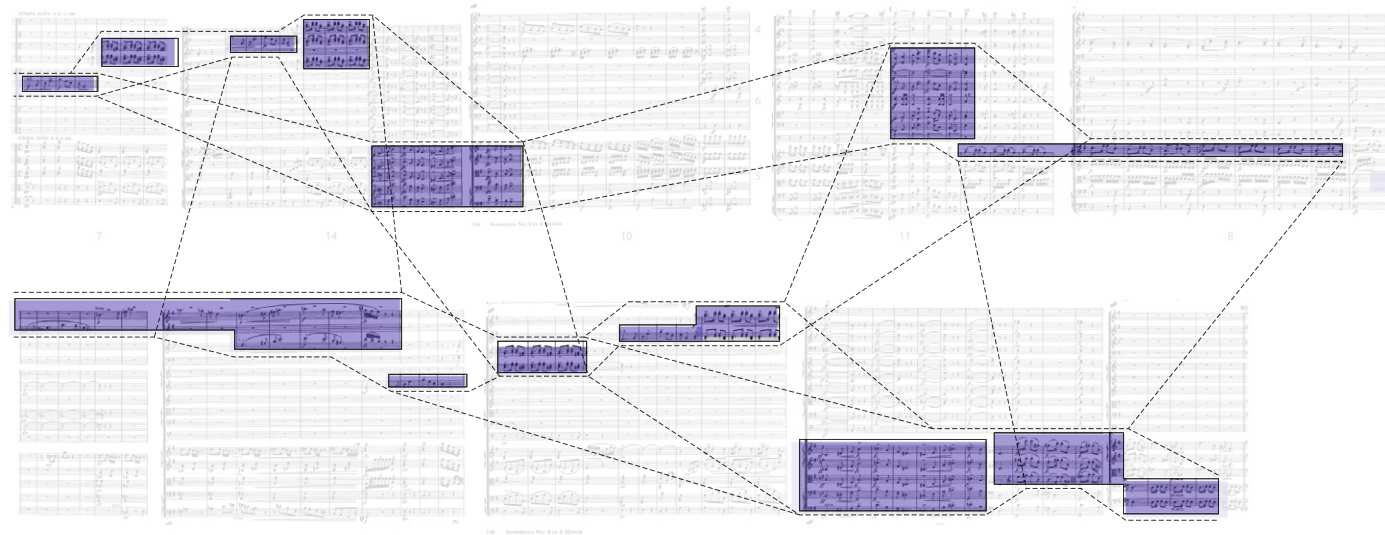
Date: January 2020- April 2020

Collaborator: Yining He

Role in Group: Team Leader, Design, Drawing, Modelling, Rendering

This project envisions a concert hall developed from the reinterpretation of New World Symphony. The duality and recurring melodies in the music are transformed into an uniform spatial language with two contrasting expressions. Solids carved by continuous yet ever-changing voids formed both the interior and exterior expression of the architecture.

MUSICAL STRUCTURE, RECURRING MELODY & DUALITY



"I am now satisfied that the future of music in this country must be founded upon what are called **[African American]** melodies."
 "This must be the real foundation of any serious and original school of composition to be developed in the United States. . ."
 "These beautiful and varied themes are the product of the soil. They are American."

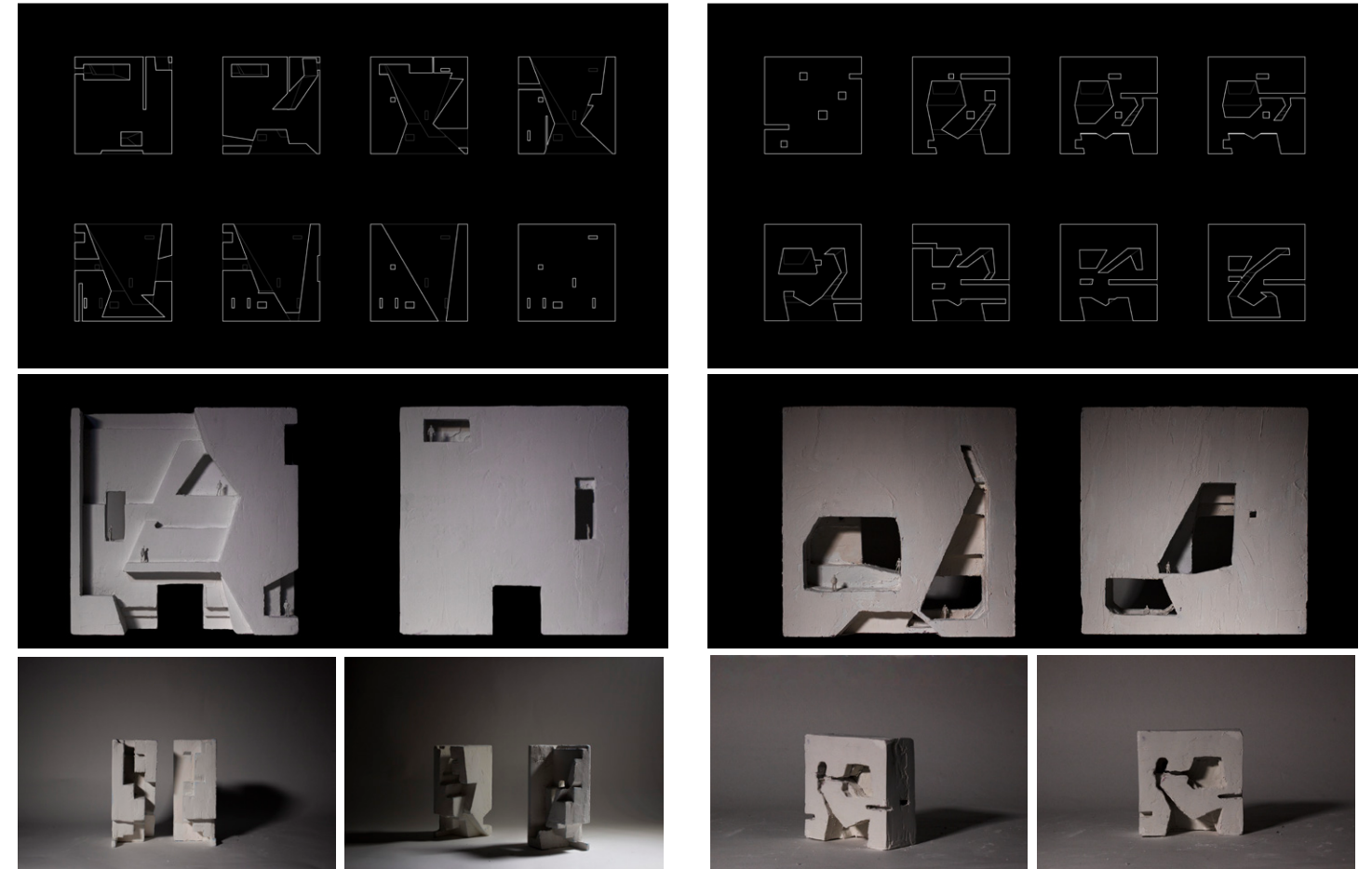


New World Symphony
United States

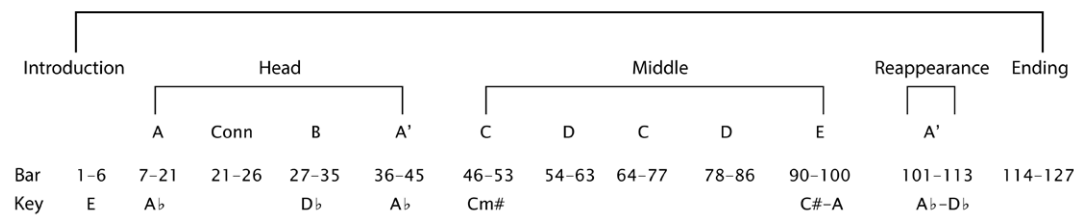


Antonin Dvorak
Czech Republic

SPATIAL STRUCTURE, RECURRING PATTERN & DUALITY



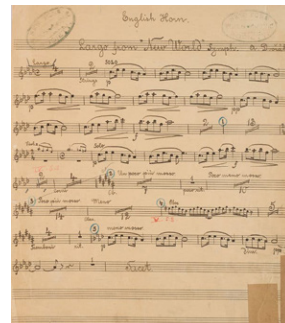
Compound Ternary Form



The classical Sonata Structure in symphony's Largo movement



The famous English horn solo melody with sole music characters in symphony's Largo movement



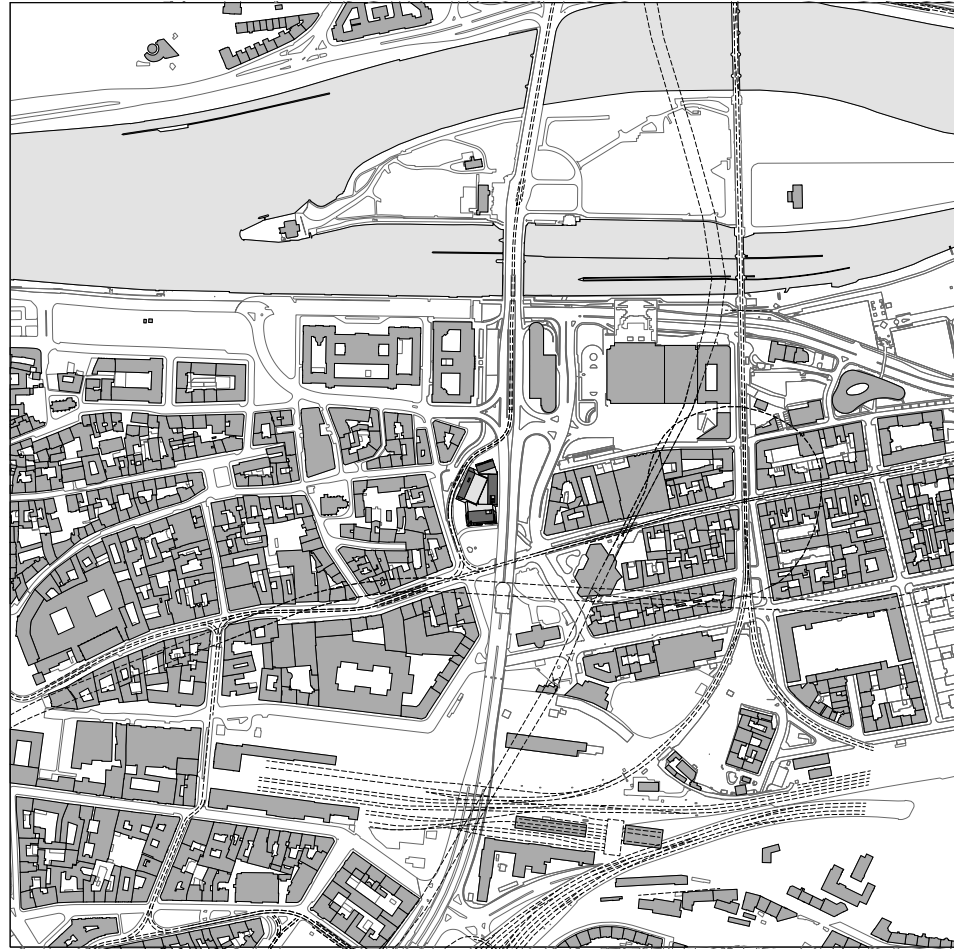
simple and crude



opaque with odd shaped openings

The void keeps changing in section but still we have an overall thematic feeling of the space. Just like the melody switches in various ways but keeps the overall emotion.

SITE & STRATEGIES

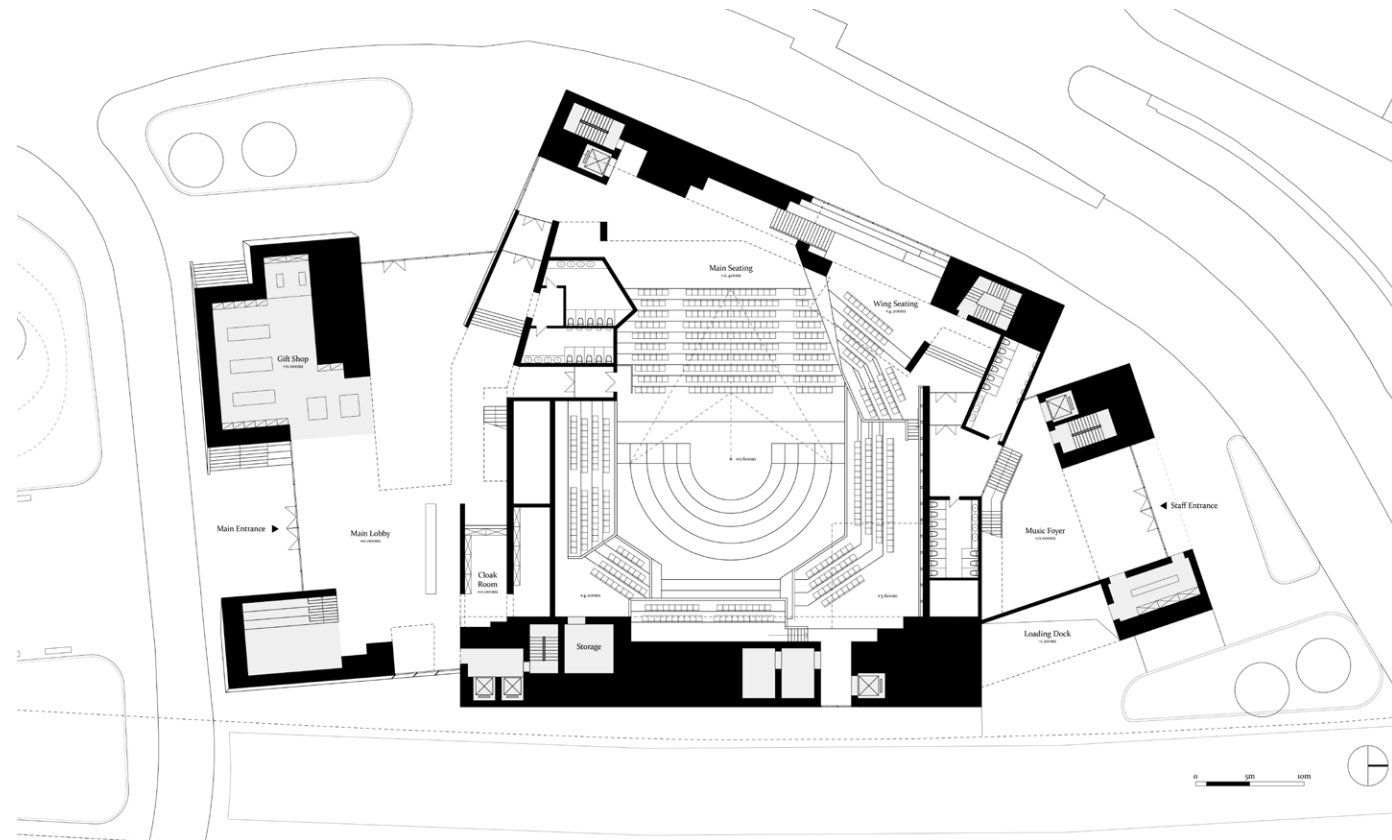


On the urban scale, the language of prague is adopted. Enclosing the site with four blocks or thick walls, the urban fabric is continuous, yet the architecture language is something new

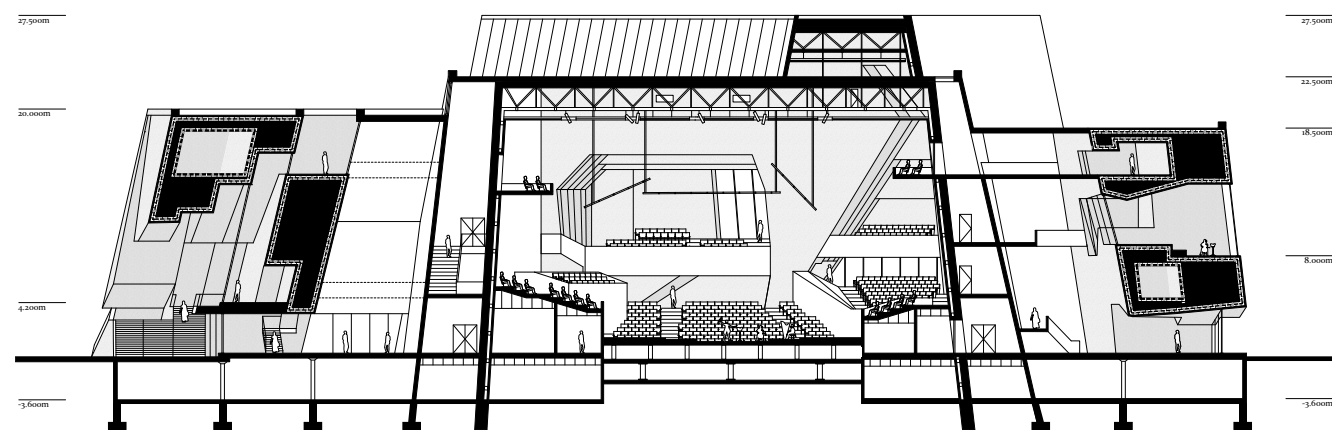
SOLIDS, VOIDS & PUBLIC APPEARANCE



The voids have a public appearance. It could be entrances to the building. It can also suggest the programs inside, a space for music, a space for public activities, etc.



PLAN (STAGE LEVEL)

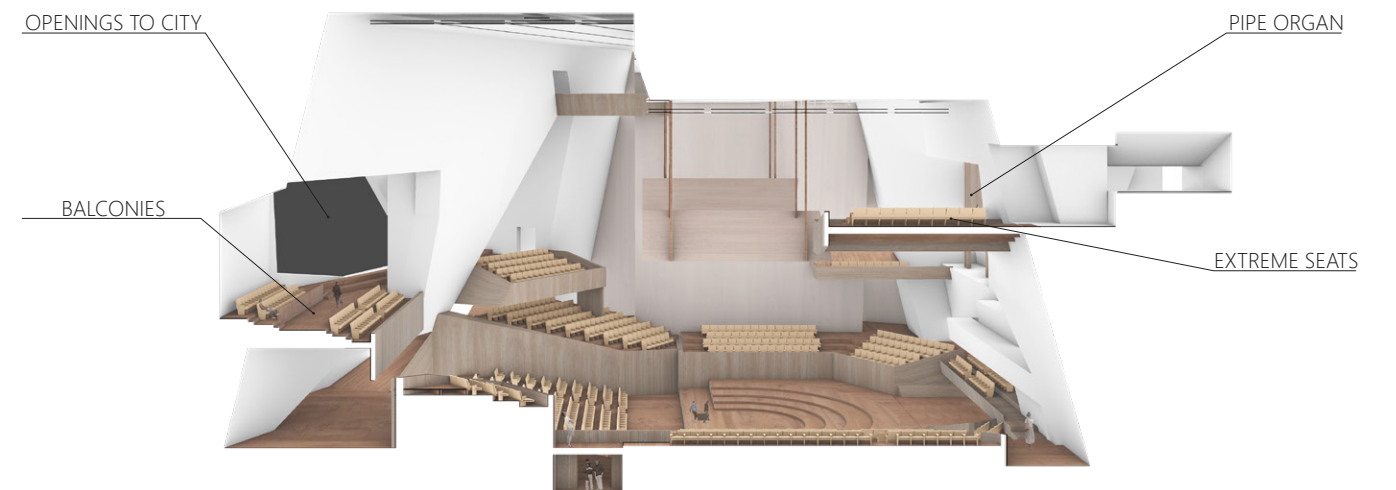


SECTION A-A



HYBRID LANGUAGE

The typical vineyard arrangements are combined with our language and create three kinds of seatings. The typical vineyard seating, the seating inside the voids, and the hybrid



SPATIAL DUALITY

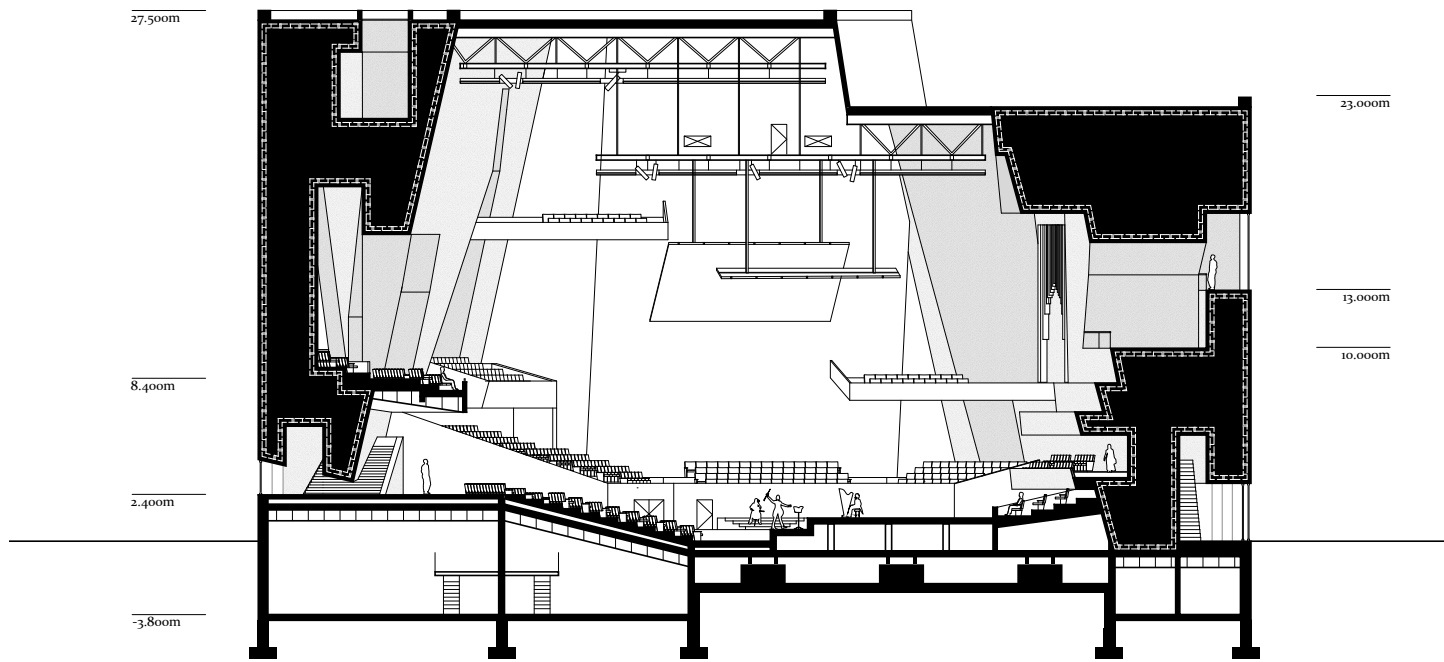
The void keeps changing in section but still we have an overall thematic feeling of the space. Just like the melody switches in various ways but keeps the overall emotion.



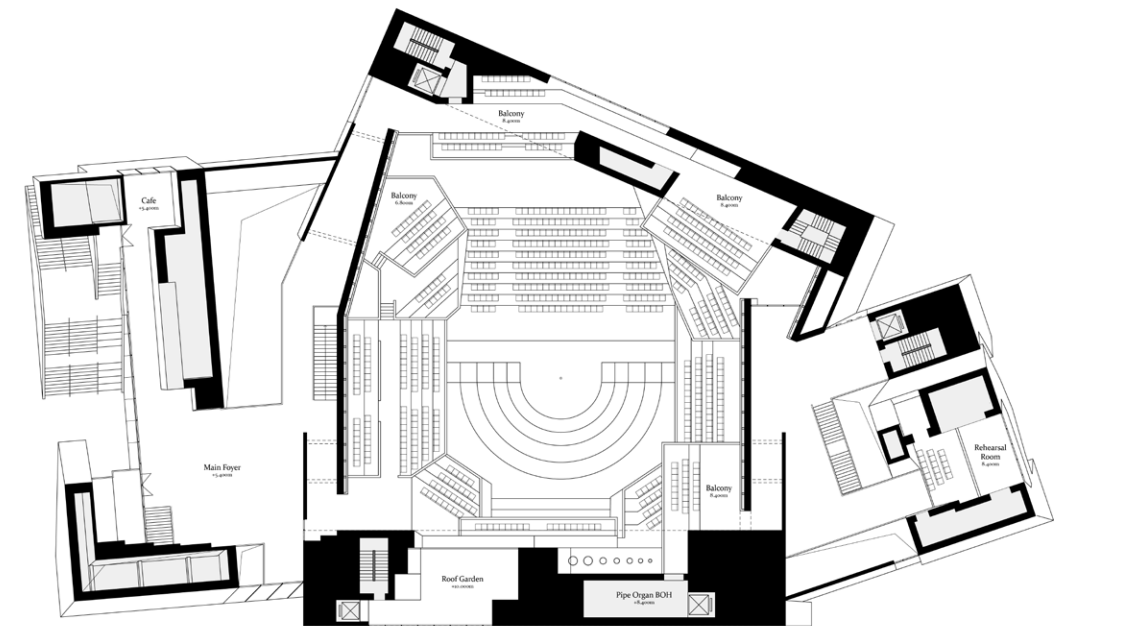
The voids create opportunities for needed program but with different experience.



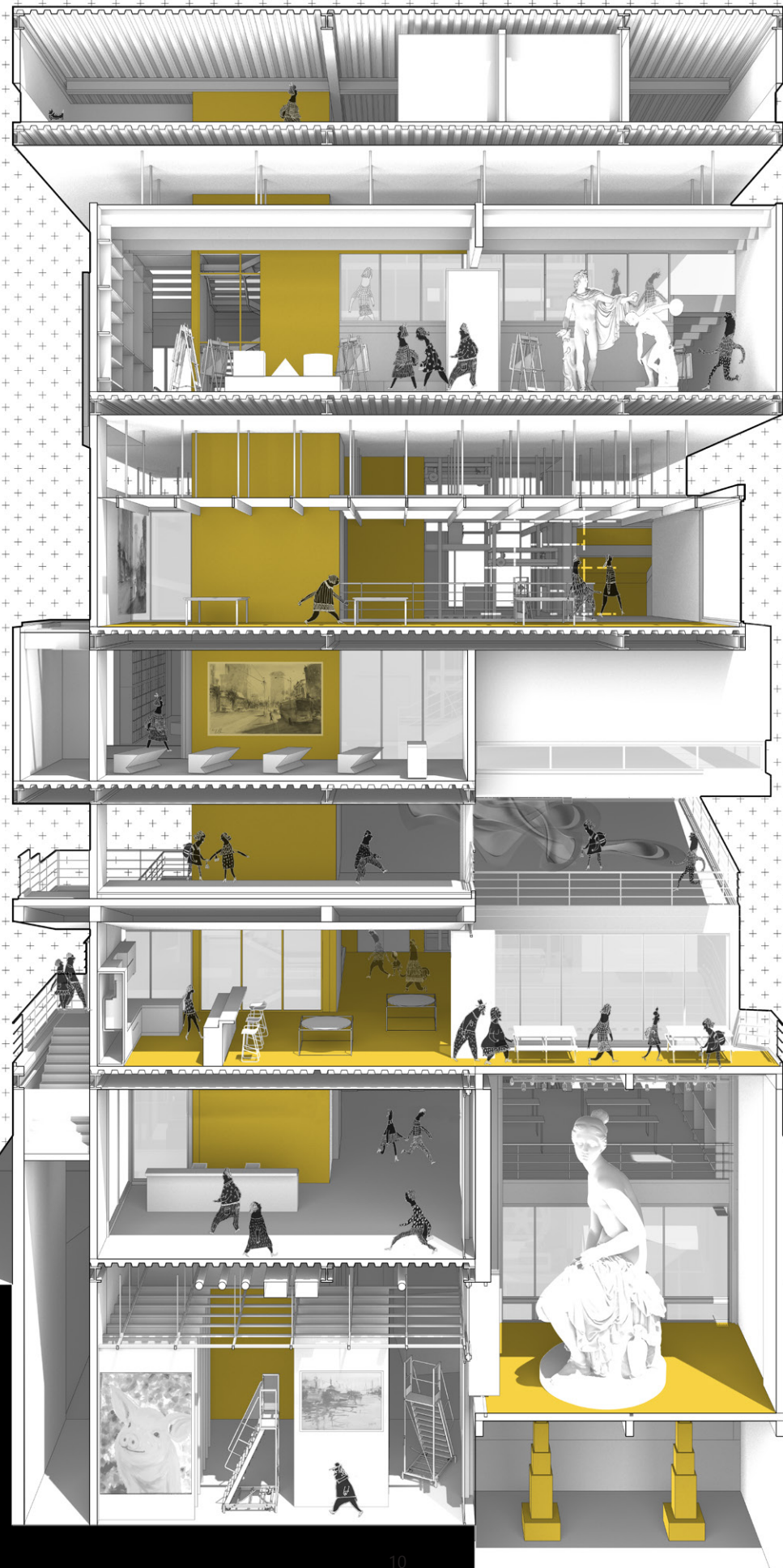
The experience is conveyed through the frontality, the thickness and the voids



SECTION B-B



PLAN (BALCONY LEVEL)



02 MOTION

Art Museum without "Gallery"

GSAPP Advanced Studio 4
Tutor: Mimi Hoang, Eric Bunge
Date: June 2019- August 2019
Collaborator: Zihan Yu
Role in Group: Team Leader, Design, Drawing, Modelling, Rendering

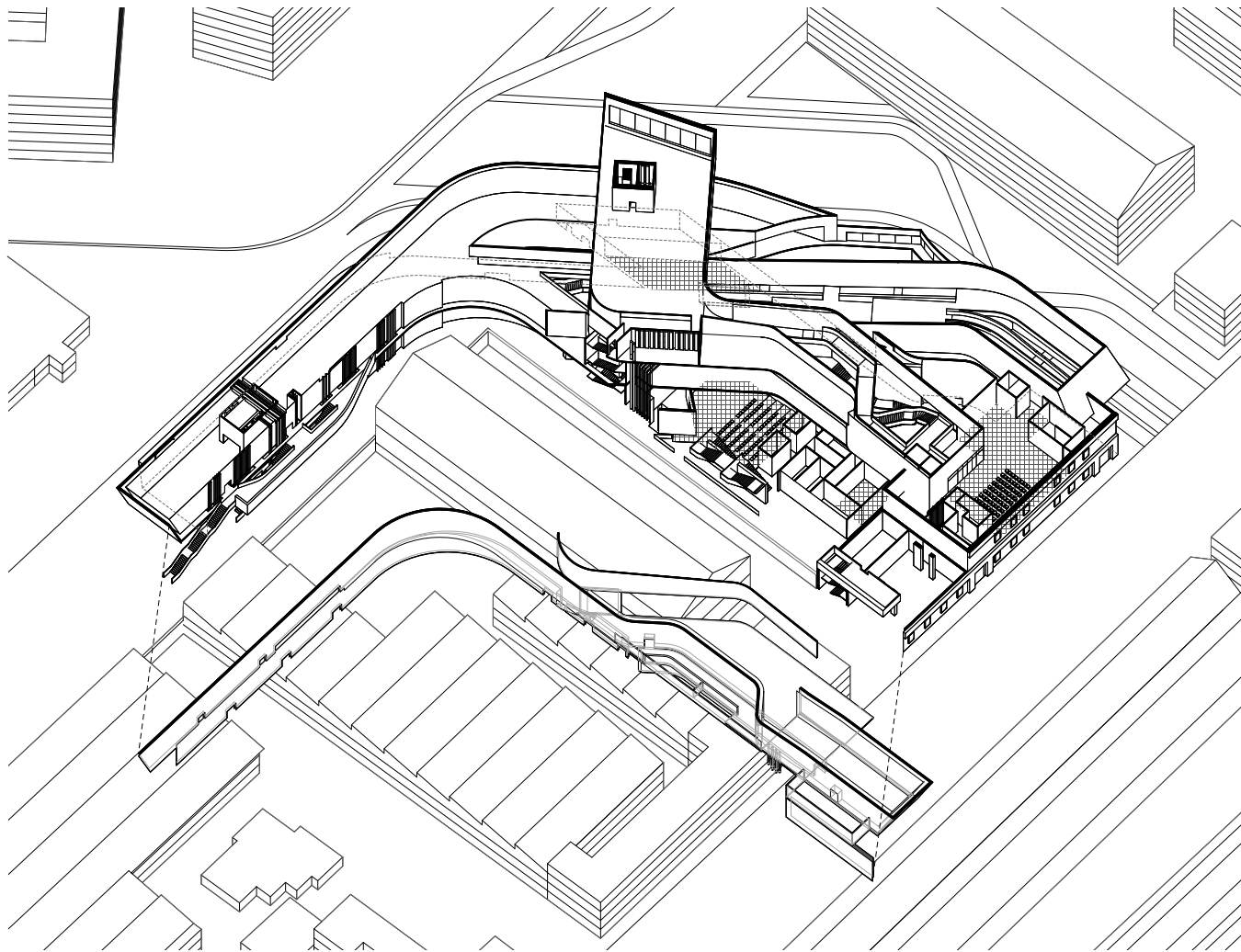
This project envisions a hypothetical art museum without galleries. By this we mean without galleries as we conceive of them today. Spaces for production, support, guest services, education and circulation are re-interpreted to serve as an armature for art. How would a museum without traditional galleries adapt to existing art forms or catalyze new ones?

HYPOTHESIS: A MUSEUM STRIPPED BARE BY/TO ITS GALLERY



Museum without walls, Andre Malraux, 1947

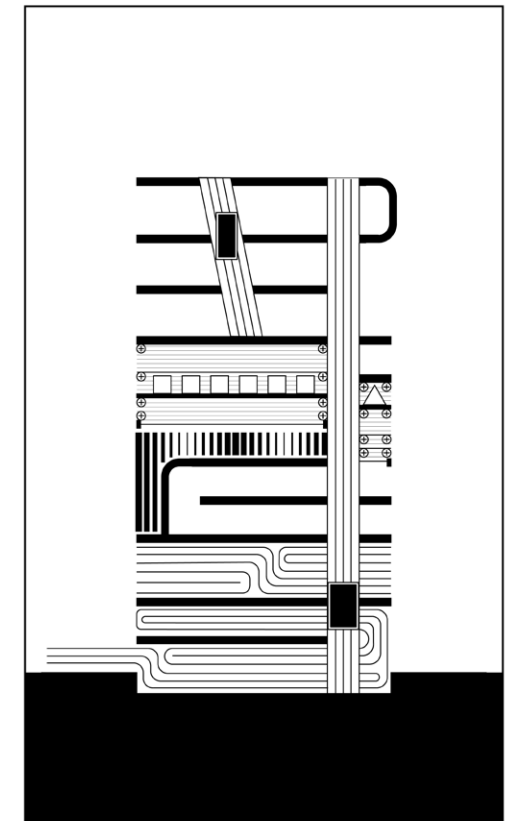
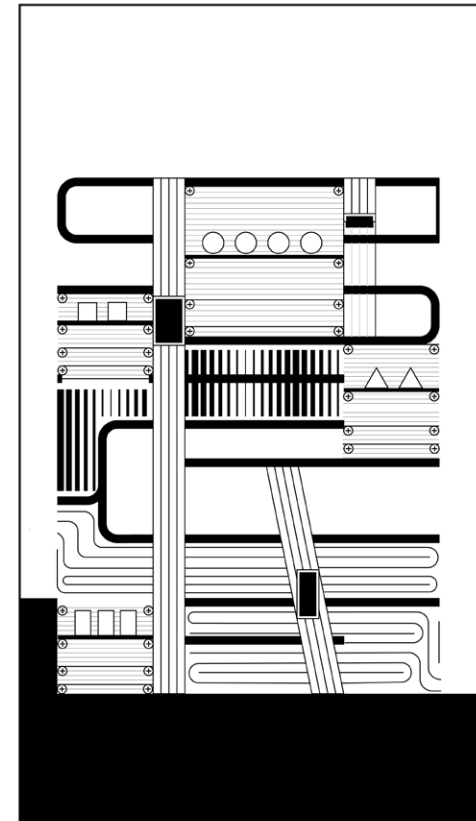
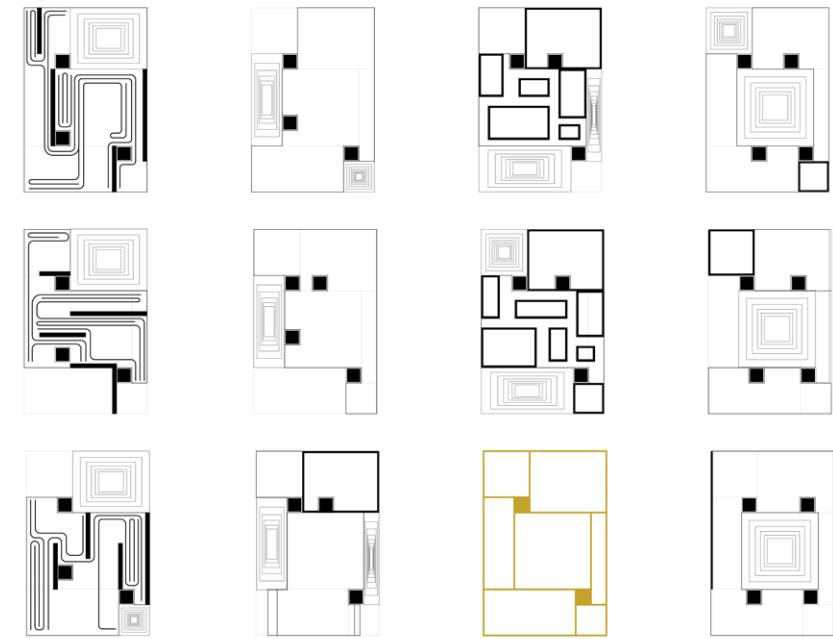
*"Museum as an open field into which the viewer's own imaginative, imaginative, projective, play was welcomed".
An idealized collection of the imagination, it was in reaction to the rigid sequential experience of the institutionalized museum, as represented by a series of rooms en filade.*



Explosive Axonometric of back of house space, MAXXI Museum

*In the MAXXI Museum, back of house space are hidden behind the walls to keep the purity of the gallery space.
Galleries dominate the space.*

CONCEPT: MUSEUM IN MOTION

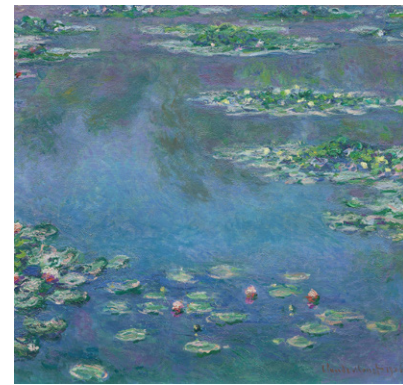


What if back of house rather than the gallery dominates the space? What if the museum is in motion constantly?

ARTWORK IN BACK OF HOUSE



Workers moving framed artwork



Water Lilies, Claude Monet, 1906

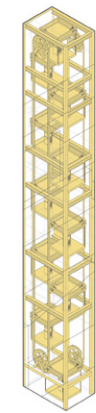
Gallery provides a stationary, isolated white-box space for artworks. While in the back of house, artworks are more vibrant when they are transported, decorated, repaired, etc.



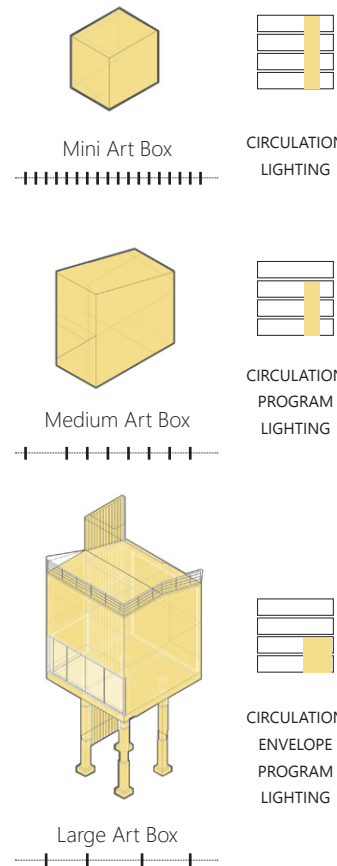
Elevator in Maison à Bordeaux, OMA



Elevator



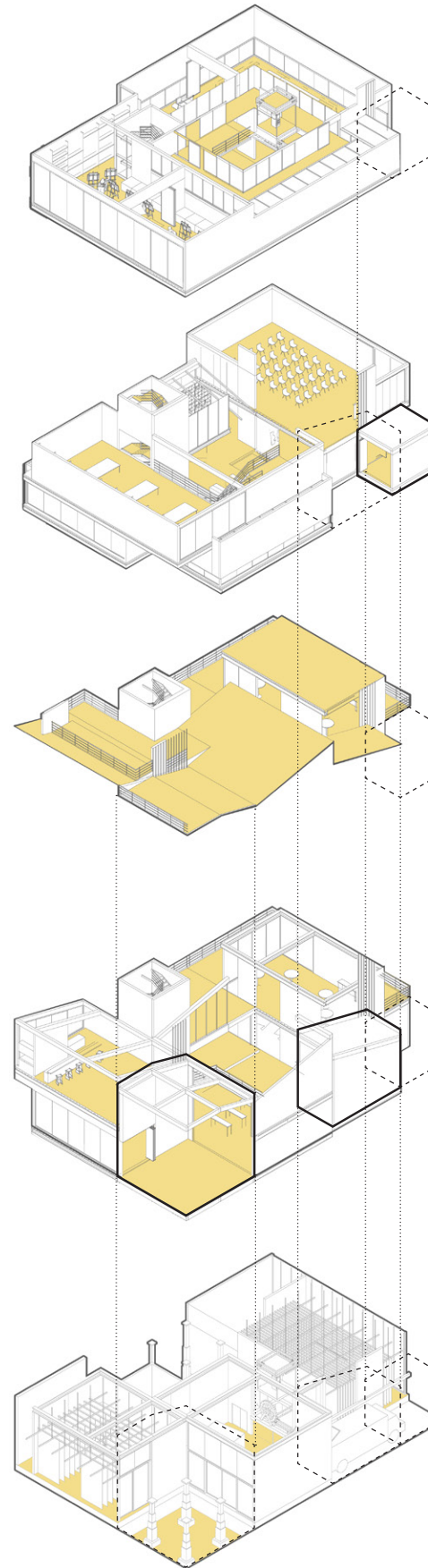
Patenoster



MOVEMENT IN VARYING SCALE & FREQUENCY

Inspired by the giant elevator in Maison a Bordeaux, moving art boxes at three scales are designed. Through their movement at different frequency, different styles and forms of artwork can have unprecented dialogue between each other, peoviding both the curators and visitors with more opportunities.

MOVEMENT THROUGH VARING CONTEXT



WORKSHOP

Workshop plays an important role in artworks' lifecycle. Imagine a waterlily being repaired and reframed in a workshop.



EDUCATIONAL

Artworks always have educational function. With experts introducing the background, you have a new relationship with the waterlily!



COMMERCIAL

Imagine a waterlily in Sotheby's Auction Hall. Will it be more valuable to you than the one in the gallery?



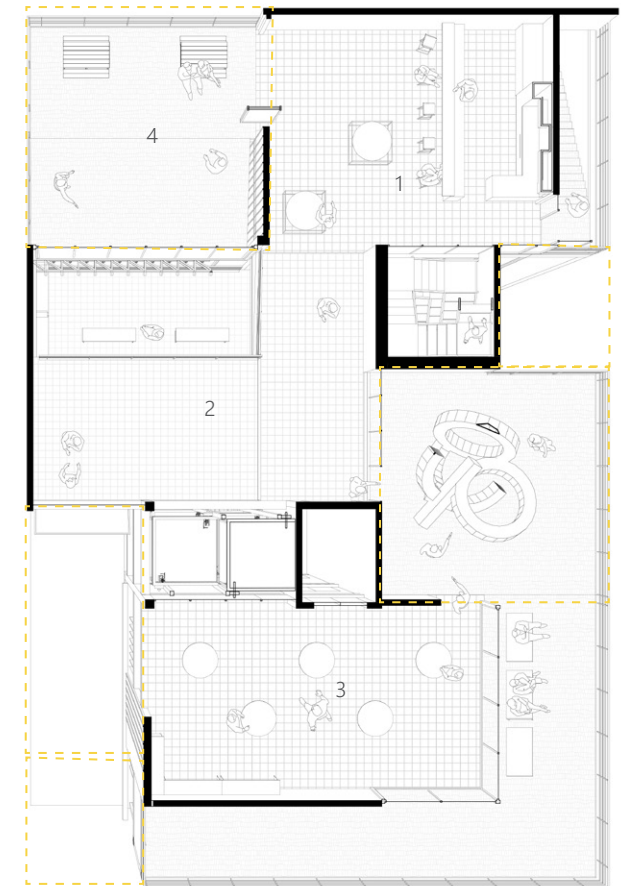
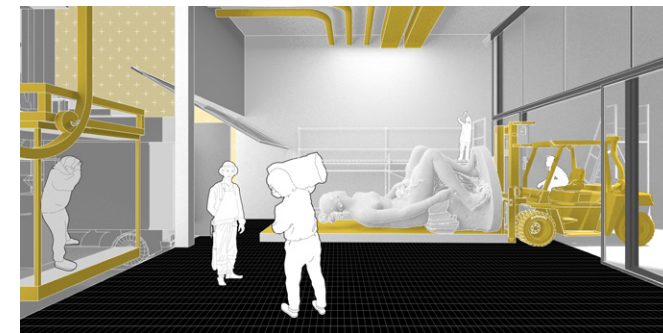
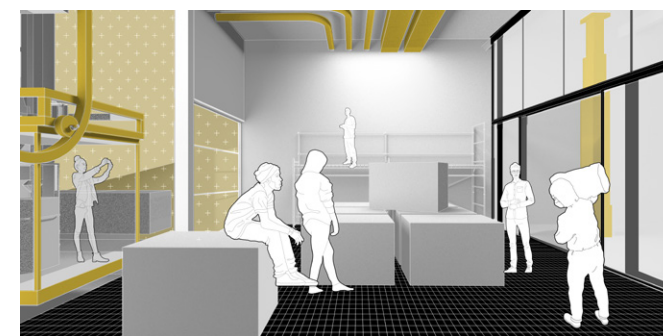
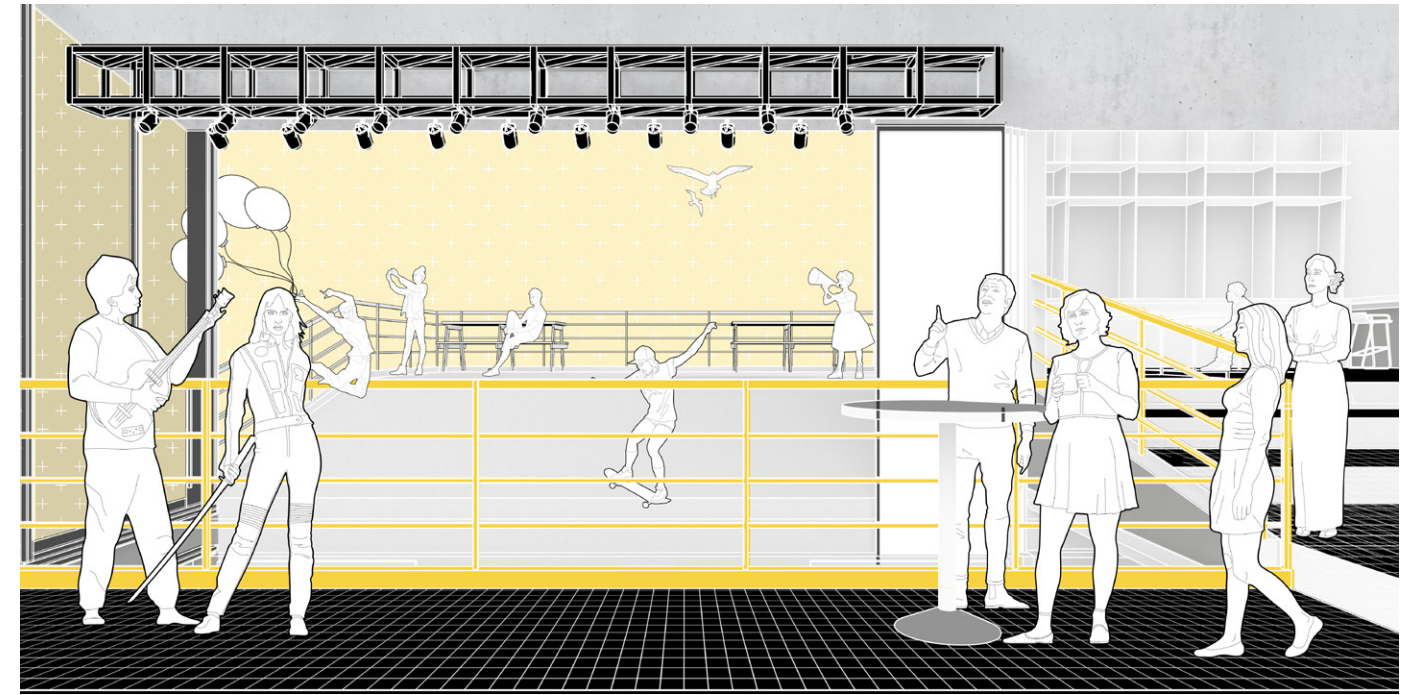
STORAGE

What if you saw hundreds of waterlily together in a storageroom? Will it gets stronger or loses its uniqueness?



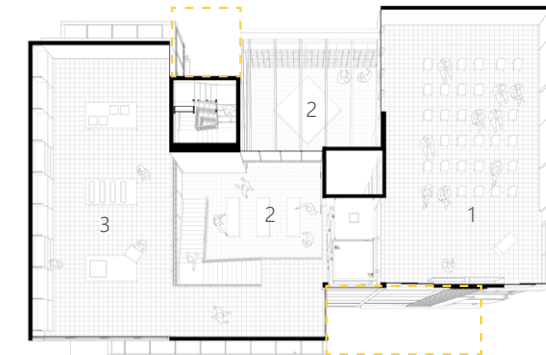
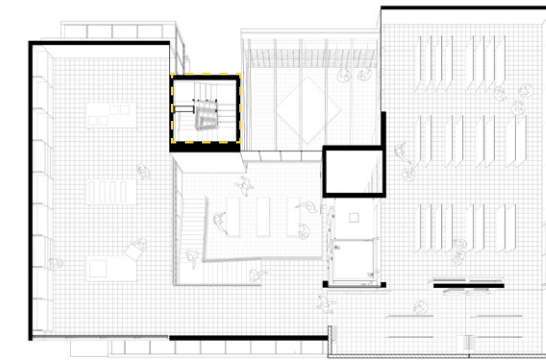
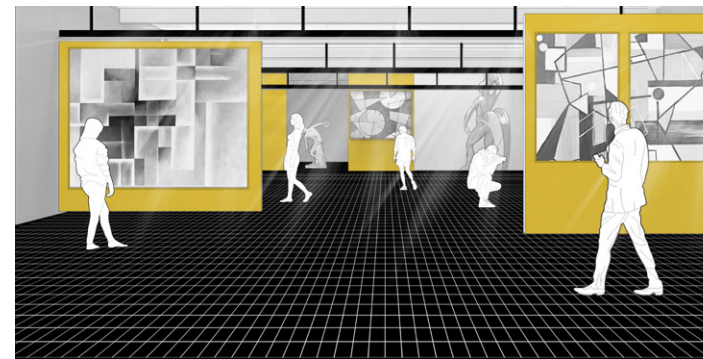
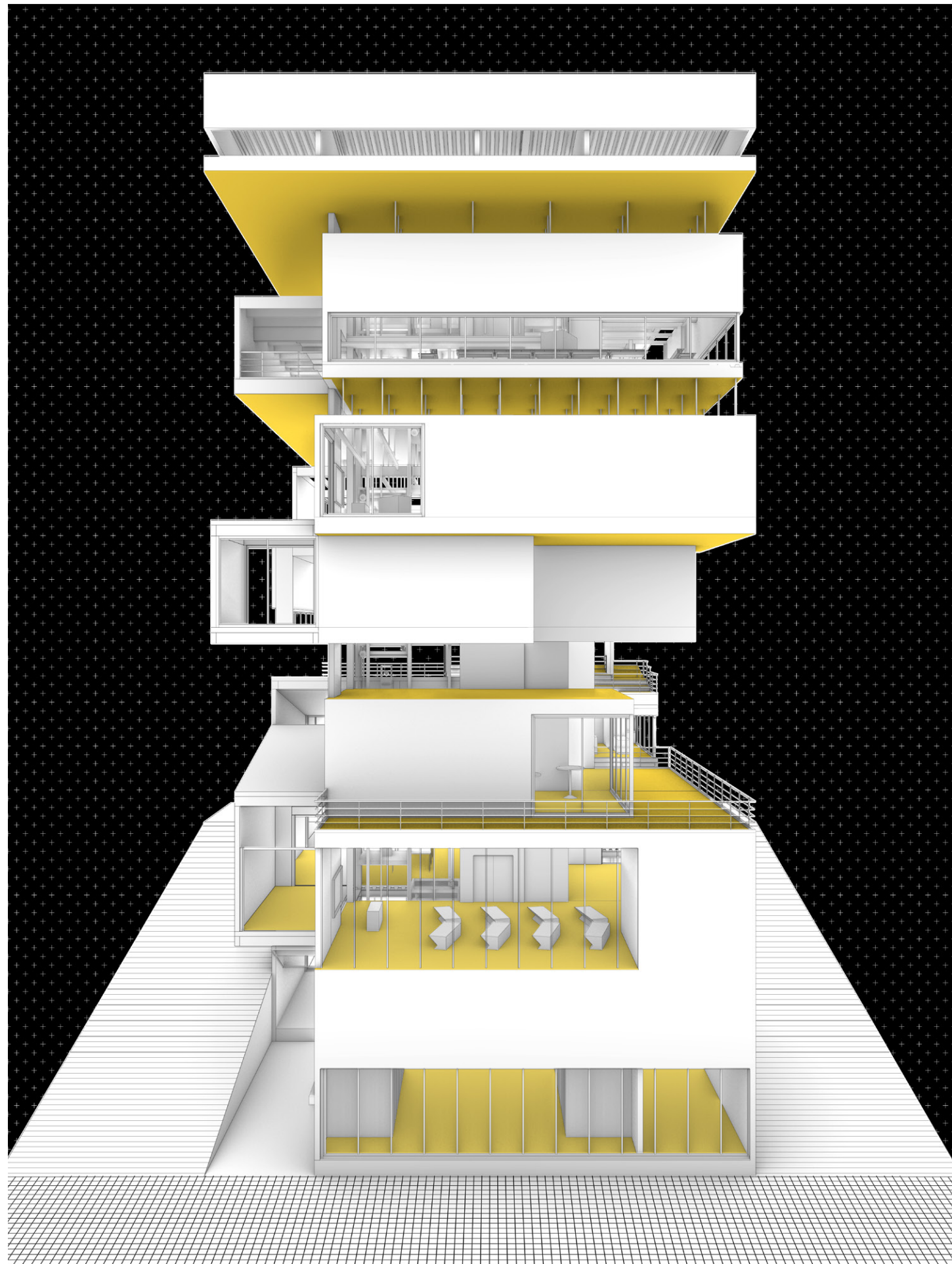
MUSEUM VISITING EXPERIENCE

Instead of wandering from one gallery to the other staring at the paintings on the wall, visitors are moving in the museum with artwork moving simultaneously. The whole life-cycle of artworks is presented and every visitor is able to have his unique experience.

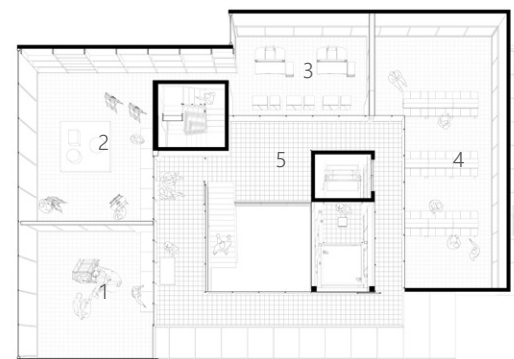
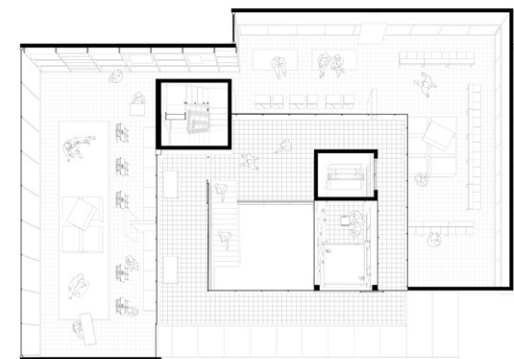
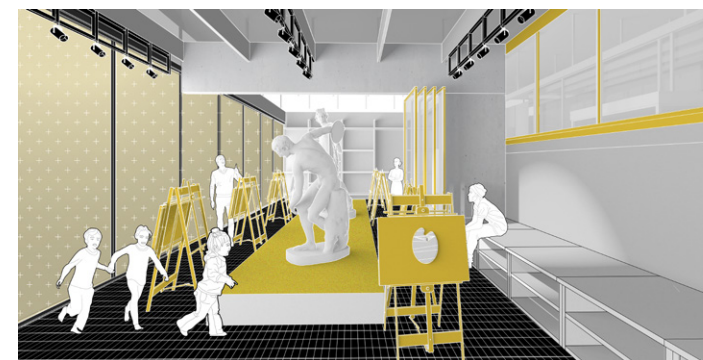


1 · Cafe 2 · Lobby 3 · Multifunction Hall 4 · Terrace

STORAGE & COMMERCIAL LEVEL

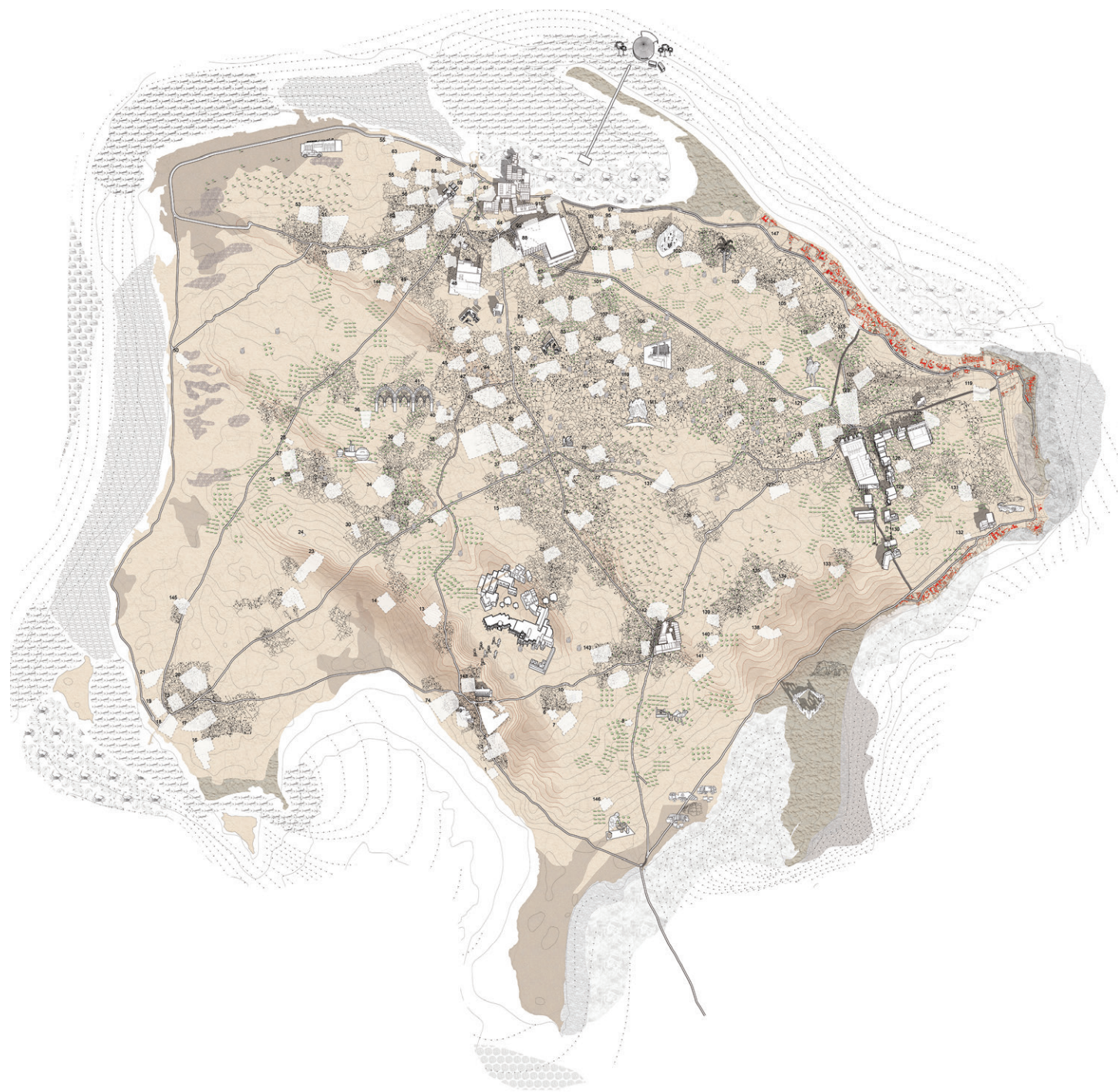


1 · Multifunction Classroom 2 · Library 3 · Study Room



1 · Sculpture Workshop 2 · Painting Workshop 3 · Office
4 · Fine Restoration Workshop 5 · Viewing Deck

EDUCATIONAL & WORKSHOP LEVEL



03 SHARING

Towards a New Rural Landscape

GSAPP Advanced Studio 5

Site: Djerba, Tunisia

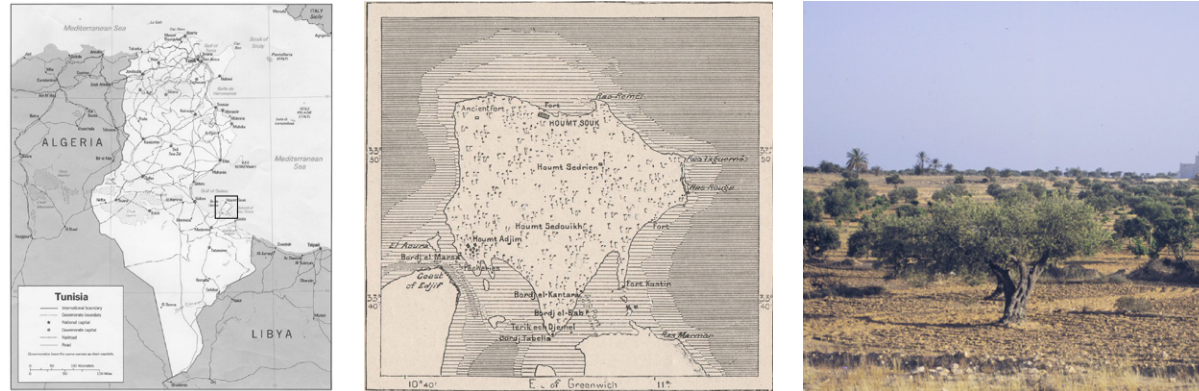
Tutor: Ziad Jamaledine

Collaborator: Xiaoxuan Hu

Role in Team: Team Leader, Design, Drawing, Modelling, Rendering

The project primarily investigates and intervenes on the deserted rural mosques and other religious structures that are no longer required to perform the traditional defensive functions – that they have historically held for centuries on the Island of Djerba in Tunisia. This project looks at the territorial potentials of the Jaddah (dirt road) typology and proposes the revival of Djerbean agricultural landscape and its deserted Menzels, through Tabias (natural fences) manipulation and resource sharing among multiple stakeholders.

DJERBA: THREE LANDSCAPES



GEOLOGICAL LANDSCAPE

The geological landscape that had shaped the Island as physical continuation of the Saharan mainland, through underwater trenches and shallow waters.



MARITIME ECONOMIC LANDSCAPE

A maritime economic landscape, wherein Djerba is located as part of a constellation of islands in the Mediterranean Sea with a shared Olive oil agriculture economy, including Sardinia, Sicily and Malta.



GEOGRAPHICAL LANDSCAPE

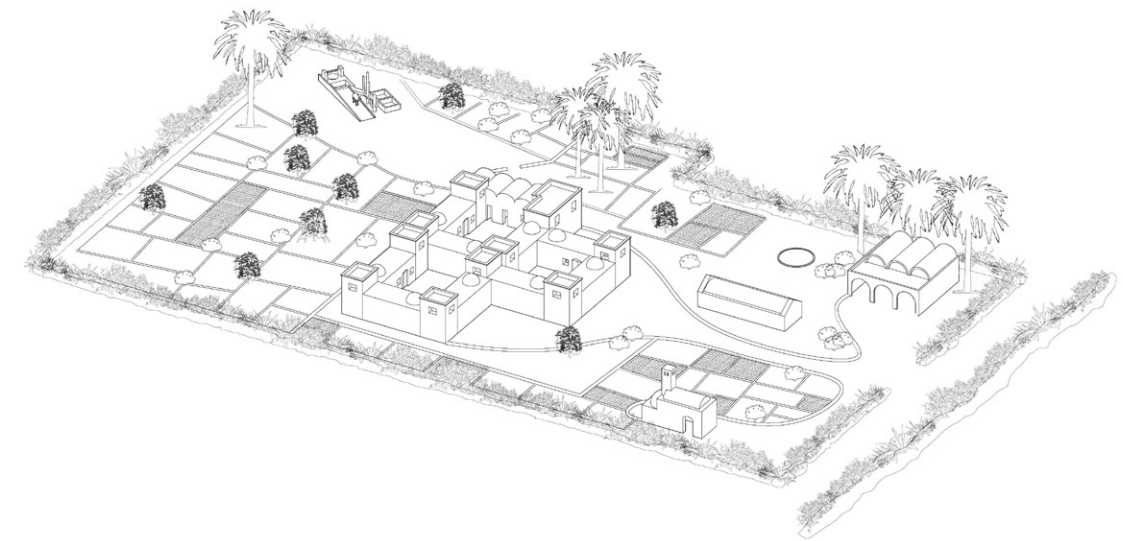
A geographical landscape that located the island along the northern African shore frontier (Afriqia) of the Mediterranean Sea.
 A historical front of confrontation and exchange with Europe – this is a drawing of the Battle of Djerba in 1560 between the Ottomans and the Spanish army...
 A site for tourism since mid 20th Century

MENZEL: A DISAPPEARING LONG-STANDING RURAL SETTLEMENT



Menzel: a unique rural settlement

The space of the Menzel unit is composed of the houch (house), a well with an irrigation system, the cistern (including a rain water harvesting basin), and a workshop (olive press) ---- surrounded by the Ghaba (Olive grows)



Menzel Unit Composition



Houch (Main House)

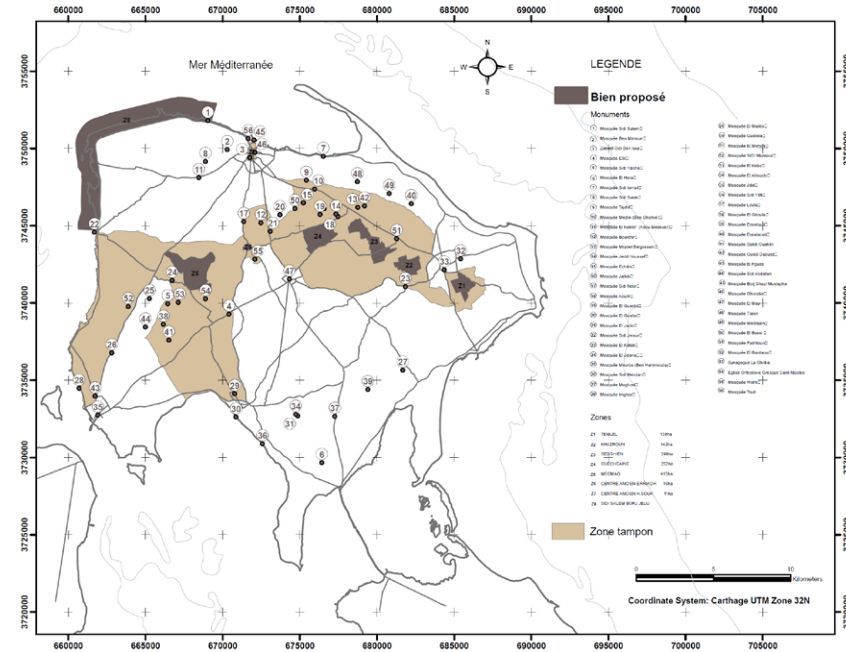
Well

Stroage

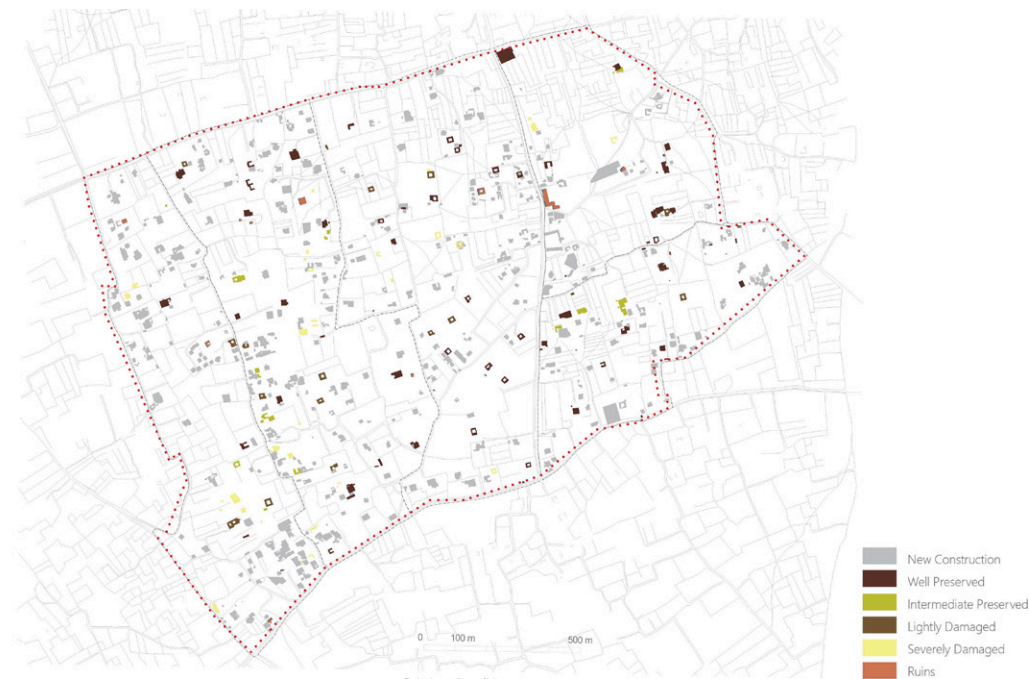
Tabias

Ten menzels form a Houmma which is a small community. They share agricultural and religious infrastructures like olive press and family mosque. Five hoummas form a Houmn which is a medium-sized village. Some of the houmn has its own market and large mosque.

OPPORTUNITY: NATIONALWIDE CONCERN ON MENZEL



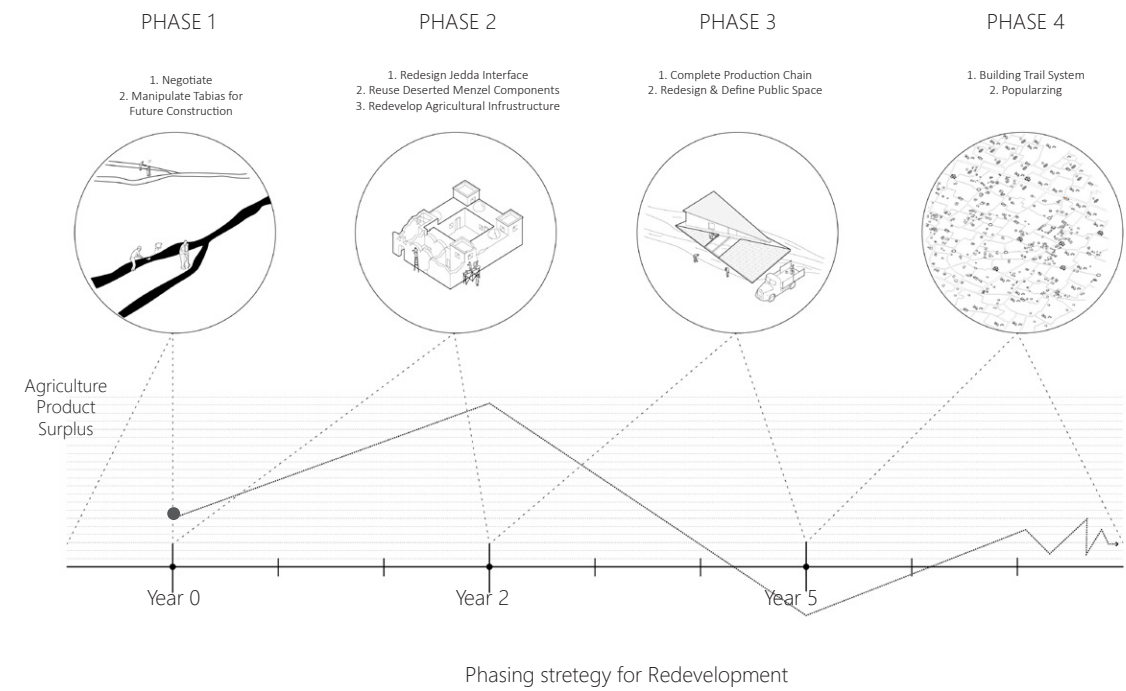
Cultural Heritage Proposal under review by UNESCO, 2019



No.4 core protection zone in current proposal

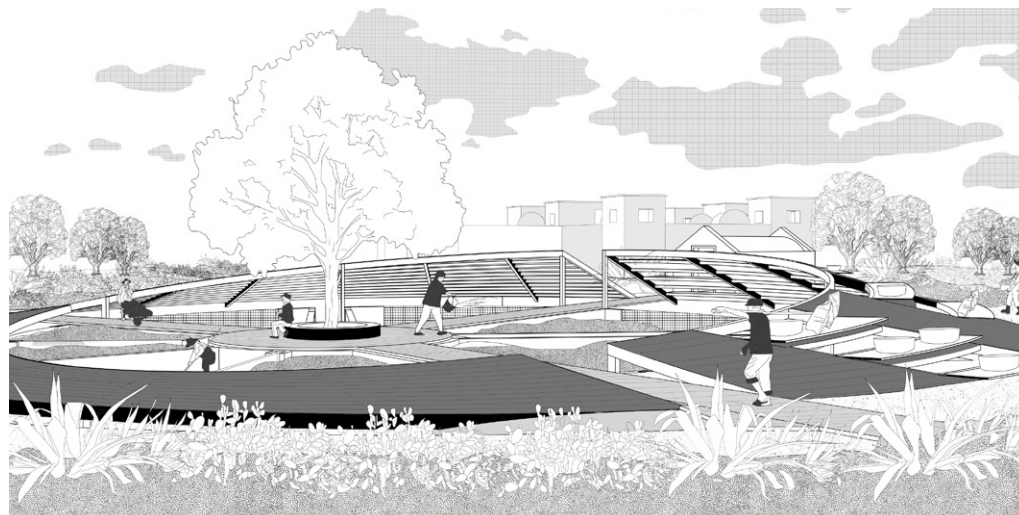
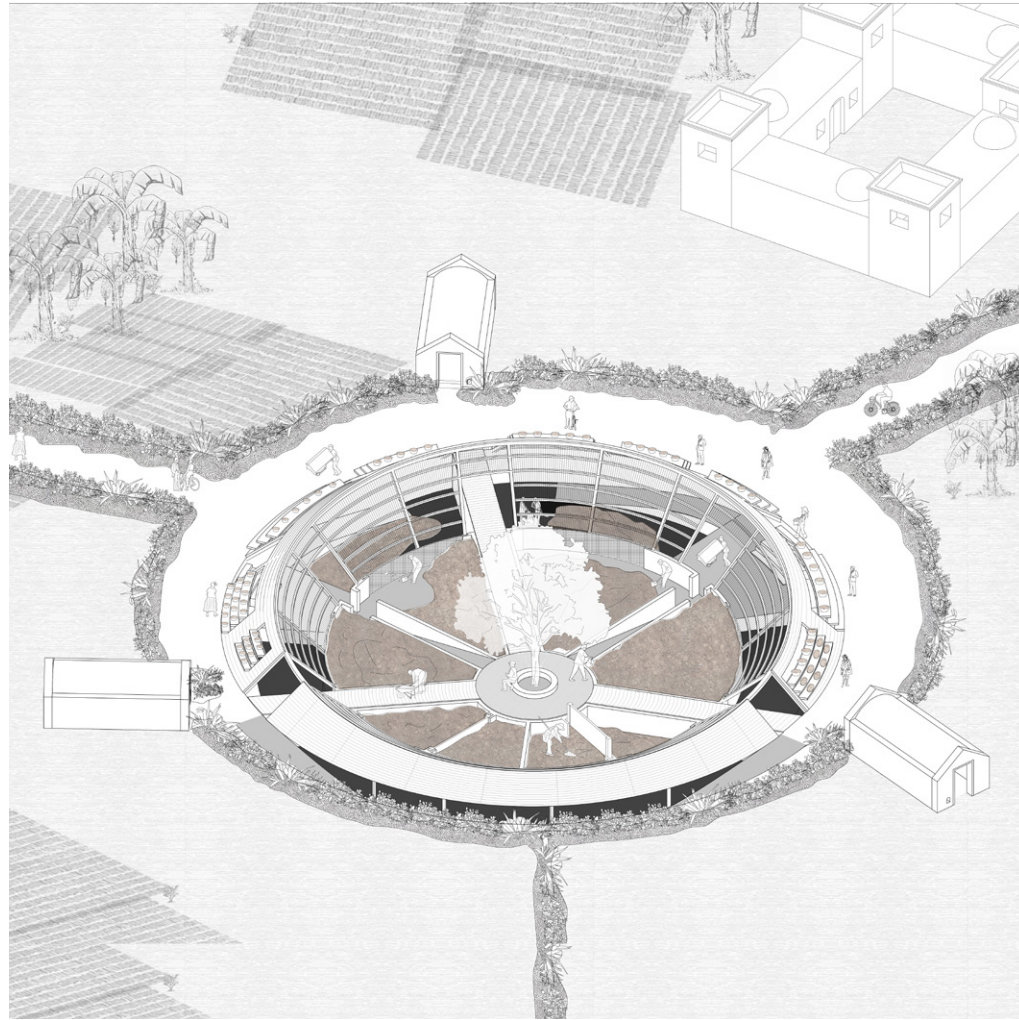
During our field trip in Djerba, we had meetings with Djerbean architects who is working on the cultural heritage proposal aiming at protecting this rural settlement typology.

STRATEGY: PROTECTION THROUGH SUSTAINABLE REDEVELOPMENT



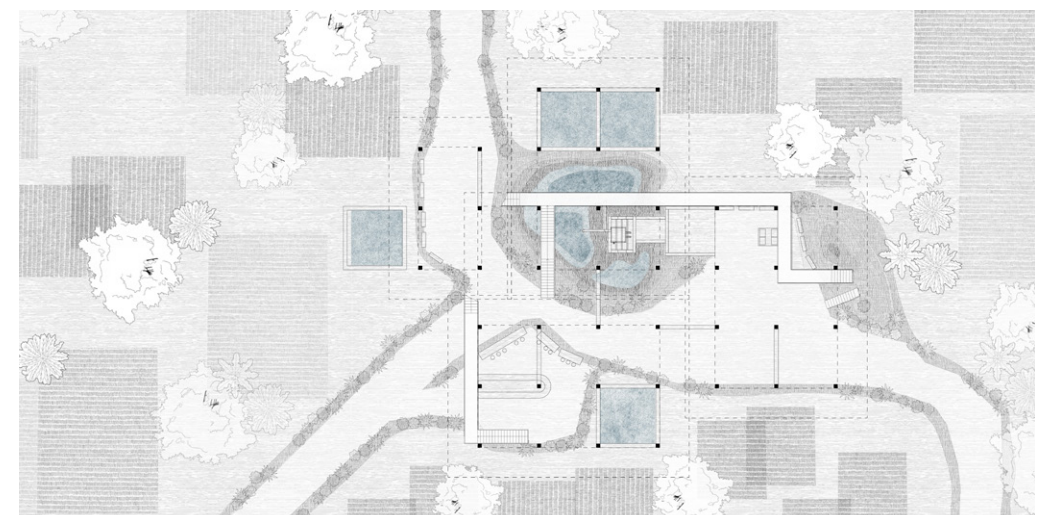
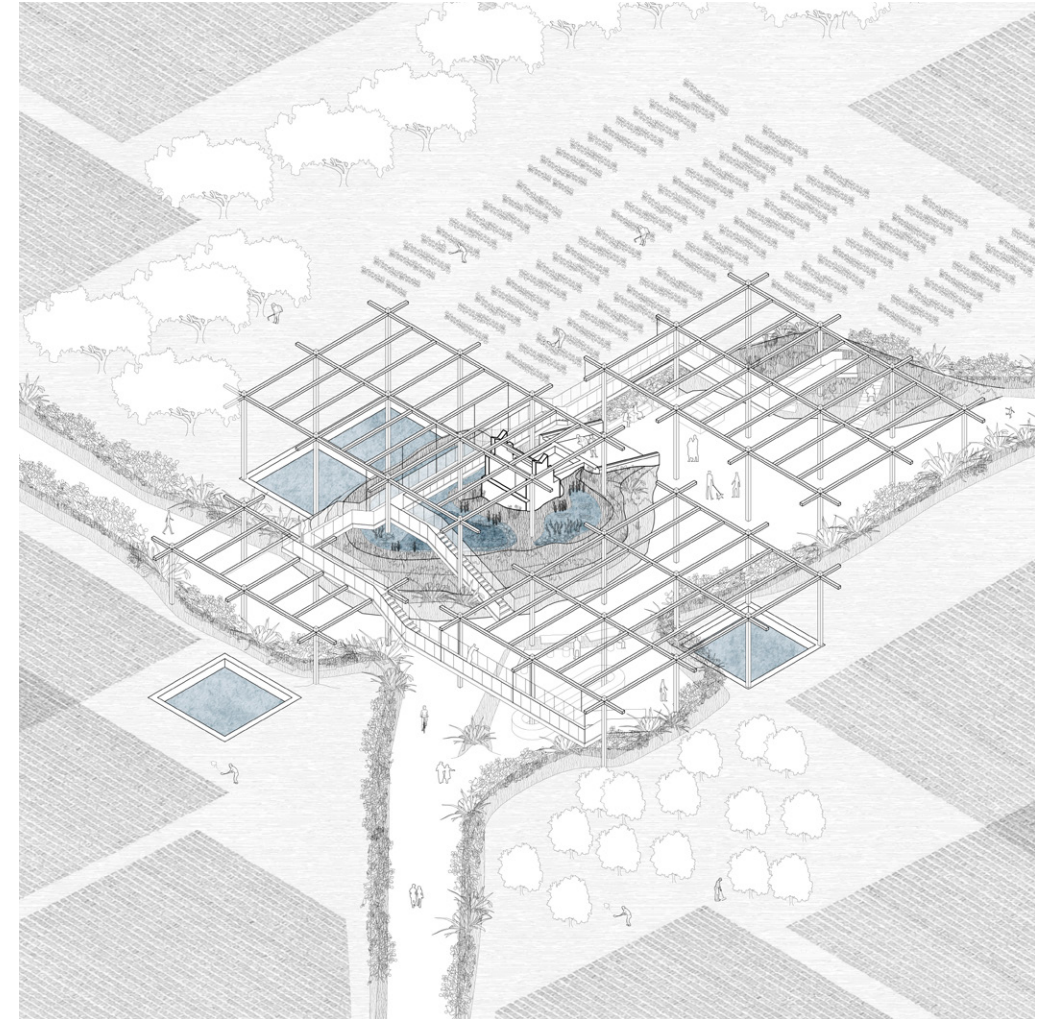
Rebuilt Stakeholder relationship free from capital control

The design strategy is to overlap a redevelopment plan on the ongoing proposal based on the special ownership relationship and interest exchange among multiple stakeholders.



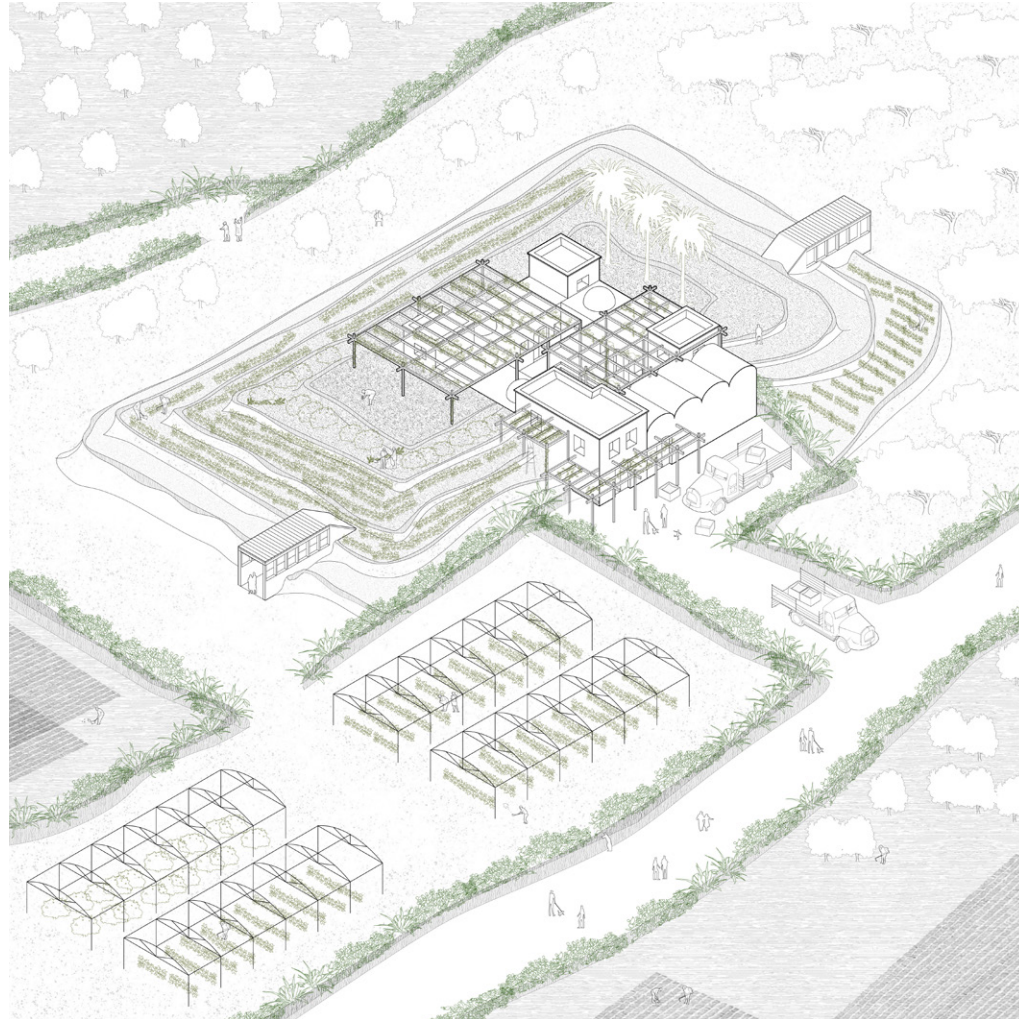
PHASE II: Composting & Storage

In phase two, we will focus on deserted menzel components and transform them into bases providing essential agricultural resources including water, fertilizer, cultivation skills. At the end of this phase, all those resources as well as the space holding them will be shared at different scale for the upliftment of agriculture industry.



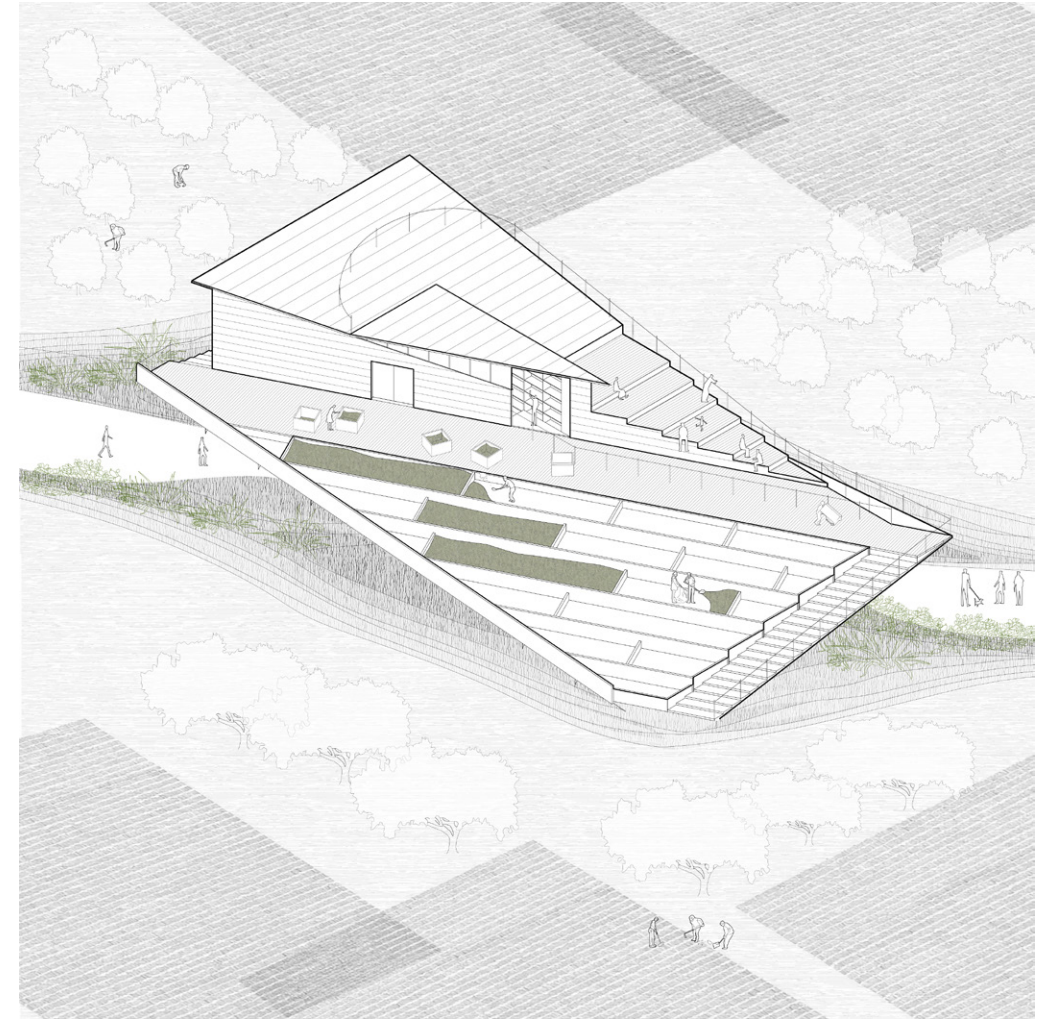
PHASE II: Water Treatment

Through negotiation, well owner agree to rent his deserted well and land in exchange for water treatment facilities. Neighboring landowners will rent their land in exchange for better irrigation water. Tabias is designed to enclose space for a pool for water treatment and space for resting. The public also benefit from the shaded public space covered by the canopy.



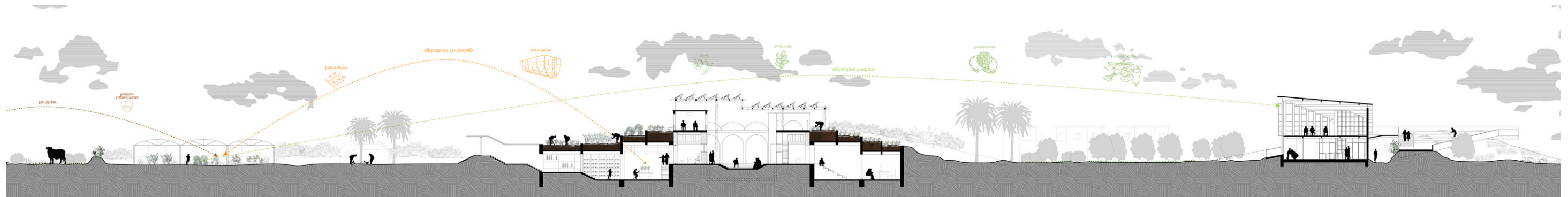
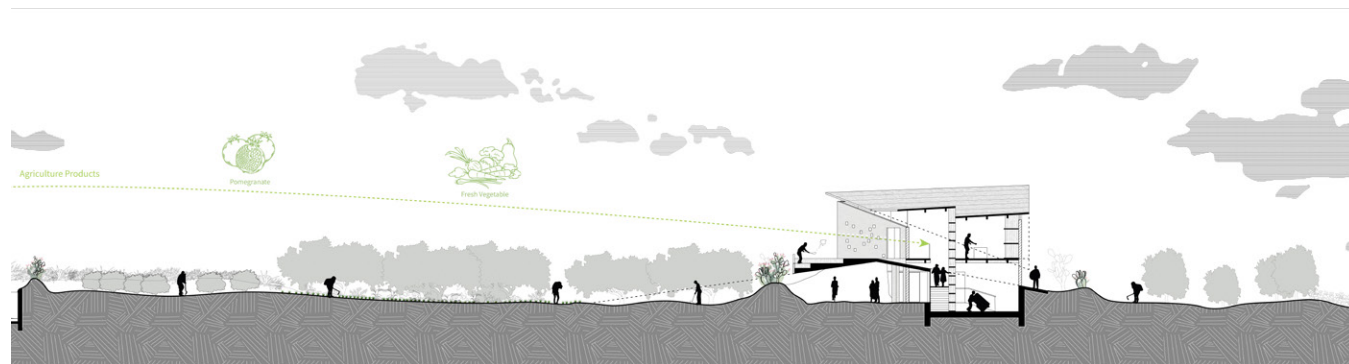
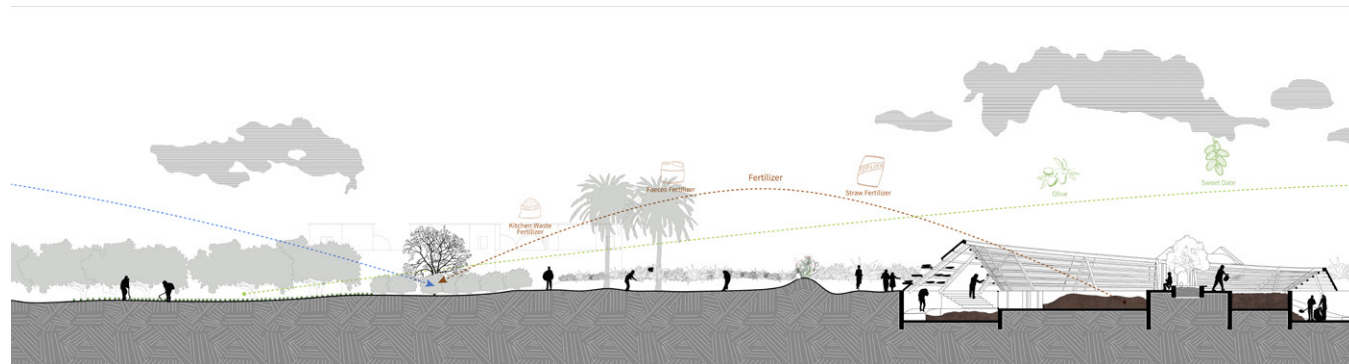
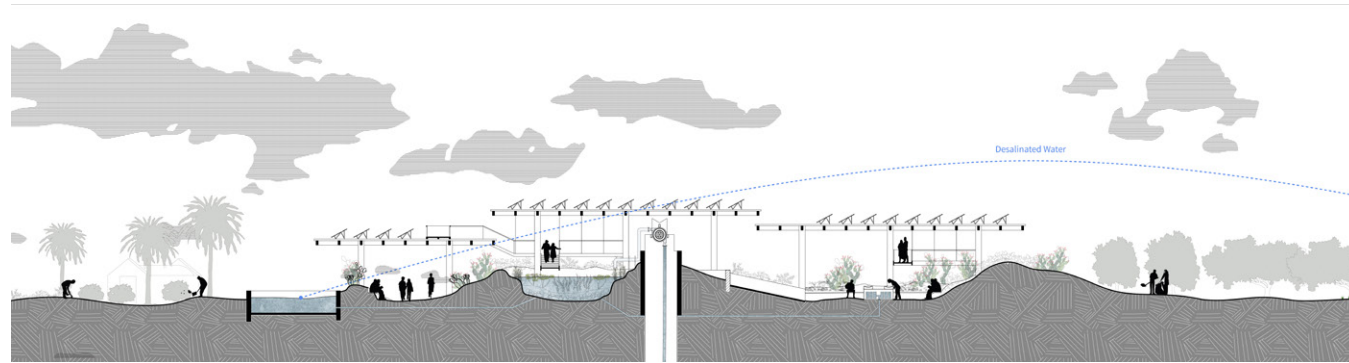
PHASE II: Agricultural Research

Some Houch are deserted because the landowners move to Tunis or abroad. For cultural reasons, they won't demolish their old menzels or sell them. Some of the landowners even hire people to take care of the landscape in their menzels. The idea is to rent the whole menzel from those landowners and transform it into an agricultural research center to test the latest cultivation technology which probably benefit the whole island.



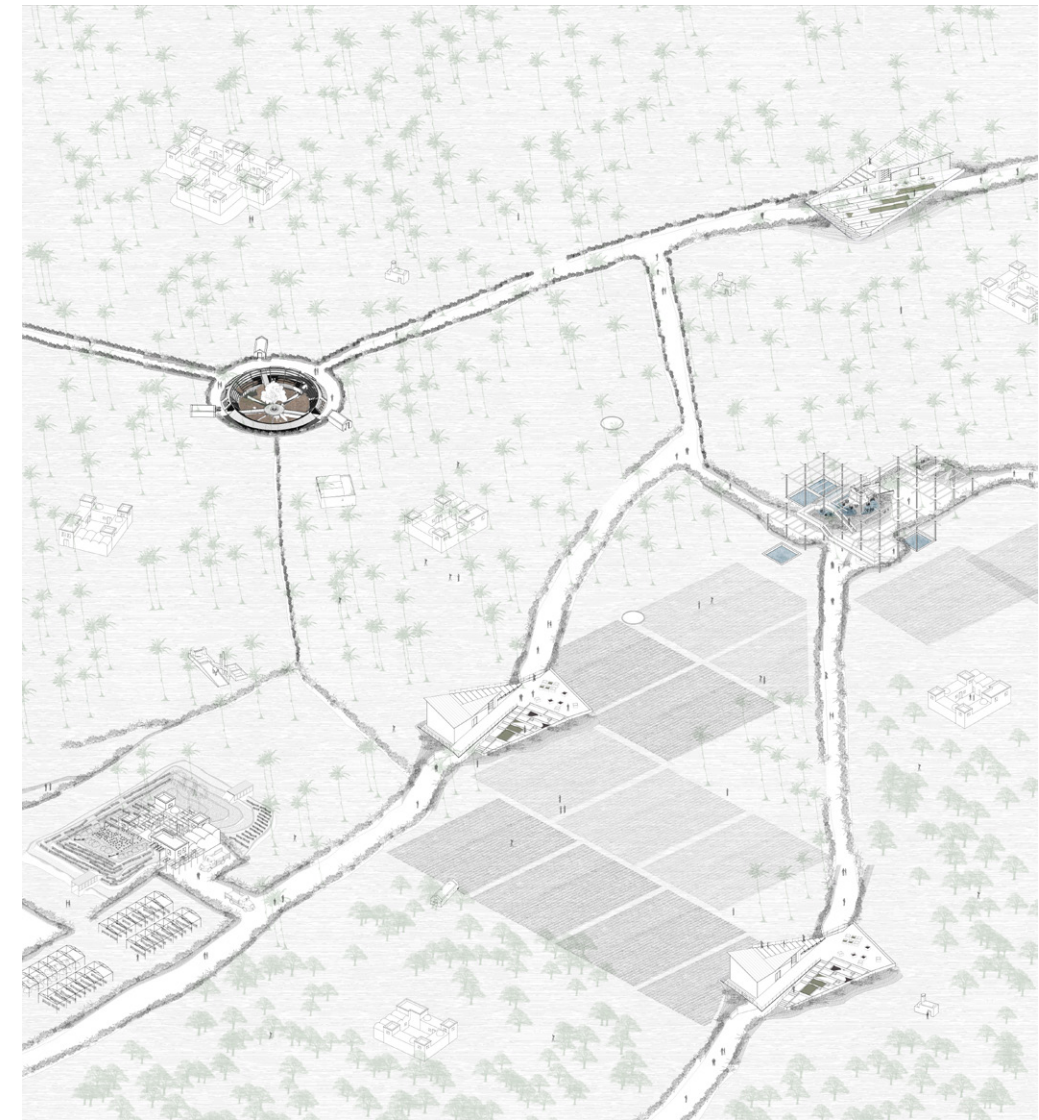
PHASE III: Agricultural Redevelopment

At phase three, local agriculture industry has recovered and farmers have much surplus products. We plan to do some new construction to add more value to the agriculture products and also attract visitors. The new construction also redefines the boundary as well as the public space.



PHASE IV: Cultural Trail Network & Resource Sharing Network

At phase four, tabias as well as new constructions build up a complete cultural trail system in the public space as well as a resource sharing network among local agricultural community. They can also be popularized on the whole island.



A New Djerbean Landscape

The new Djerbean landscape witnessed the territorial potentials of the Jaddah typology, the inherent potential of Djerbean agricultural landscape and its deserted Menzels, through Tabias manipulation and resource sharing among multiple stakeholders

04 ALGORITHM AND URBANISM

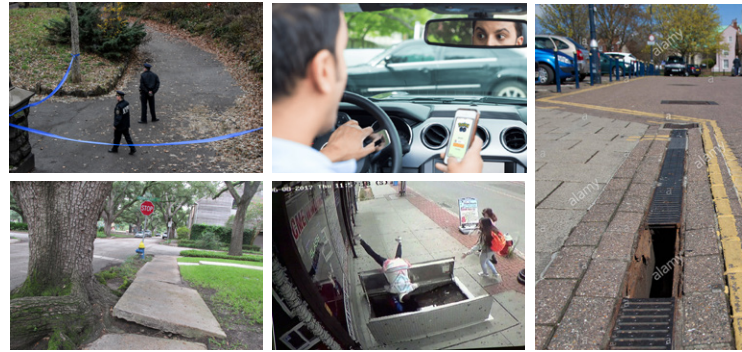
URBAN DATA EXPLORATION, MODELLING AND VISUALIZATION

GSAPP Tech Optional, January 2020- May 2020

Tutor: Luc Wilson

Collaborator: Guangwei Ren, Xinyue Liu

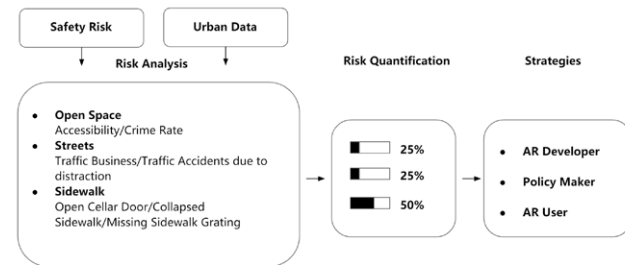
Role in Group: Team Leader, Data Cleaning, Data Visualization, Modelling



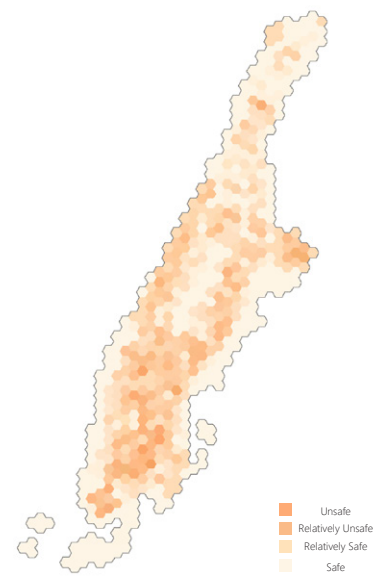
In a busy city like NYC, physical safety is always a major issue. A lot of AR users are likely to use them on busy streets because they rarely have a chance to parks or other open spaces. So traffic accidents and busyness data are important here. Basically, Open Spaces provide a relatively safer environment for AR Users for their lower traffic volume. Yet high crime rates are making those empty parks much more unsafe than busy streets.



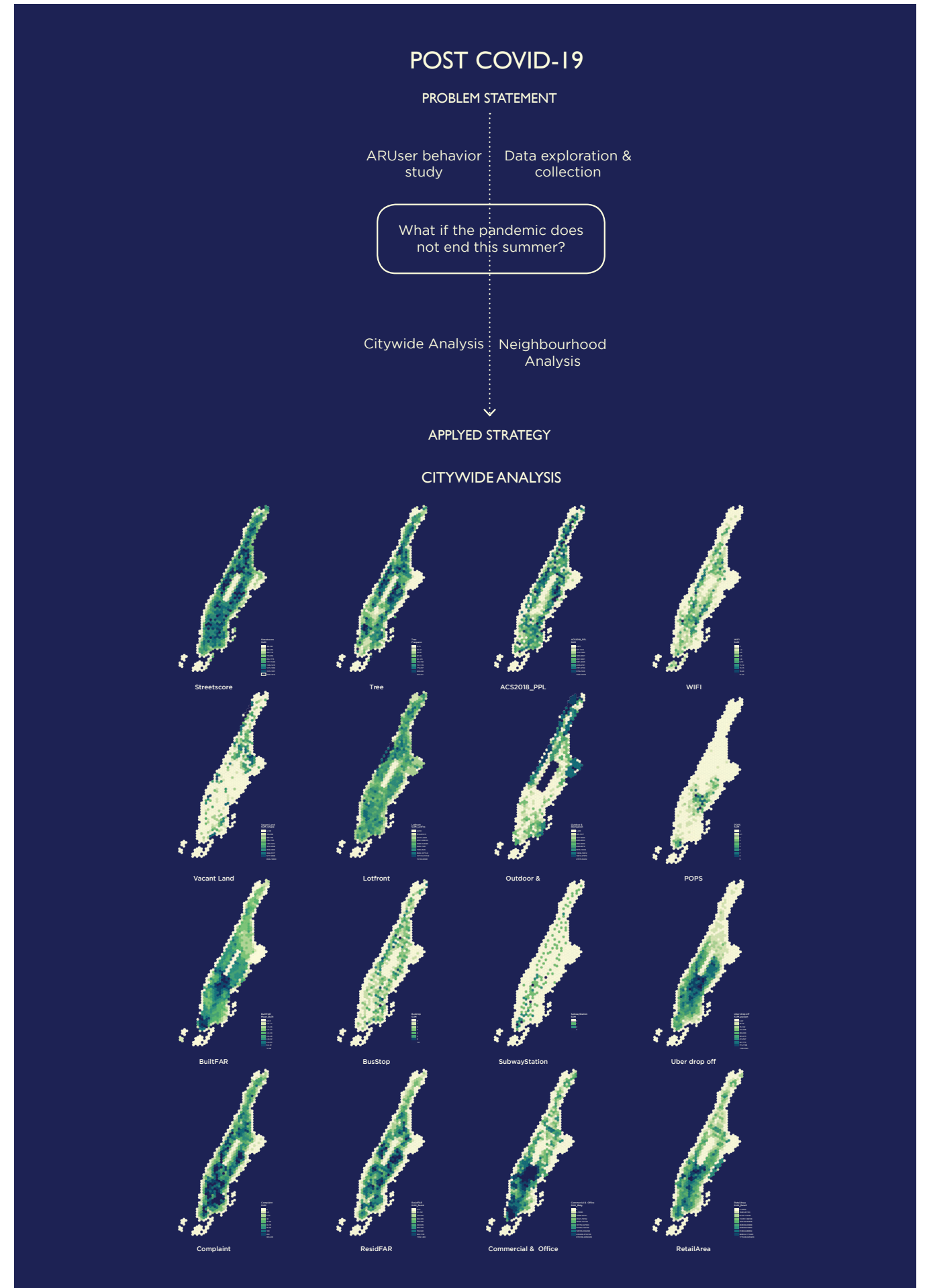
AR Safety Threats Quantification

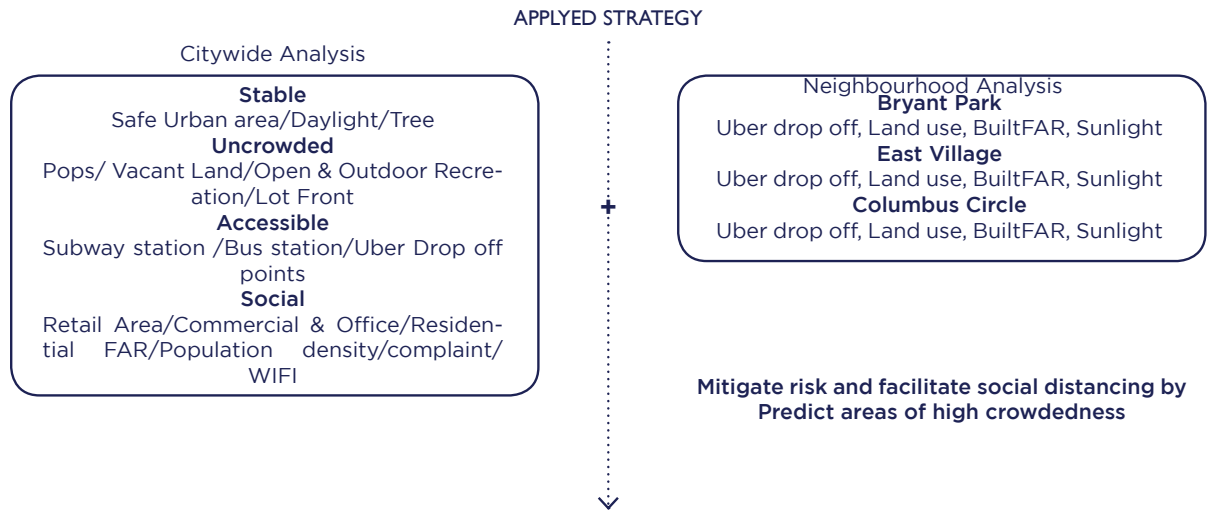


Besides, the augmented environment is providing so much information for users to handle with that AR users are more vulnerable to obstacles on the road like bumpy sidewalks, open cellar door, missing sidewalk grating, etc. Data from 311 Complaints are integrated into the grating system to evaluate the spatial distribution of those threats.

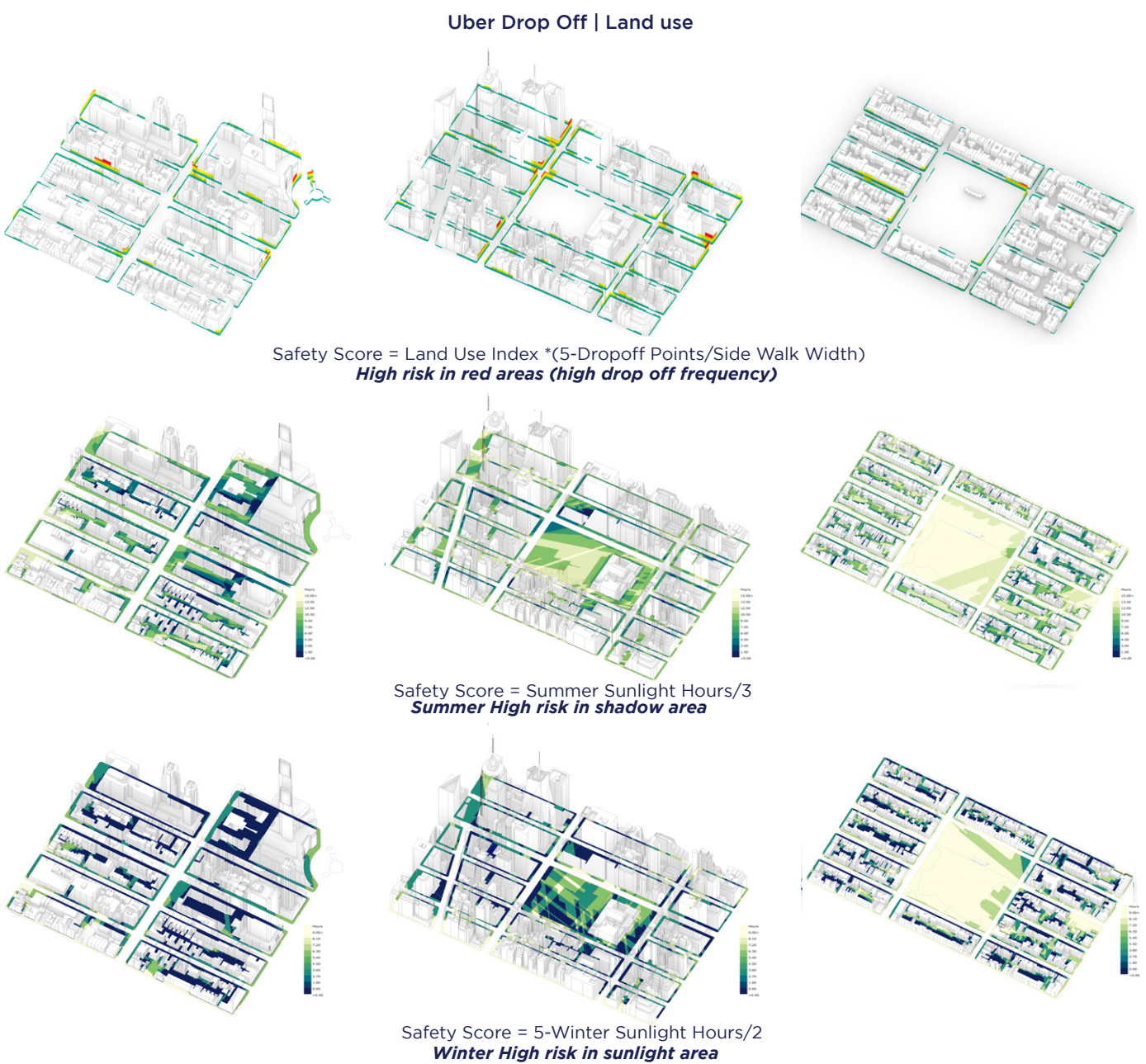
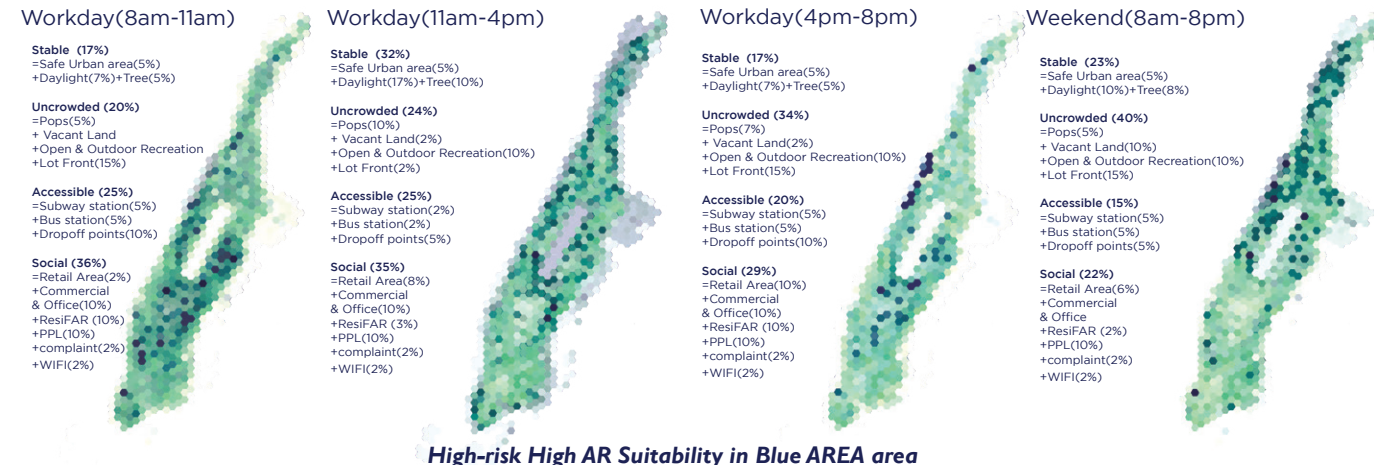


AR Safety Map





AR SUITABILITY FOR COVID-19 RISK ERA BY TYPICAL TIME CONDITIONS



APPLIED STRATEGIES

City:
Calculate and Predict areas of high crowdedness under specific conditions eg: Week Day + Commute Hours + Rainy (In Progress)

Uber/Lyft/Taxi Dropoff point suggestion for drivers
Real-Time Pedestrian Navigation indicating sidewalk segments that need to avoid

AR Developer:
Use the data to update the model
Put commercial programs on recommended points to benefit and attract pedestrians

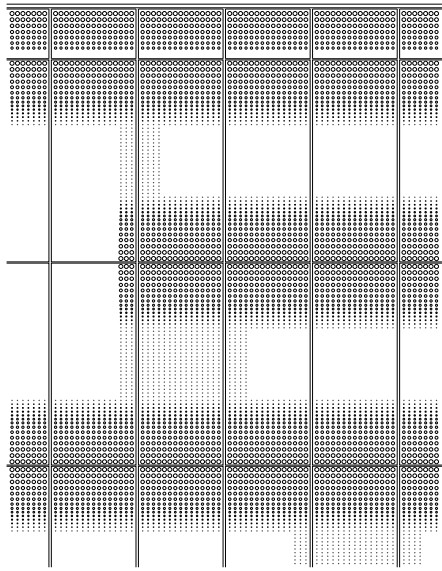
AR APP
In google map, the user could turn on the alert of covid-19. Then the prediction of unsafe area is shaded in google map. In AR mode, the app could alter the user when current area is high risk, and suggest the user to turn left/right for safety.



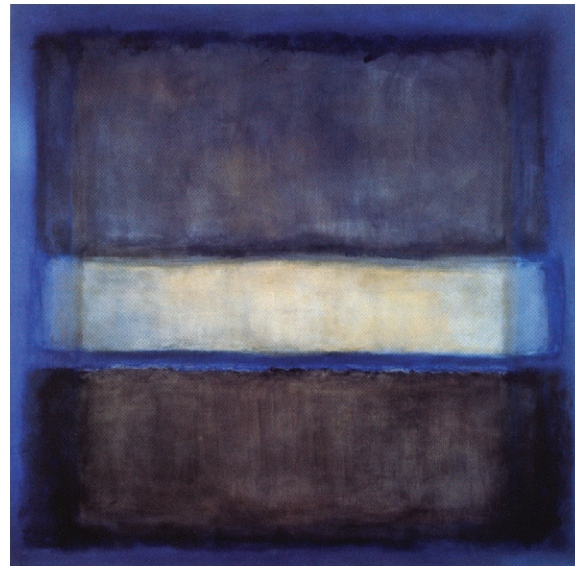
05 ADVANCED CURTAIN WALL

UNITIZED CURTAIN WALL DESIGN

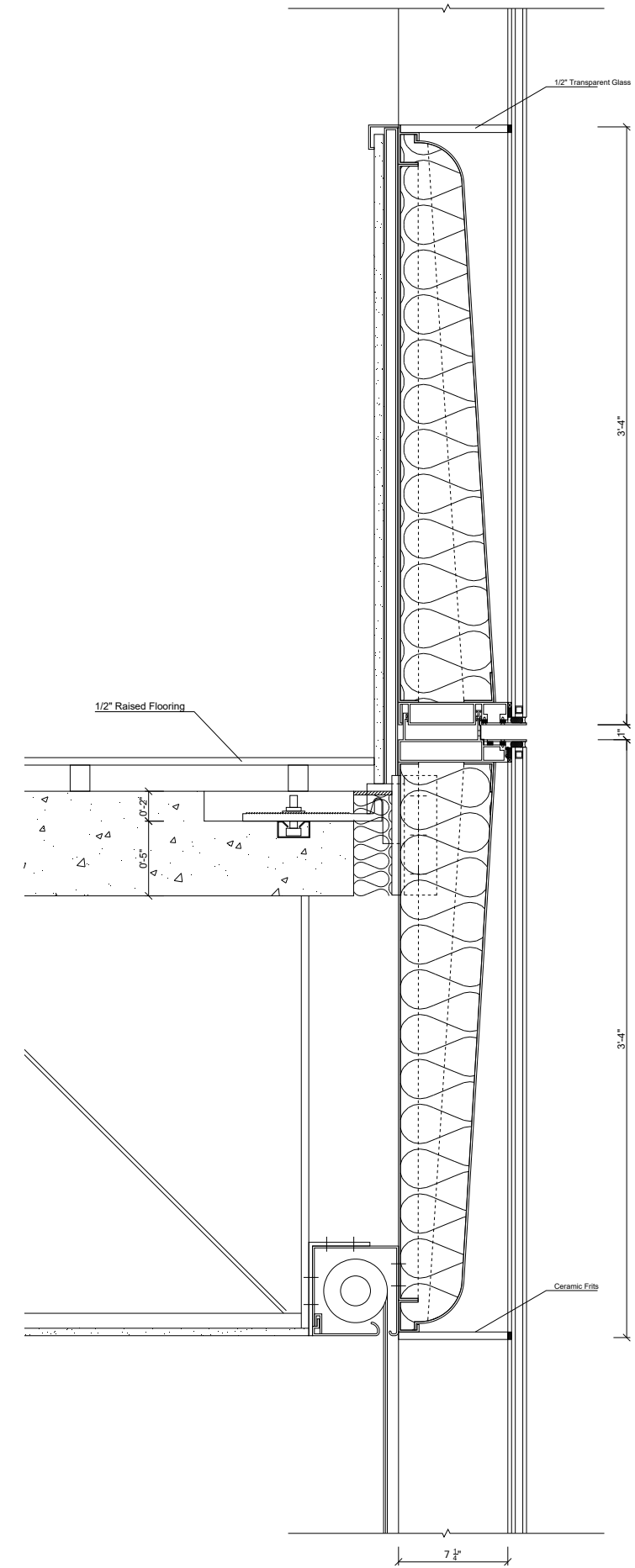
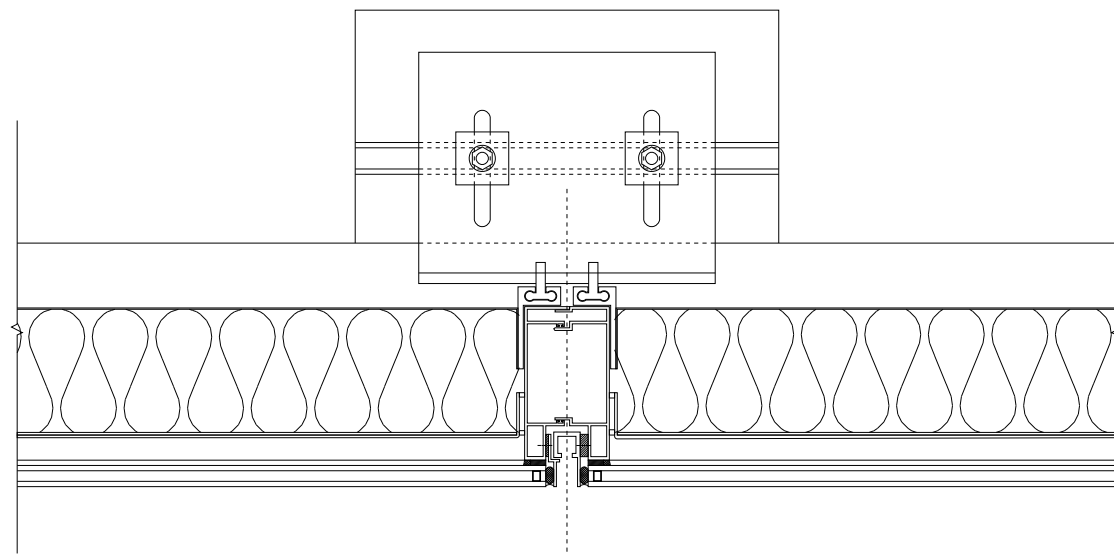
GSAPP Tech Optional, January 2020- May 2020
Tutor: Robert Heintges
Individual Work



Bold blocks of colour with featured edges are reinterpreted with curtain walls of varying levels of transparency, which is technically achieved by ceramic frits gradient in scale.



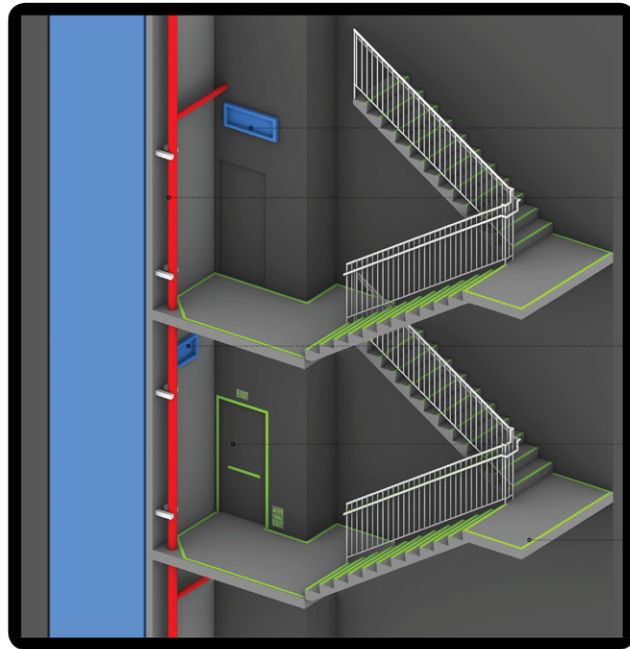
Inspired by Mark Rothko's White Band Number 27, the design tries to translate his signature technique of Colour Field painting into facade appearance



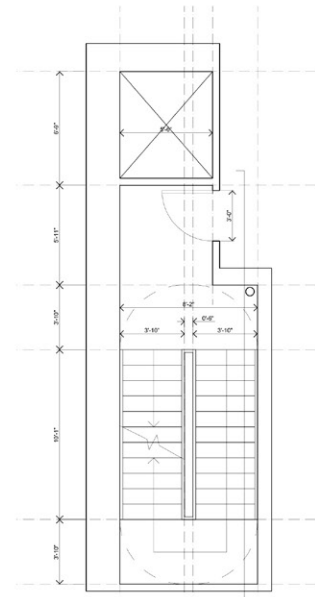
06 SUPER TALL!

INFOGRAPHIC ANALYSIS OF SUPERTALL LIFE SAFETY AND CORE ELEMENTS

GSAPP Tech Optional, January 2020- May 2020
Tutor: Nicole Dosso
Individual Work



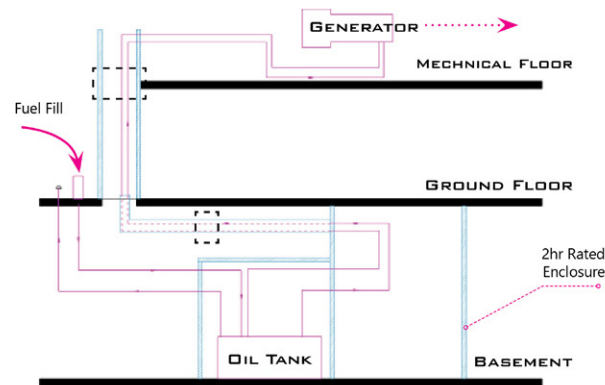
- Control Relief Valve
36"x 12" / Odd Floors Only
- Standpipe
d = 6" / Photoluminescent Strip
- Stair Pressuration Tap
24"x 12" / Even Floors Only
- Final Exit Door
Min Height: 80" / Door Sign / Photoluminescent Strip
- Demarcation Lines
Min Width: 1"; Maz Width: 2"



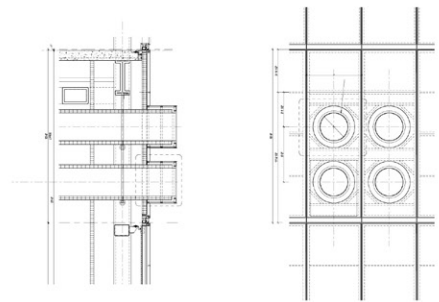
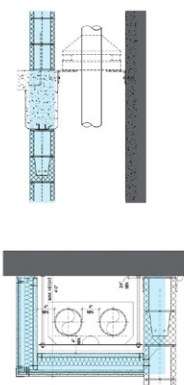
II. STAIRCASES

Bamboo has been used in architecture construction for a long time. From scaffoldings to pavilion, this cheap, strong and environmentally friendly material is not far from us. However, because of its irregular shape, bamboo has seldomly cross the boundary of being a popular construction material.

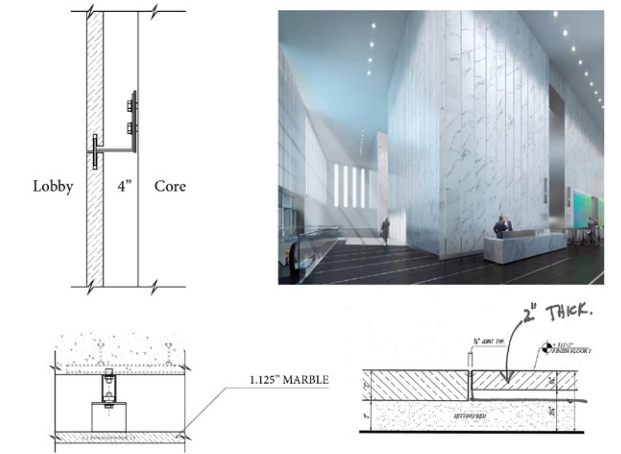
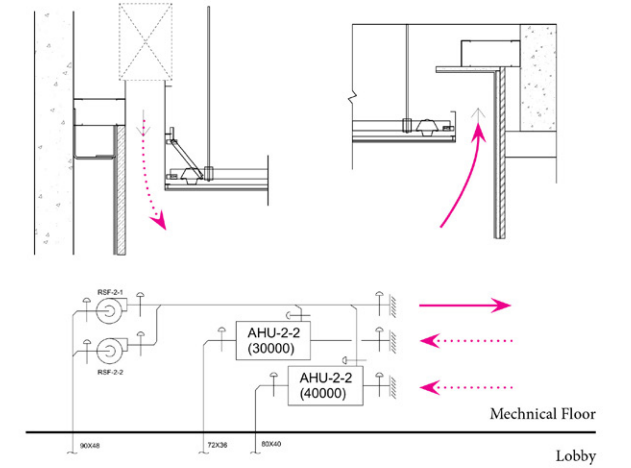
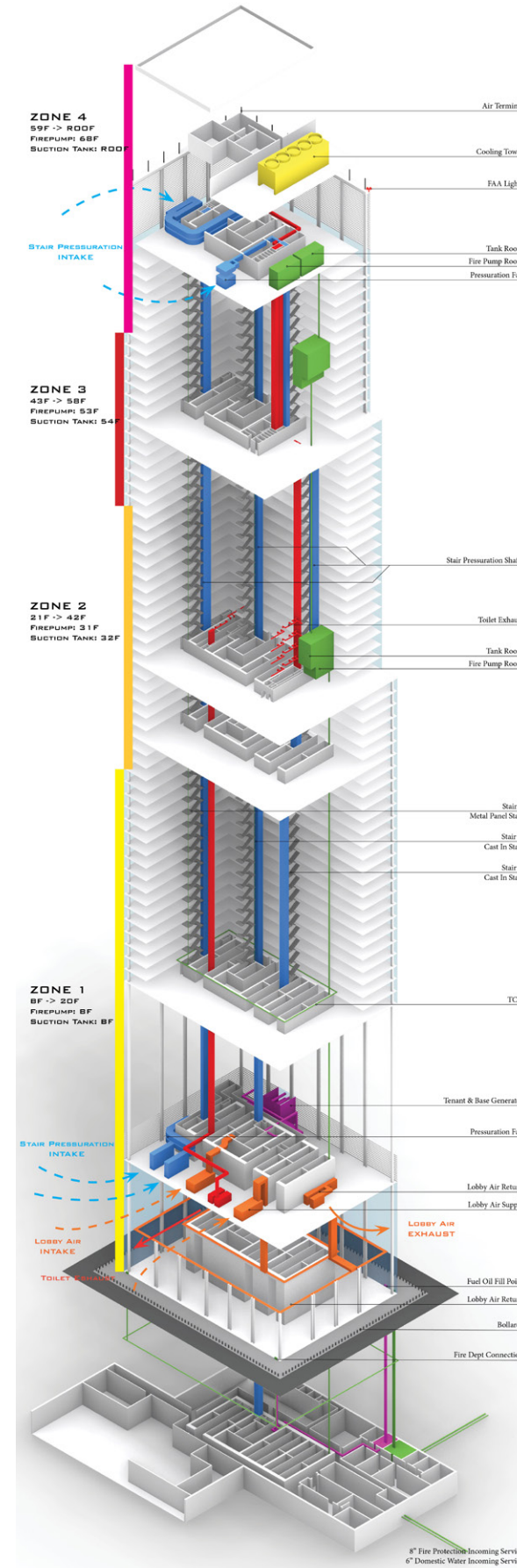
However, because of its irregular shape, bamboo has seldomly cross the boundary of being a popular construction material.



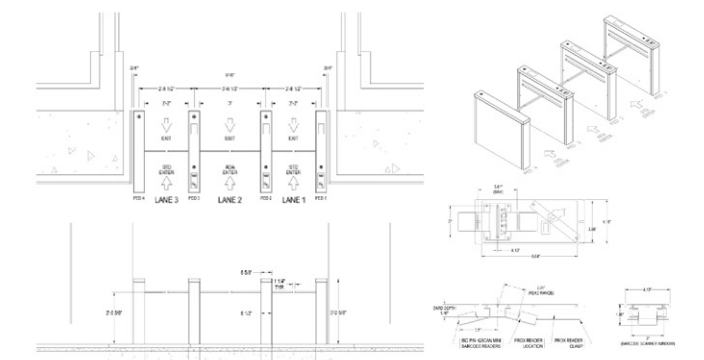
FUEL OIL RISER ENCLOSURE



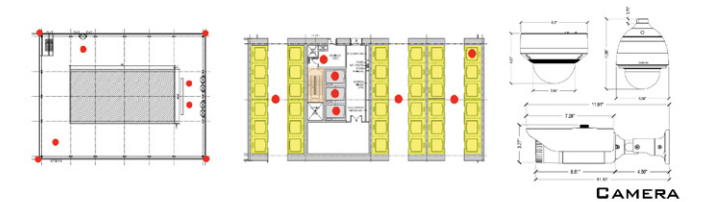
GENERATOR FLUES
IV. EMERGENCY GENERATOR



VI. LOBBY SUPPLY & LOBBY FINISH



TURNSTILES



CAMERA

VII. SECURITY

07 RE-THINKING BIM

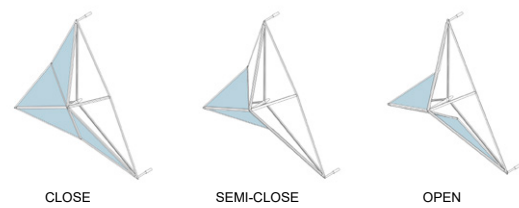
LEVER HOUSE FACADE DESIGN WITH ADAPTIVE COMPONENTS IN BIM

GSAPP Tech Optional, September 2019- December 2019

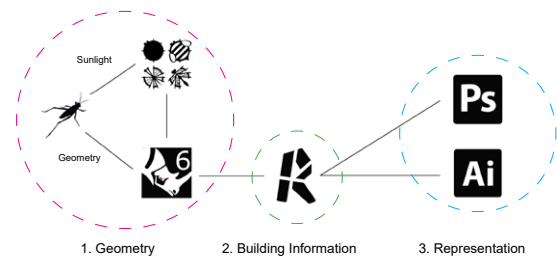
Tutor: Jared Friedman

Collaborator: Zihan Yu

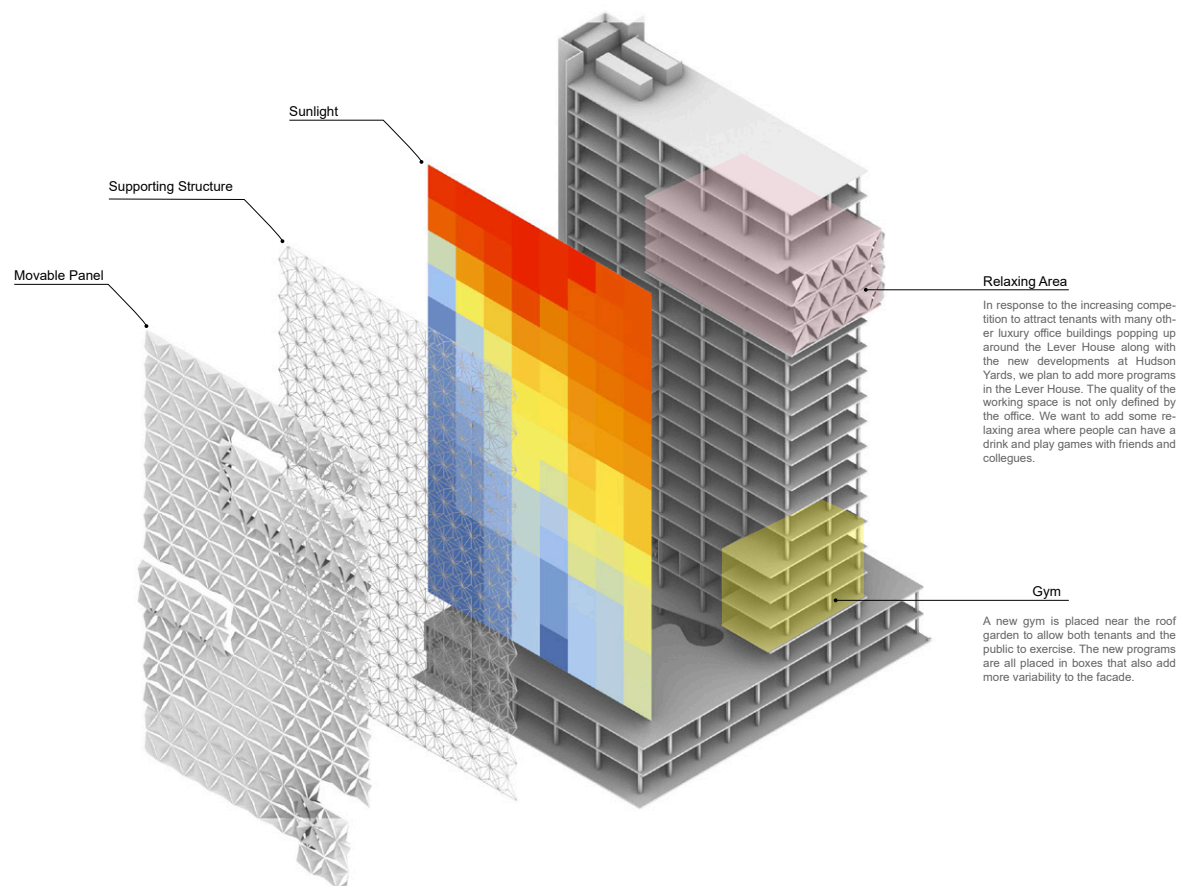
Role in Group: Team Leader, Design, Drawing, Modelling, Rendering



We want to create a foldable panel that can respond to the intensity of sunlight through different degree of openness. The basic geometry is a triangle panel. Six triangle panels form a movable component. The openness is basically determined by a bar that can in the center. When it extends, the panels fold and when it shrinks, the panel open.



The data flow is quite direct. We get the sunlight data from ladybug and then transform the intensity of the sunlight to the degree the panels will open. Through calculation in grasshopper, it generates all the panels that open at different degrees. Then they are baked to Rhino and exported into Revit. In Revit, we will add more building information including material, name to the panels. Finally, we can easily export vectorial technical drawings or high quality renderings through Revit, which can be further beautified in Photoshop and Illustrator.



Relaxing Area
In response to the increasing competition to attract tenants with many other luxury office buildings popping up around the Lever House along with the new developments at Hudson Yards, we plan to add more programs in the Lever House. The quality of the working space is not only defined by the office. We want to add some relaxing area where people can have a drink and play games with friends and colleagues.

Gym
A new gym is placed near the roof garden to allow both tenants and the public to exercise. The new programs are all placed in boxes that also add more variability to the facade.



02/2020
Avery 6AM
Birds and Flowers

Home



10/2019
Tunisia
Tutor: Ziad Jamaledine

Field Trip



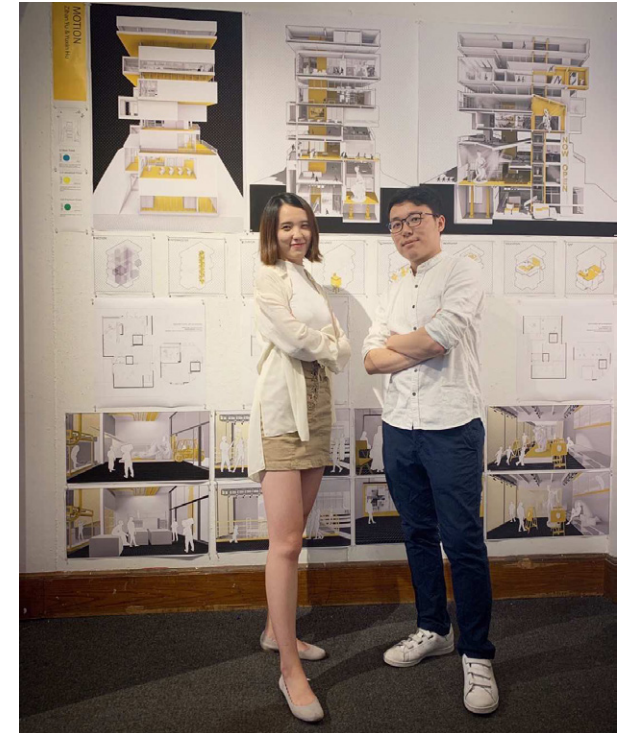
02/2020
Heintges Consulting Architects & Engineers
GSAPP Classmates

Office Tour



08/2019
Avery 600
Teammate: Zihan Yu

Final Review

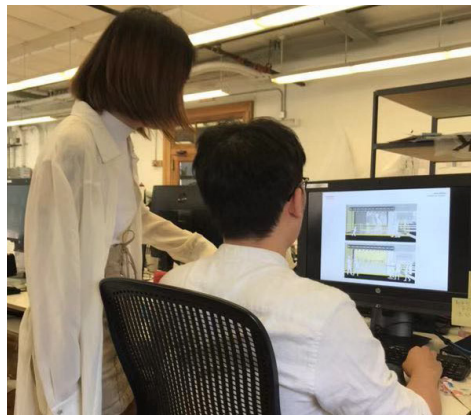


Site Visit

02/2020
The Spiral
Tutor: Nicole Dosso

Studio Daily

08/2019
Avery 500N
With: Zihan Yu



Studio Daily

03/2020
Fayerweather Hall
Tutor: Steven Holl & Dimitra Tsachrelia



Office Tour

01/2020
Steven Holl Architects
GSAPP Classmates

Final Review

12/2019
Avery 600
Teammate: Xiaoxuan Hu

Contact:
yuxin.h@columbia.edu
(646)-384-8352