Advanced Architecture Design

2024.5 - 2025.5

PORTFOLIO

MSAAD

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CONTENTS

This year, I focused on using architecture to question what often goes unnoticed—how spaces are framed, who defines their value, and what stories they tell. Through design, research, and video, I explored my own discomforts and curiosities, using them as starting points to investigate broader cultural and environmental systems. These projects became a way for me to not only express ideas but to challenge assumptions and imagine new ways of seeing and making space.

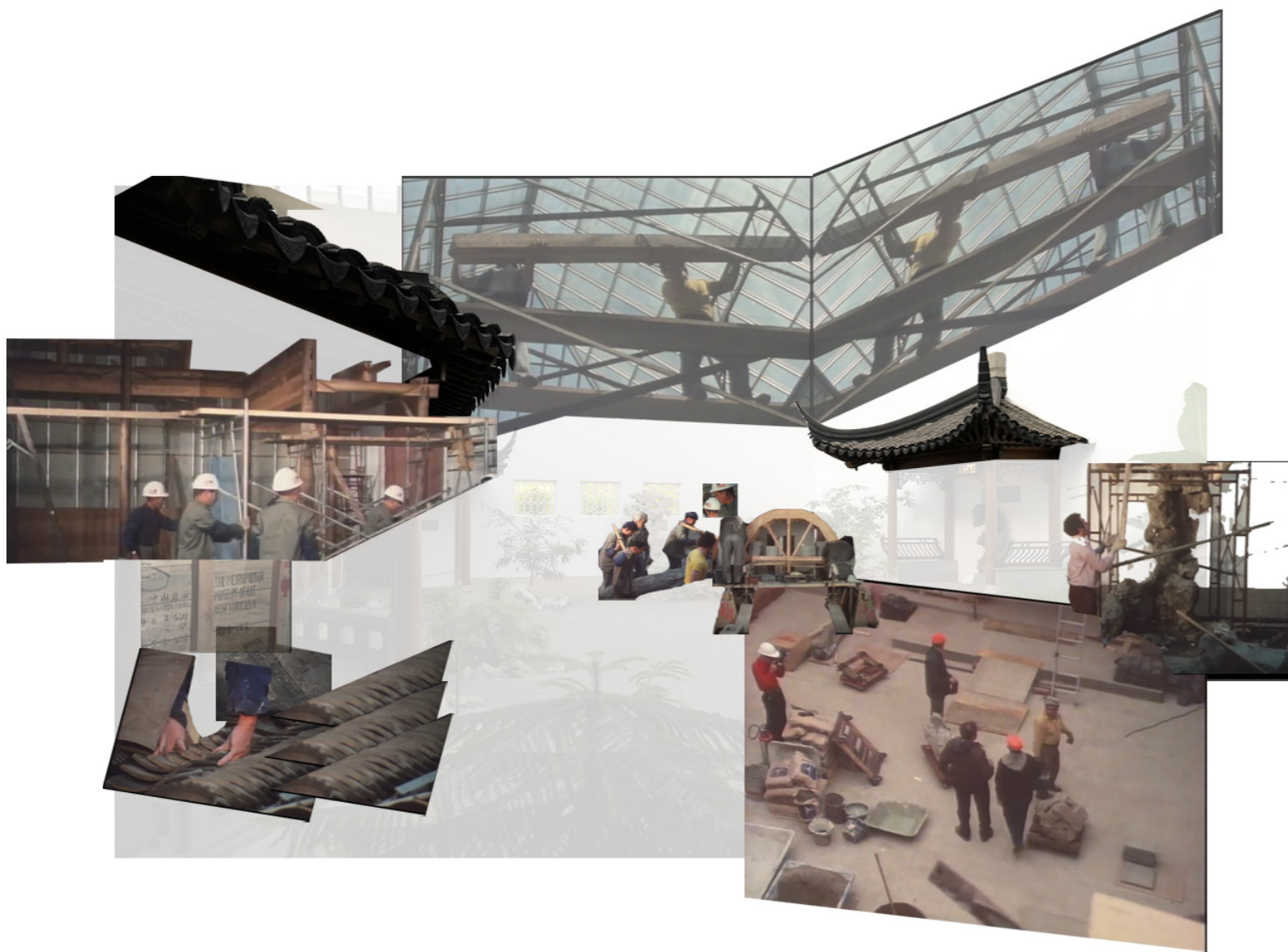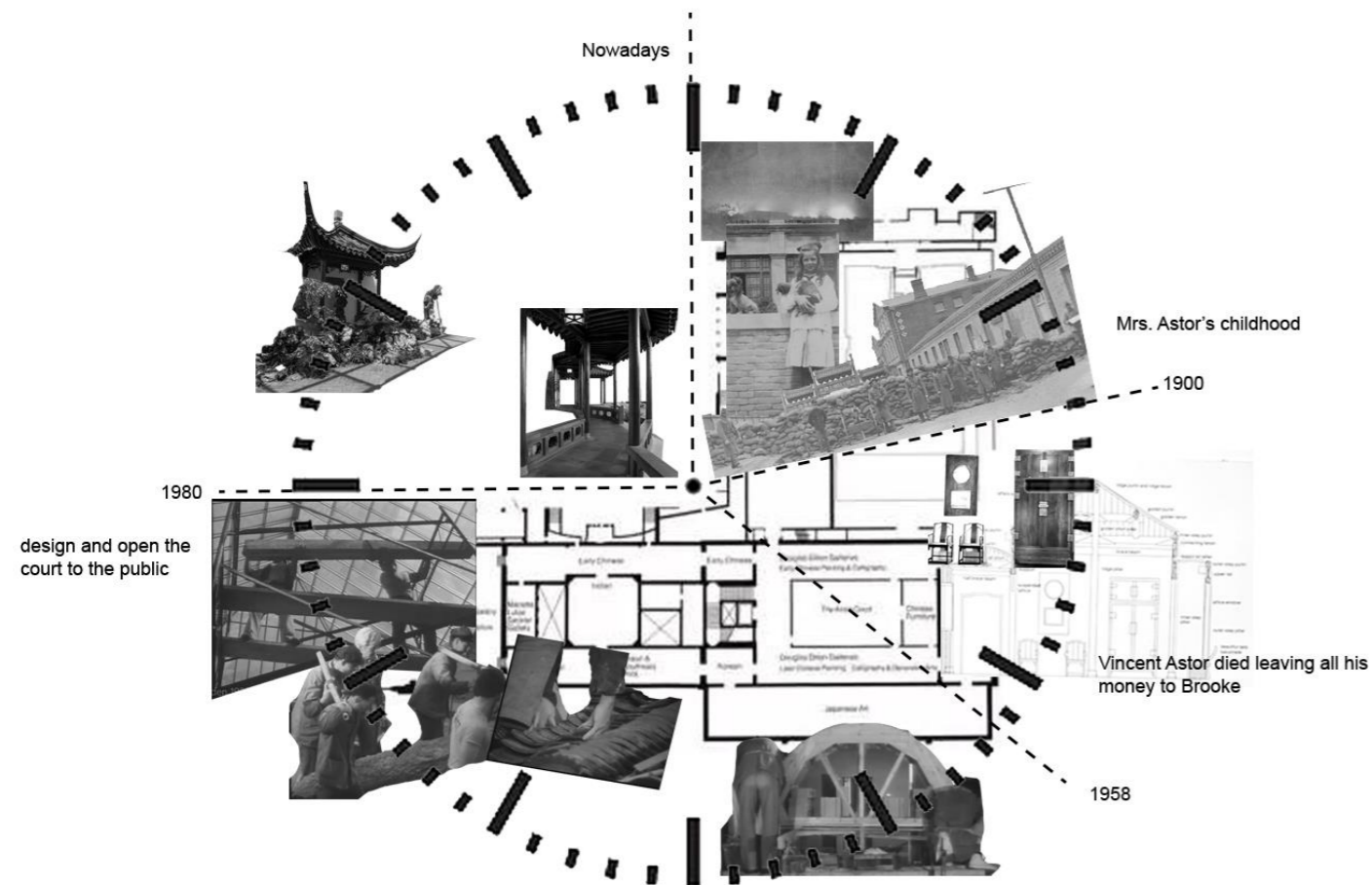# The Real Court

The Defamiliarization in The Museum

This project critically examines the Astor Court at the Metropolitan Museum of Art, a reconstructed Ming-style garden commissioned by Brooke Astor and realized through a complex interplay of cultural diplomacy, institutional patronage, and aesthetic appropriation. Although meticulously crafted to reflect traditional Chinese garden design, the space engenders a sense of dislocation and defamiliarization—a feeling that prompted this video-based inquiry.

The Astor Court is not a neutral reproduction of historical Chinese aesthetics; rather, it is a carefully staged environment shaped by the perspectives of collectors, trustees, and designers who interpreted Chinese culture through their own positionalities. This project explores how such recontextualizations—however well-intentioned—can inadvertently flatten cultural nuance, transforming dynamic heritage into static representation. The accompanying video reorients the viewer's gaze through temporal fragmentation, layered narration, and selective framing, encouraging a critical reconsideration of authenticity and authorship.
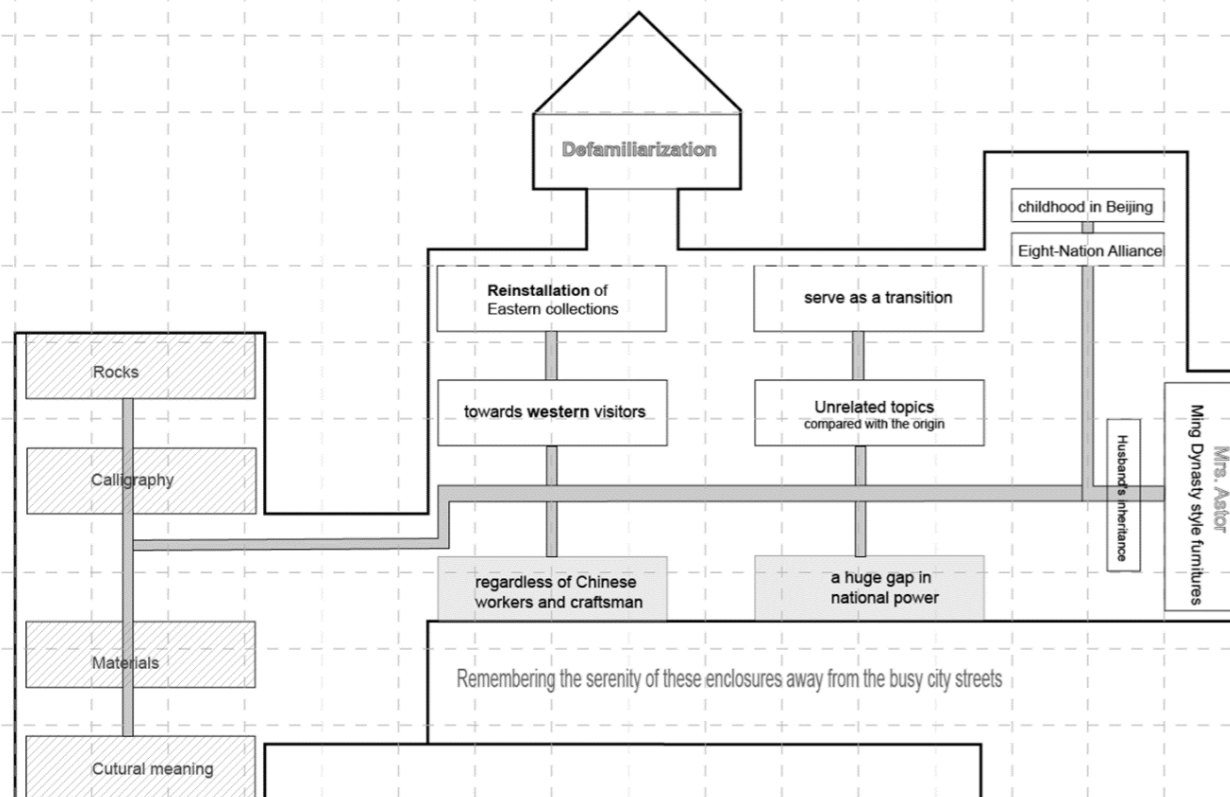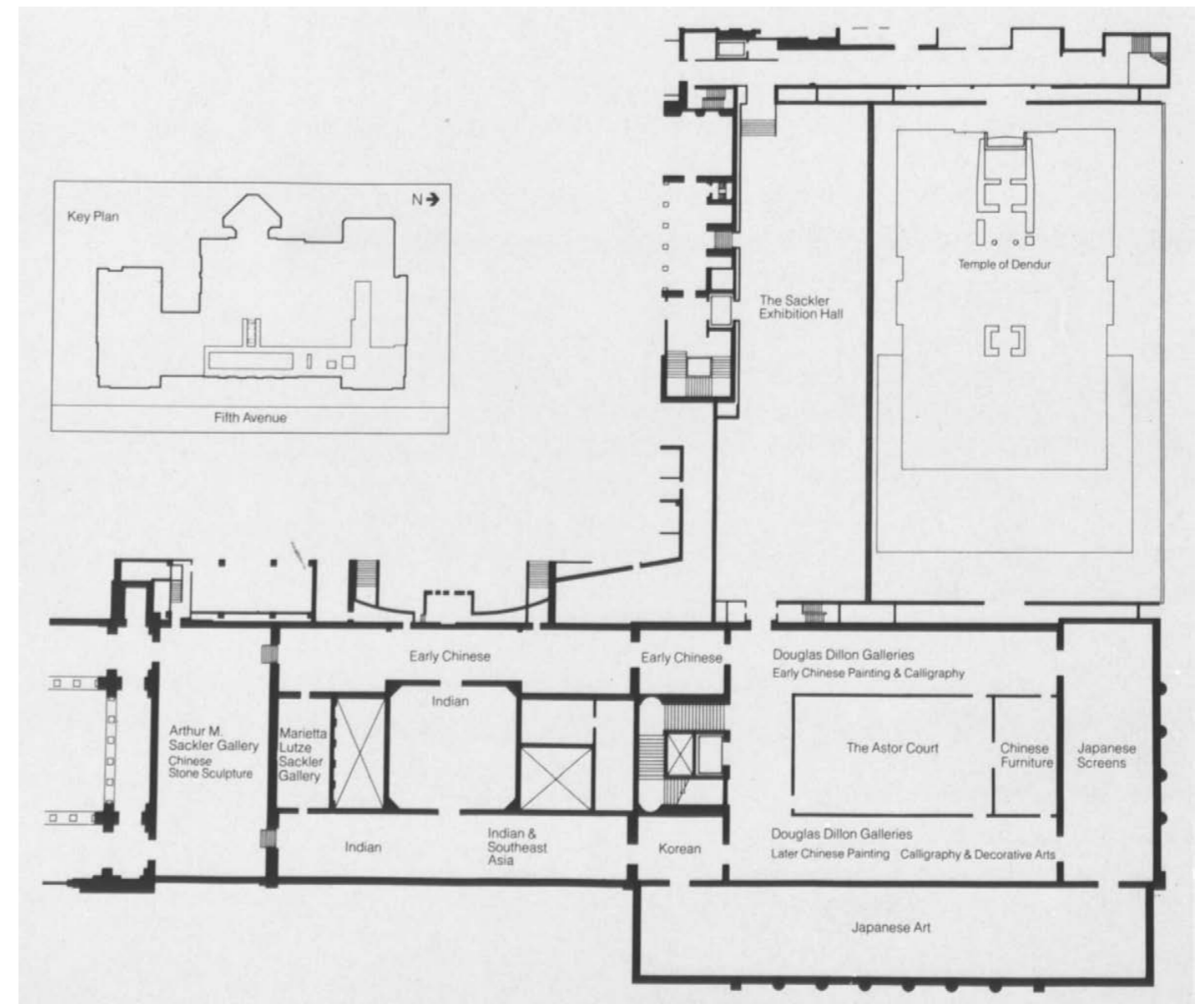
Individual Work
2024 Summer
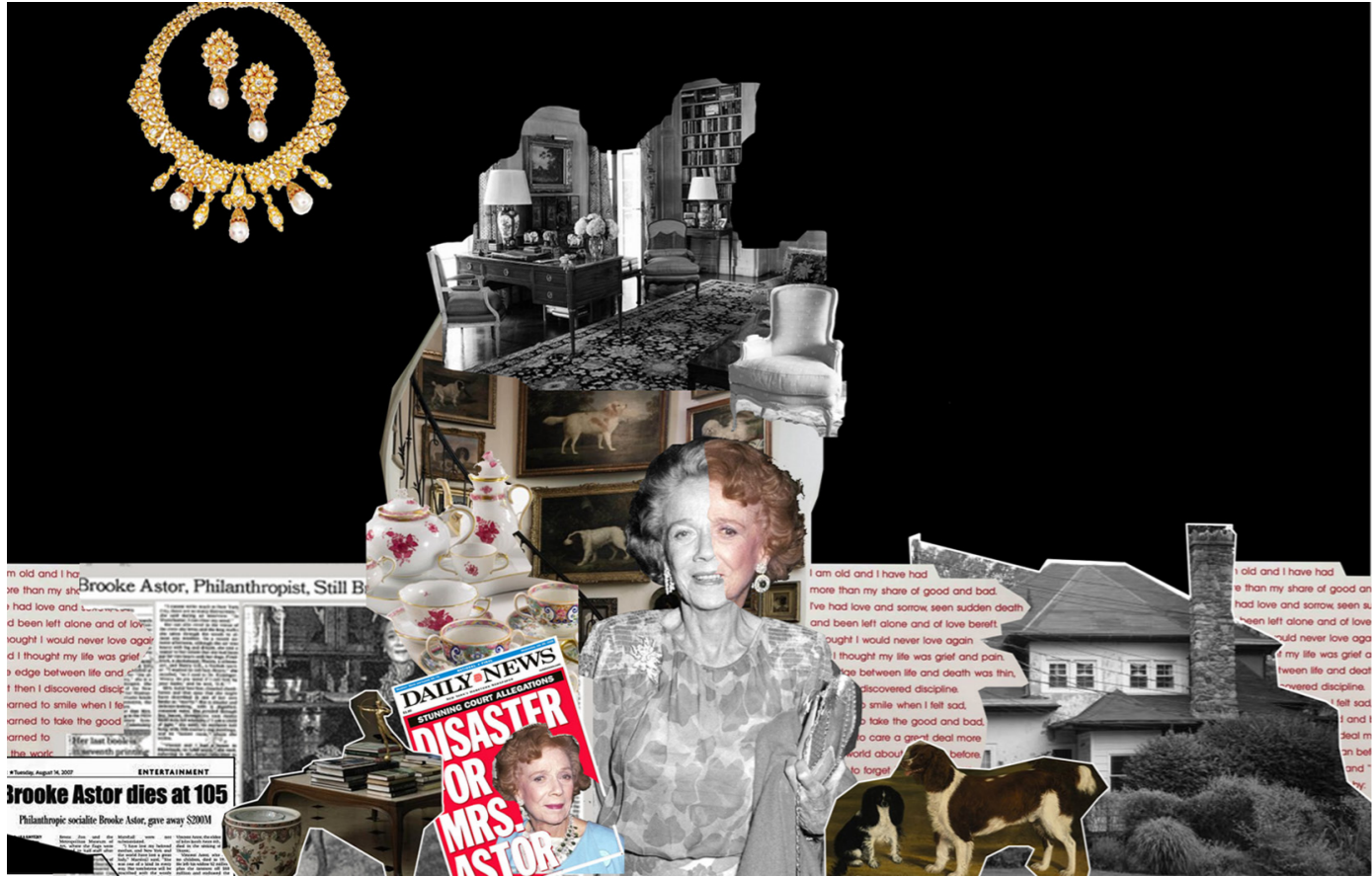Instructor: Cruz García & Nathalie Frankowski

Nowadays

Mrs. Astor's childhood

1900

1980

design and open the
court to the public

Vincent Astor died leaving all his
money to Brooke

1958

Defamiliarization

childhood in Beijing

Eight-Nation Alliance

Reinstallation of
Eastern collections

serve as a transition

Mrs. Astor

towards western visitors

Unrelated topics
compared with the origin

Husband's inheritance

Ming Dynasty style furnitures

Rocks

Calligraphy

regardless of Chinese
workers and craftsman

a huge gap in
national power

Materials

Cutural meaning

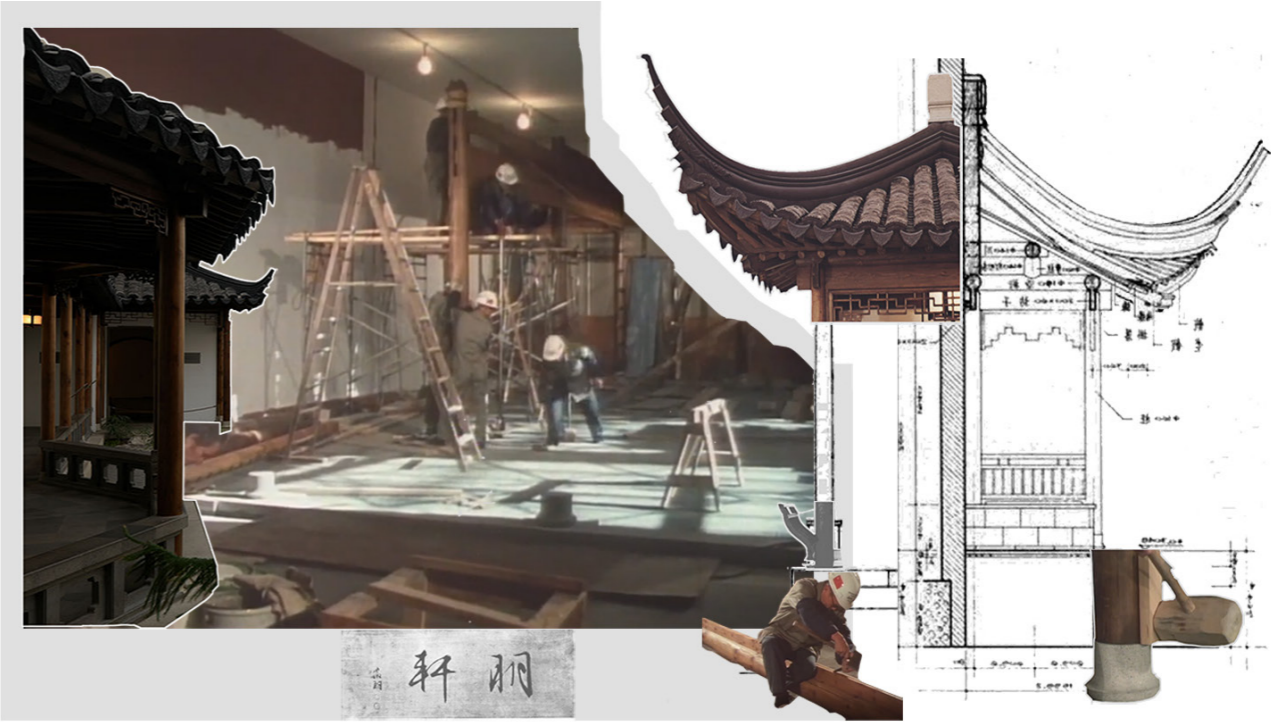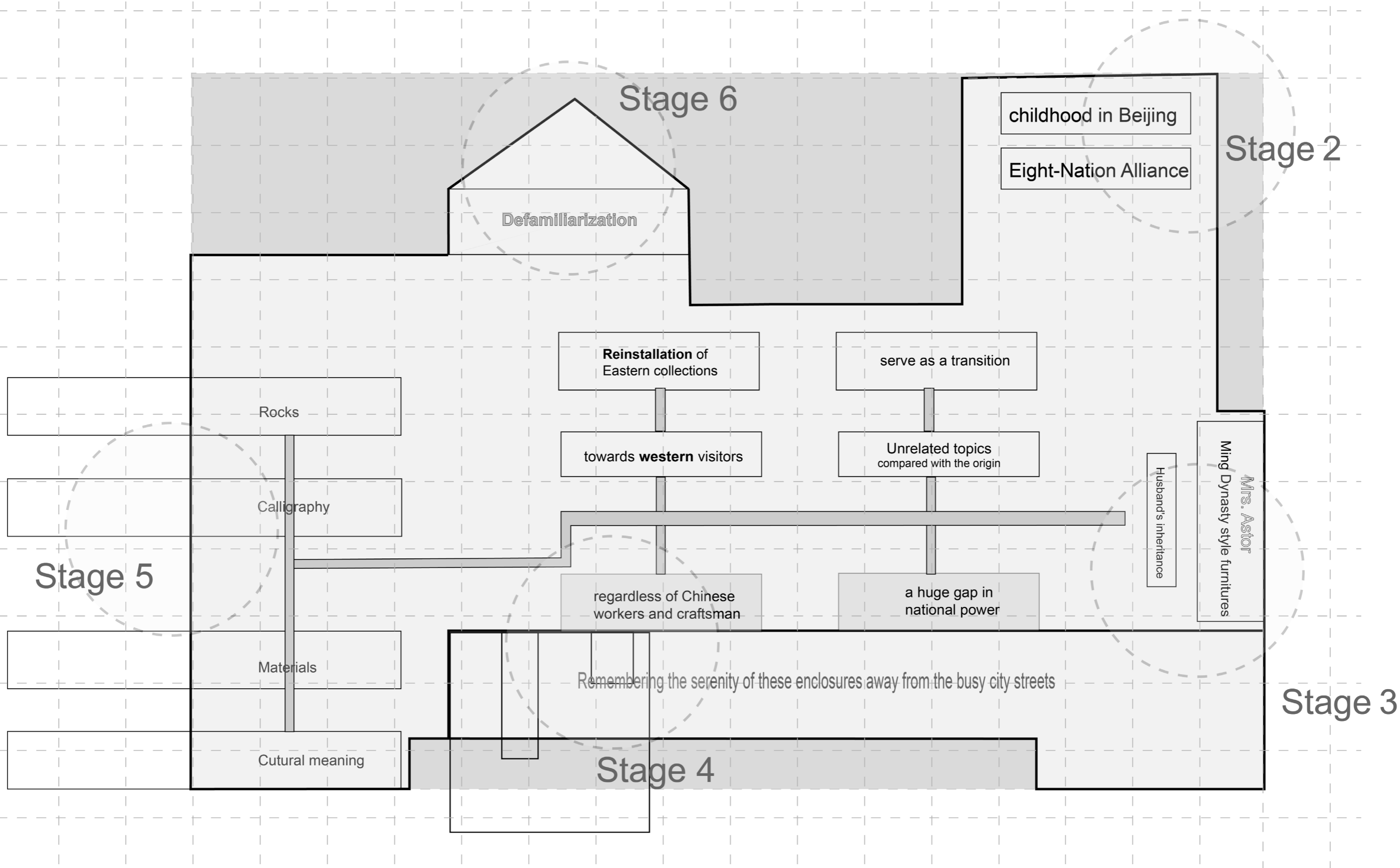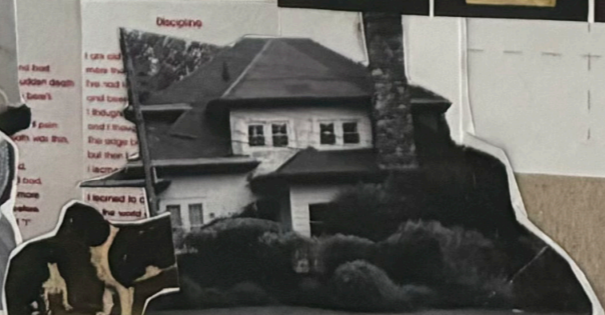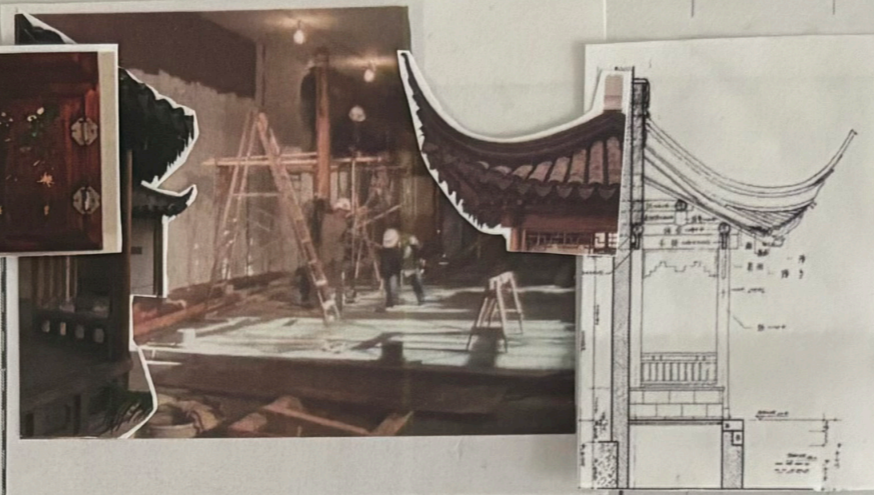Remembering the serenity of these enclosures away from the busy city streets

Plan

The video begins with a slow, deliberate visual mapping of the Astor Court's material features—Lake Tai limestone, nanmu pillars, lattice windows—juxtaposed against archival and textual documentation of their origins and symbolic functions in Chinese landscape tradition. Through voiceover, the narrative situates these elements within a broader critique of museological framing, emphasizing the implications of transplanting cultural artifacts from their original epistemological and spatial contexts into Western institutional environments. The project foregrounds how the act of aesthetic preservation can also constitute a form of ideological abstraction, detaching material heritage from its socio-historical matrix. By interrupting visual continuity with temporal distortion and abrupt sonic shifts, the video resists passive spectatorship and instead prompts analytical engagement.

Key Plan

N→

Temple of Dendur

The Sackler
Exhibition Hall

Fifth Avenue

Early Chinese

Early Chinese

Douglas Dillon Galleries
Early Chinese Painting & Calligraphy

Arthur M.
Sackler Gallery
Chinese
Stone Sculpture

Marietta
Lutze
Sackler
Gallery

Indian

The Astor Court

Chinese
Furniture

Japanese
Screens

Indian

Indian &
Southeast
Asia

Korean

Douglas Dillon Galleries
Later Chinese Painting   Calligraphy & Decorative Arts

Japanese Art

Stage 6

Defamiliarization

Stage 2

childhood in Beijing

Eight-Nation Alliance

Reinstallation of Eastern collections

serve as a transition

Rocks

Calligraphy

towards **western** visitors

Unrelated topics
compared with the origin

Husband's inheritance

Mrs. Astor
Ming Dynasty style furnitures

Stage 5

Materials

regardless of Chinese workers and craftsman

a huge gap in national power

Stage 3

Cutural meaning

Remembering the serenity of these enclosures away from the busy city streets

Stage 4

Harvest Beyond

Food reverse logistics

For food, its life starts from growing, and then harvest, then being sent to restaurants and markets, then most of wasted food or unused food will be directly sent into landfill.As we have to consider two categories, we choose food and home improvement, our project focuses on the changing logic of recycling in the TIME dimension, aiming to extend the life cycle of food and home improvement to achieve sustainable resource recycling.

I introduced an on-site waste collection machine, which remolds crushed waste into bricks by using active organisms (mainly mushroom mycelium) as a binder.I want to create a system of reverse logistics majorly in the food industry and provide new possibilities of abandoned materials.
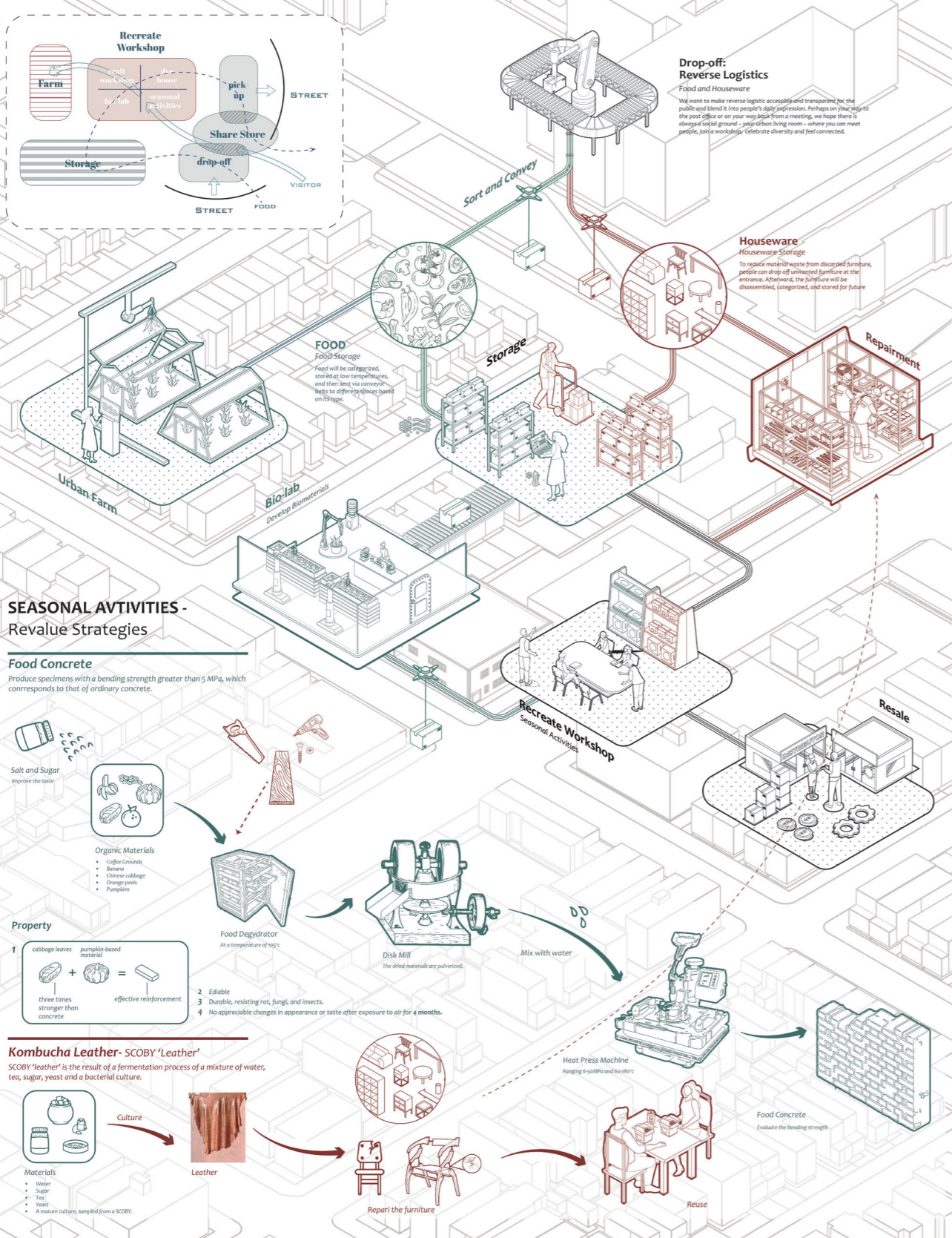
Group Work
2024 Fall
Group member: Shuyi Kong | Anzhi Li
Instructor: Cyrus Peñarroyo
Site: New York

The Food Return Process

REVERSE FOODS AND HOUSEWARES
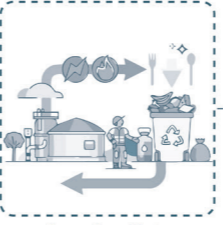*Spacial Sequences of Returned Foods and Housewares*

Recreate Workshop
Farm
pick up
Street
Share Store
Storage
drop-off
VISITOR
Street
FOOD

Drop-off:
Reverse Logistics
Food and Houseware

We want to make reverse logistics accessible and transparent for the public and blend it into people's daily expression. Perhaps on your way to the post office or on your way back from a meeting, we hope there is always social ground – yet urban living room – where you can meet people, join a workshop, celebrate diversity and feel connected.

Sort and Convey

Houseware
Houseware Storage
To reduce material waste from discarded furniture, people can drop off unwanted furniture at the entrance. Afterward, the furniture will be disassembled, categorized, and stored for future

FOOD
Food Storage
Food will be categorized, stored at low temperatures, and then sent via conveyor belts to different spaces based on its type.

Storage

Repairment

Urban Farm

Bio-lab
Develop Biomaterials

Resale

SEASONAL AVTIVITIES -
Revalue Strategies

Recreate Workshop
Seasonal Activities

Food Concrete
Produce specimens with a bending strength greater than 5 MPa, which corrresponds to that of ordinary concrete.

Salt and Sugar
Improve the taste

Organic Materials
Coffee Grounds
Banana
Cheese cabbage
Orange peels
Pumpkins

Property

1 cabbage leaves + pumpkin-based material = effective reinforcement

three times stronger than concrete

2 Edible
3 Durable, resisting rot, fungi, and insects.
4 No appreciable changes in appearance or taste after exposure to air for 4 months.

Food Degydrator
At a temperature of 105°c

Disk Mill
The dried materials are pulverized.

Mix with water

Heat Press Machine
Ranging 6-50MPa and 80-180°c

Food Concrete
Evaluate the bending strength

Kombucha Leather- SCOBY 'Leather'
SCOBY 'leather' is the result of a fermentation process of a mixture of water, tea, sugar, yeast and a bacterial culture.

Culture

Materials
Water
Sugar
Tea
Yeast
A mature culture, sampled from a SCOBY.

Leather

Repari the furniture

Reuse

Waste Management

Food Scrap

Food Rescue

Compost

Energy From Waste

Disposal/Landfill

Environmentally Friendly
Source Reduction
Harmful to Environment

Category of waste food

SHAPE
Ugly or Oddly Shaped fruits and veggies

DATE
Upcoming sell-by or expiration dates (food is often still safe to eat)

OVERPRODUCTION
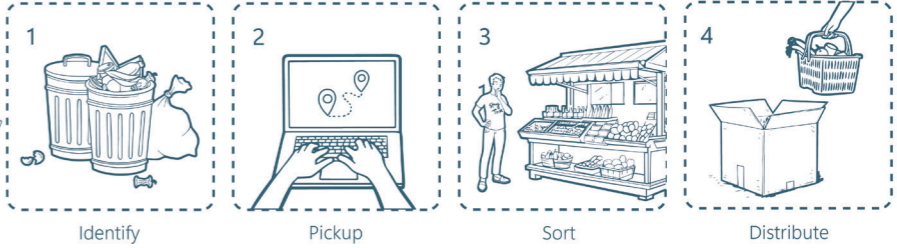Overproduction at farms (e.g. manufactured for a holiday that has now passed)

DAMAGED
Food getting damaged during transport

Organic Waste Recycle

LIVESTOCK
BIOWASTE
SEWERAGE
ORGANIC WASTE
RECYCLE
GAS
BIO-OIL
DIGESTATE
ANAEROBIC DIGESTER
BIOGAS
LIVESTOCK BEDDING
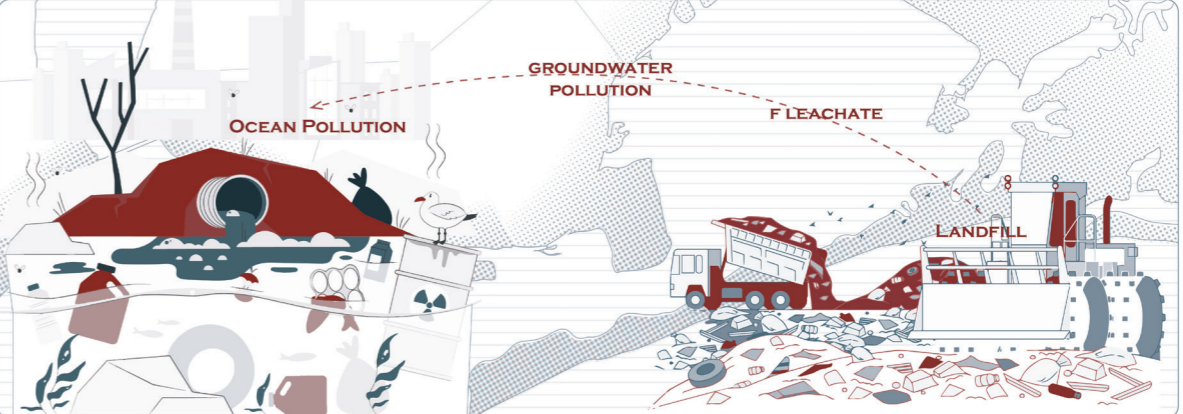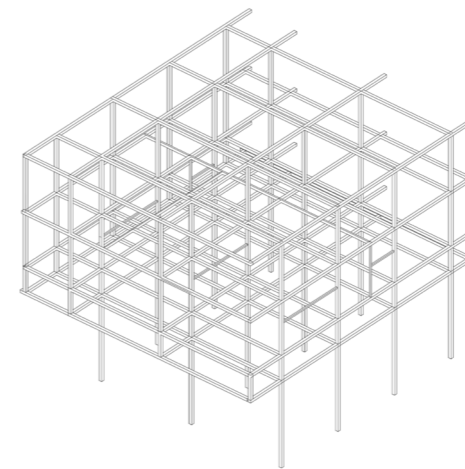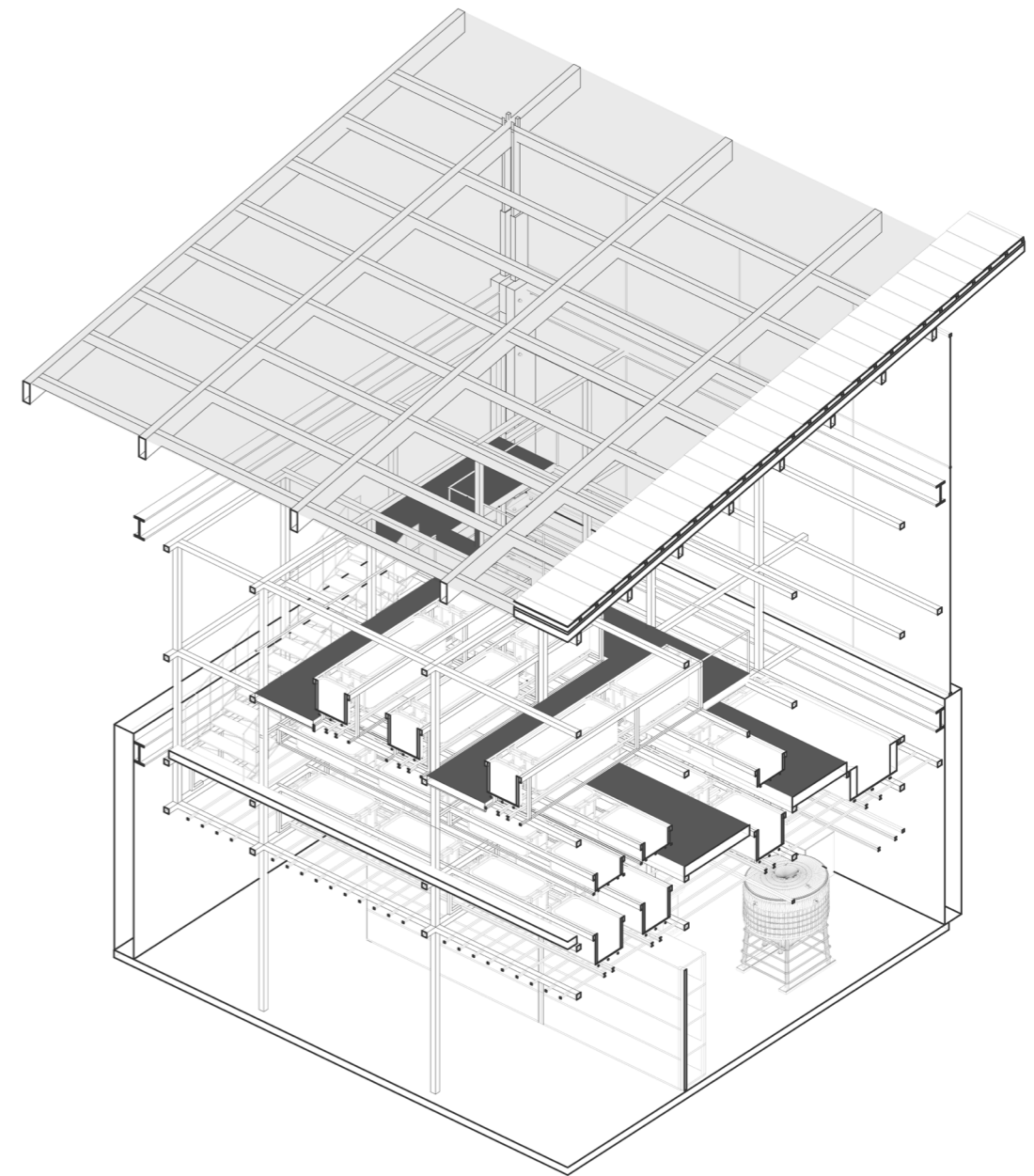SOIL AMENDMENTS
FERTILIZER
WARM
ELECTRICITY
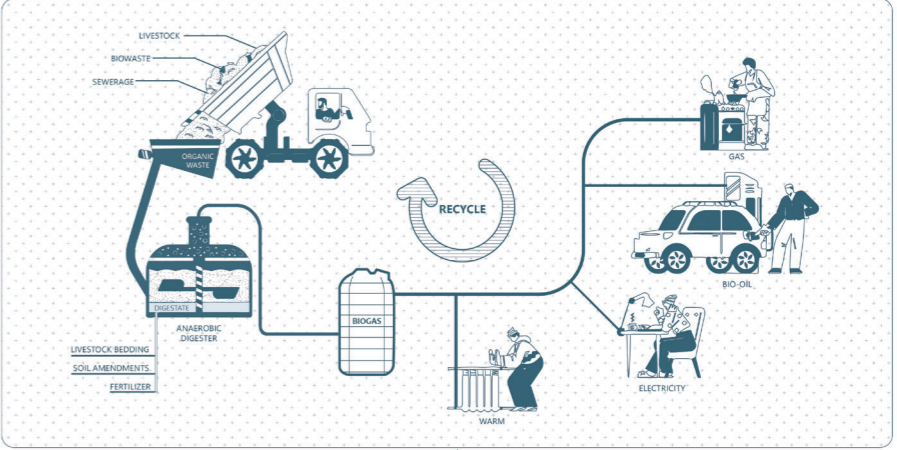
Food Rescue

Food Recovery Network
Divert more than two million pounds of wasted food from landfills to

1 Identify
2 Pickup
3 Sort
4 Distribute

Landfill Pollution

OCEAN POLLUTION
GROUNDWATER POLLUTION
F LEACHATE
LANDFILL

Ground Floor Plan 1:200

N

1 Warehouse
2 Workshop/laboratory
3 Urban farm
4 Exhibition area

Entrance
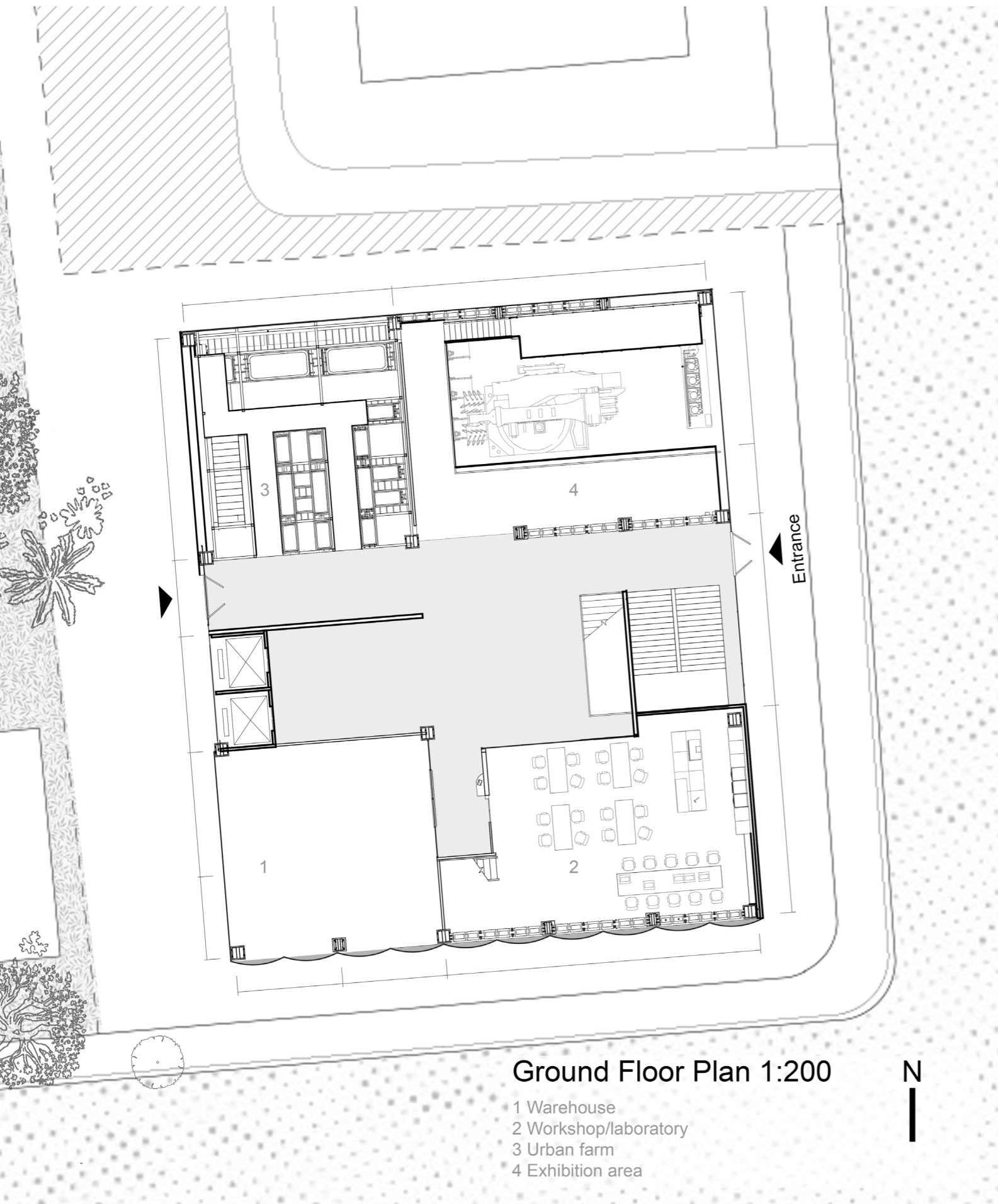
Planning of the urban farm

Category 1: .Supporting laboratory research
types: cabbage, onion, orange.
Characteristics: Longer maturation period, mainly used for
laboratory 'food concrete' research, exploring the feasibility of
combining food waste with construction materials.

Category 2: Supporting Education and Interactive Experiences
types: strawberry, cucumber, cherry tomato.
Characteristics: Short ripening cycle (about two months),
suitable for children and teenagers to provide planting
experience education, so that they can understand the whole
process of crops from sowing to harvesting.
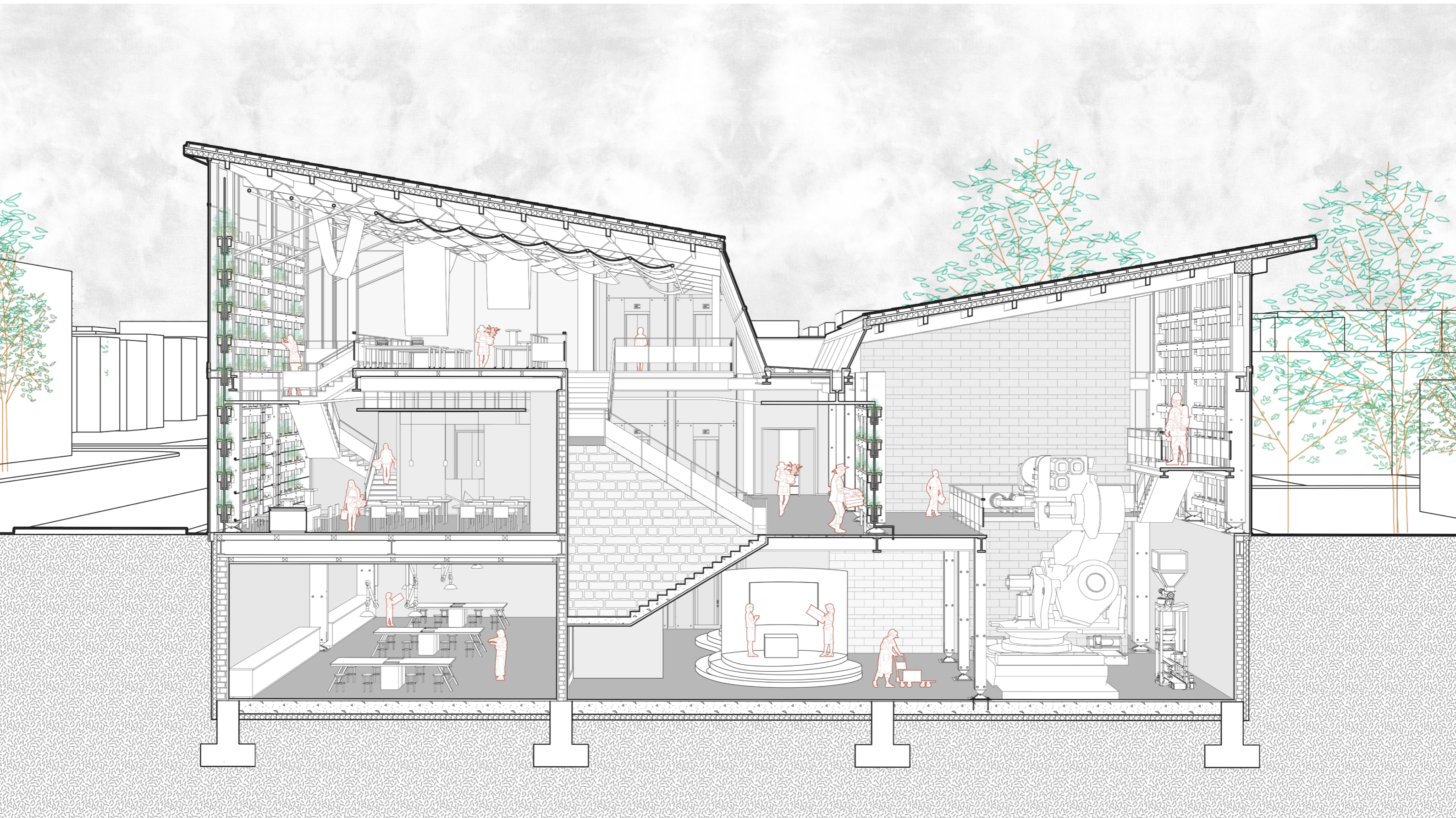
Chasing Light

Single family housing

This studio and seminar operate as a GSAPP Clinic, offering a critical investigation into the role of Private Equity in the Single-Family Rental housing market and its broader impact on housing scarcity. Through analysis and design, the work addresses how housing can be reimagined at scale in response to economic pressures, social inequity, and the shifting landscape of renewable energy and its emerging economy.

Our project focuses on the single-family home as a site for both spatial and environmental transformation. It proposes a new housing model that integrates solar energy not only as a source of power but as a design principle. Sunlight is used to shape how the home feels, moves, and glows throughout the day, creating a living environment defined by changing light, warmth, and atmosphere. By responding to natural cycles and embedding energy generation into the architecture, the home becomes both a shelter and a sustainable engine for the future.

Group Work
2025 Spring
Group member: Shuyi Kong | Zequan Yu
Instructor: Michael Bell
Site: Charlotte

Scarcity
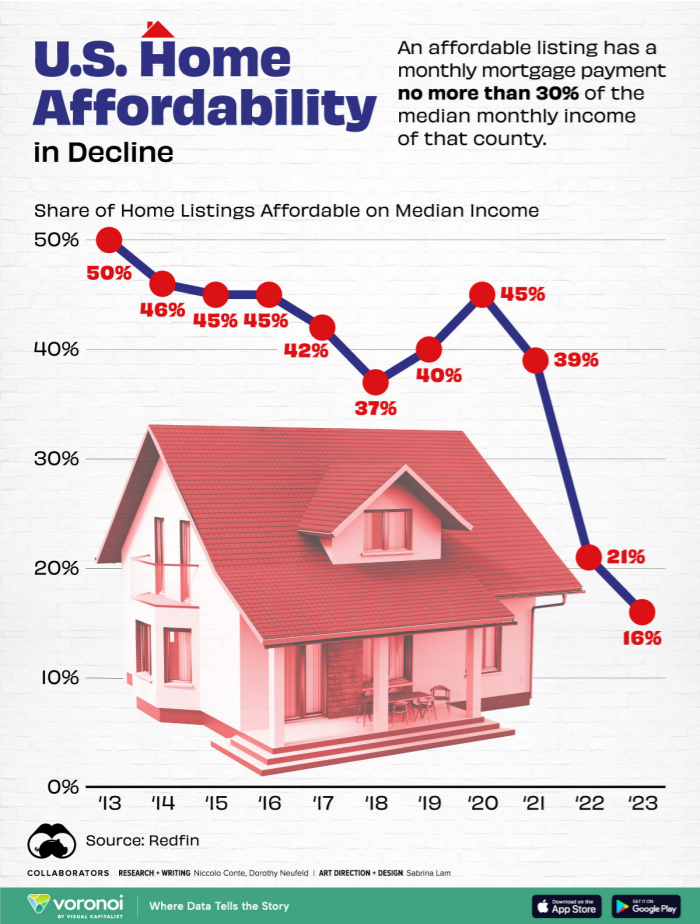
U.S. home affordability has declined sharply over the past decade, with only 16% of listings affordable in 2023 compared to 50% in 2013. This drop reflects rising home prices and mortgage rates, making homeownership increasingly inaccessible for many Americans.

Year	Share of Affordable Home Listings	U.S. Median Sale Price on New Home	Average 30-Year Fixed Mortgage Rate
2023	16%	$427,400	6.81%
2022	21%	$457,800	5.34%
2021	39%	$397,100	2.96%
2020	45%	$336,000	3.10%
2019	40%	$321,500	3.94%
2018	37%	$326,400	4.54%
2017	42%	$323,100	3.99%
2016	45%	$307,800	3.65%
2015	45%	$294,200	3.85%
2014	46%	$288,500	4.17%
2013	50%	$268,900	3.98%
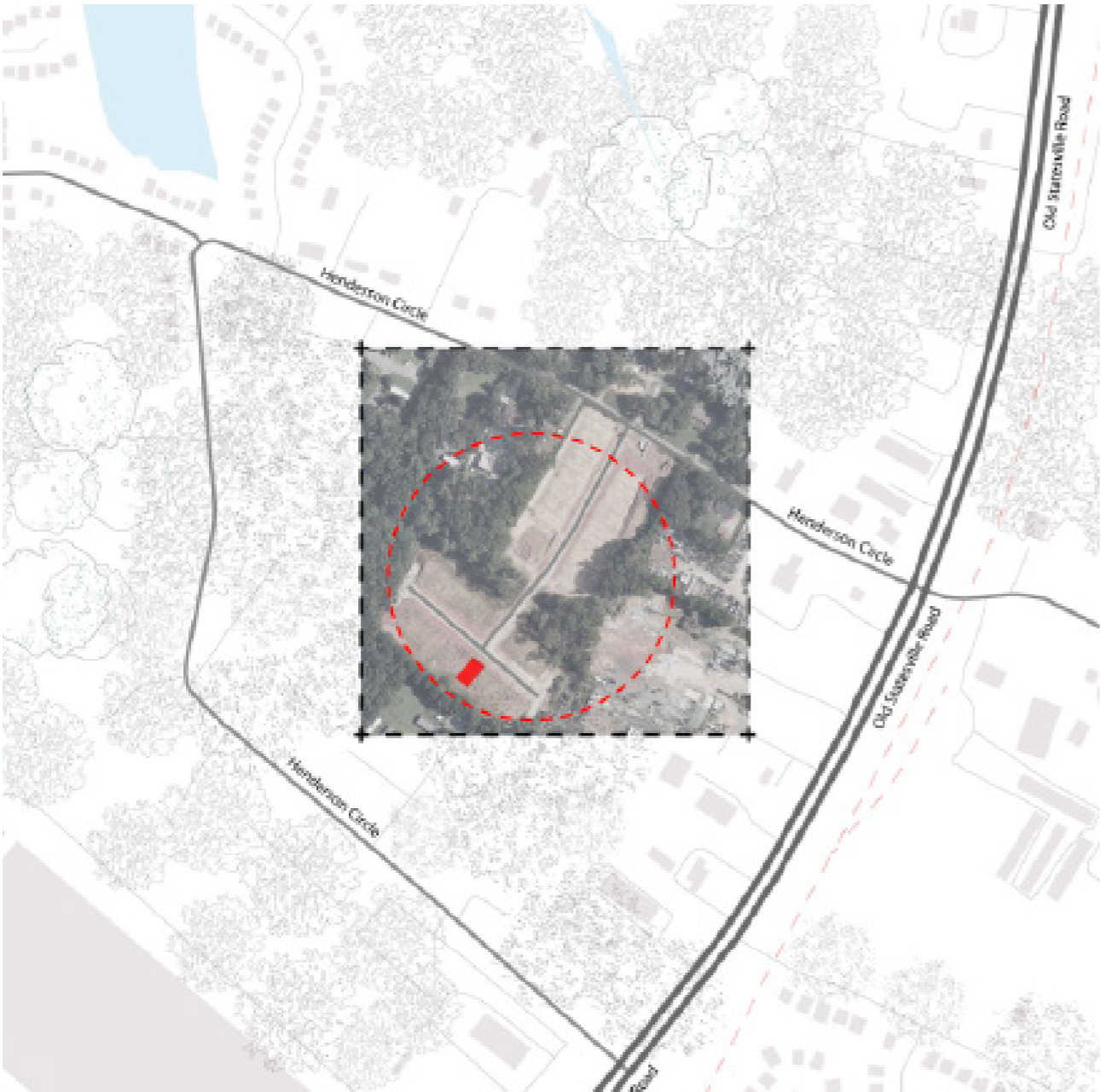
Private Equity

Institutional ownership in North Charlotte
About 12 per cent, and the Buy-to-Rent model is common. PE holds a large number of student flats and low cost housing.

Homeownership in South Charlotte
Neighbourhoods with high levels of owner-occupancy (typically >70%) are concentrated in high-income areas or historic preservation neighbourhoods.

Source: https://ui.charlotte.edu/story/wall-street-backed-landlords-now-own-more-11000-single-family-homes-charlotte/
Source: https://bestneighborhood.org/best-neighborhoods-charlotte-nc/

Site

Exterior Wall (R=21.29)
Exterior Finish: 1/2" Vinyl Siding ($0.75/sqft)
Air Layer
Water Barrier: Tyvek Sheet ($0.15/sqft)
Sheathing: 1/2" Plywood ($1.25/sqft)
Structure: 2x6 Wood Stud w/ 3" Batt Insulation ($2.50/sqft)
Insultation: 1" Rigid Insulation Board ($1.00/sqft))
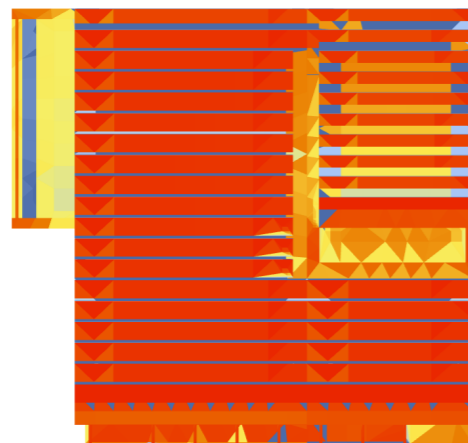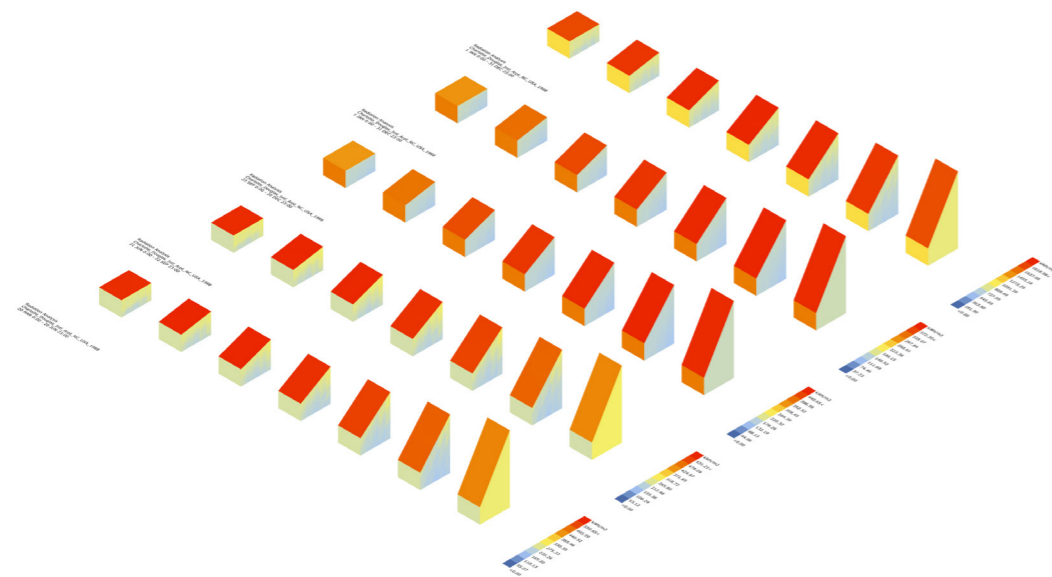Interior Finish: 1/2" DryWall ($0.50/sqft)

Interior Wall
Finish: 1/2" Drywall ($0.50/sqft)
Structure: 2x4 Wood Stud ($2.00/sqft)
Finish: 1/2" DryWall ($0.50/sqft)

Plumbing Wall
Finish: 1/2" DryWall ($0.50/sqft)
Structure: 2x6 Wood Stud ($2.50/sqft)
Sheathing: 1/2" Plywood ($1.25/sqft)
Water Barrier: Tyvek Sheet ($0.15/sqft)
Interior Finish: 1/2" Tiles ($5.00/sqft)
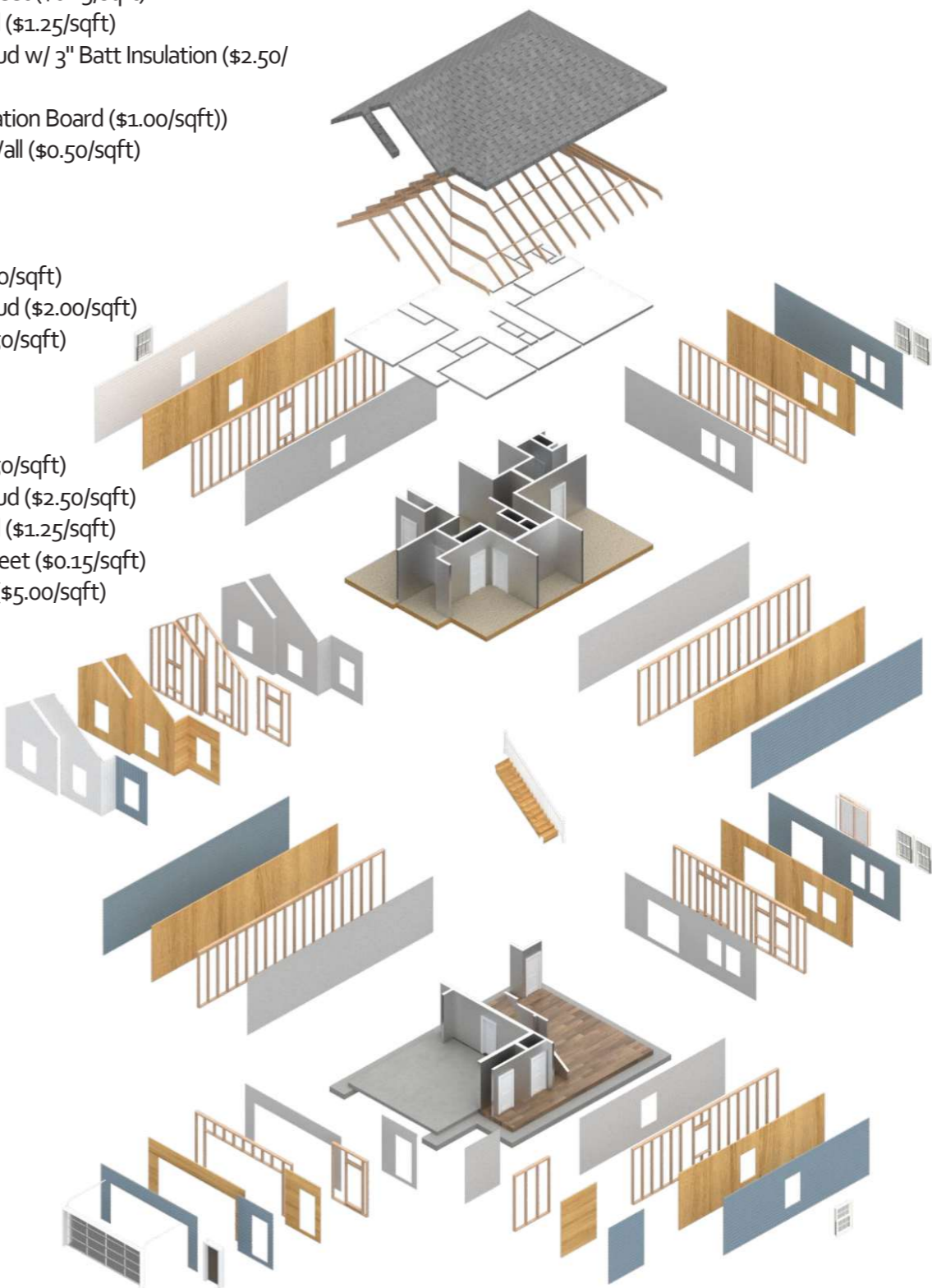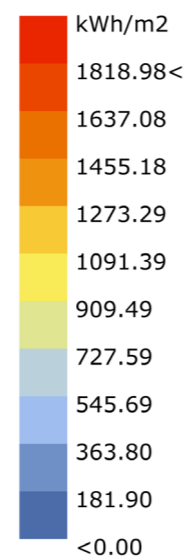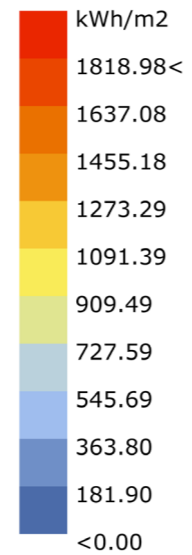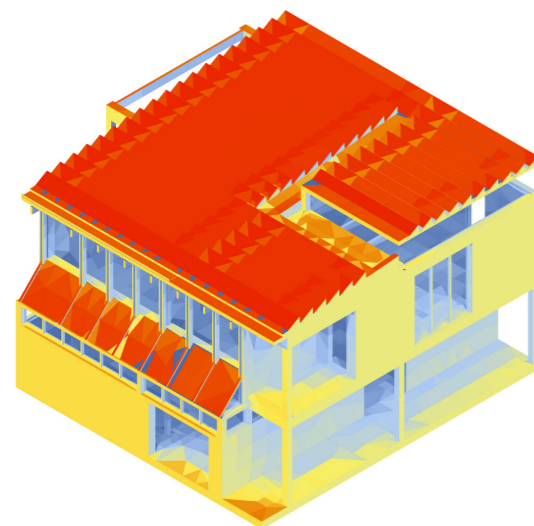
Not just about solar optimism—it's also about playing with light and shadow. How light moves through a space during the day, how it shifts, bounces, and creates moments. It's about using sunlight both as an energy source and as a design tool to shape experience.

kWh/m2
1818.98<
1637.08
1455.18
1273.29
1091.39
909.49
727.59
545.69
363.80
181.90
<0.00

kWh/m2
1818.98<
1637.08
1455.18
1273.29
1091.39
909.49
727.59
545.69
363.80
181.90
<0.00

Our program responds to the movement of light throughout the day, using sunlight to shape space and function. Communal areas are placed to capture morning light, while private spaces benefit from softer evening tones. This creates a living environment that moves in harmony with natural light.
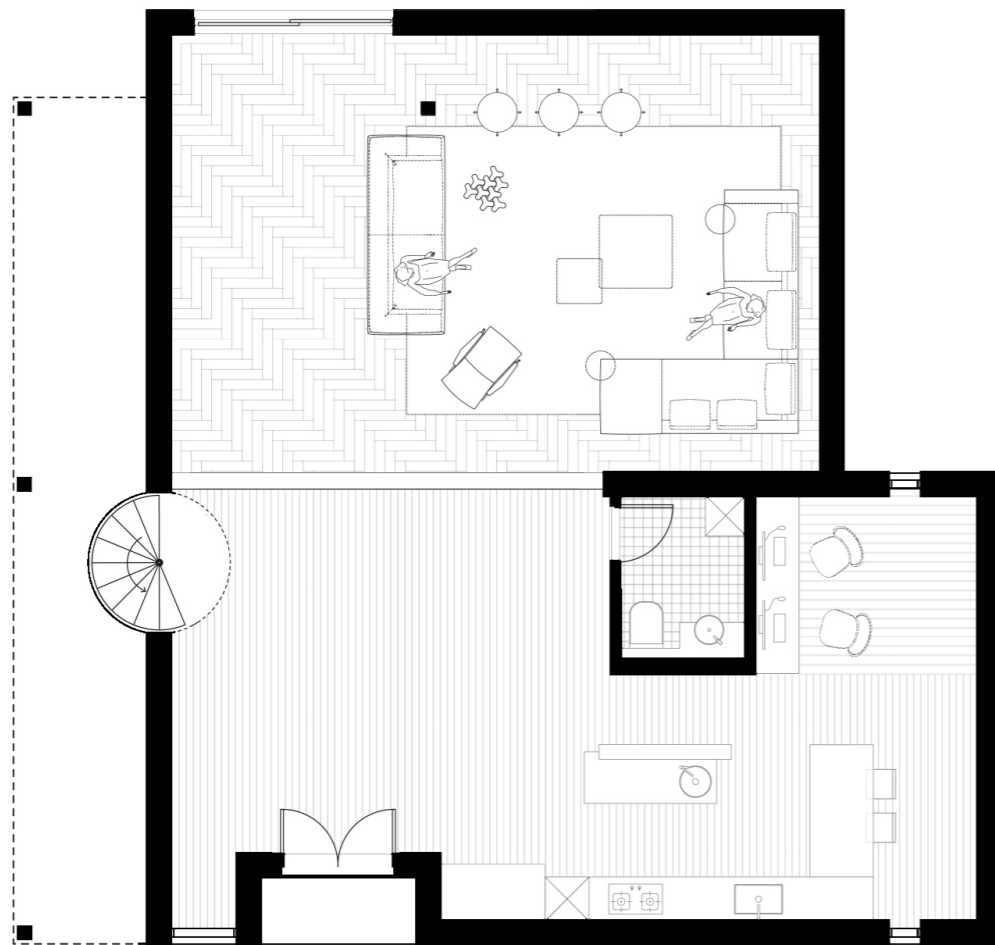
FIRST FLOOR PLAN
N.T.S.
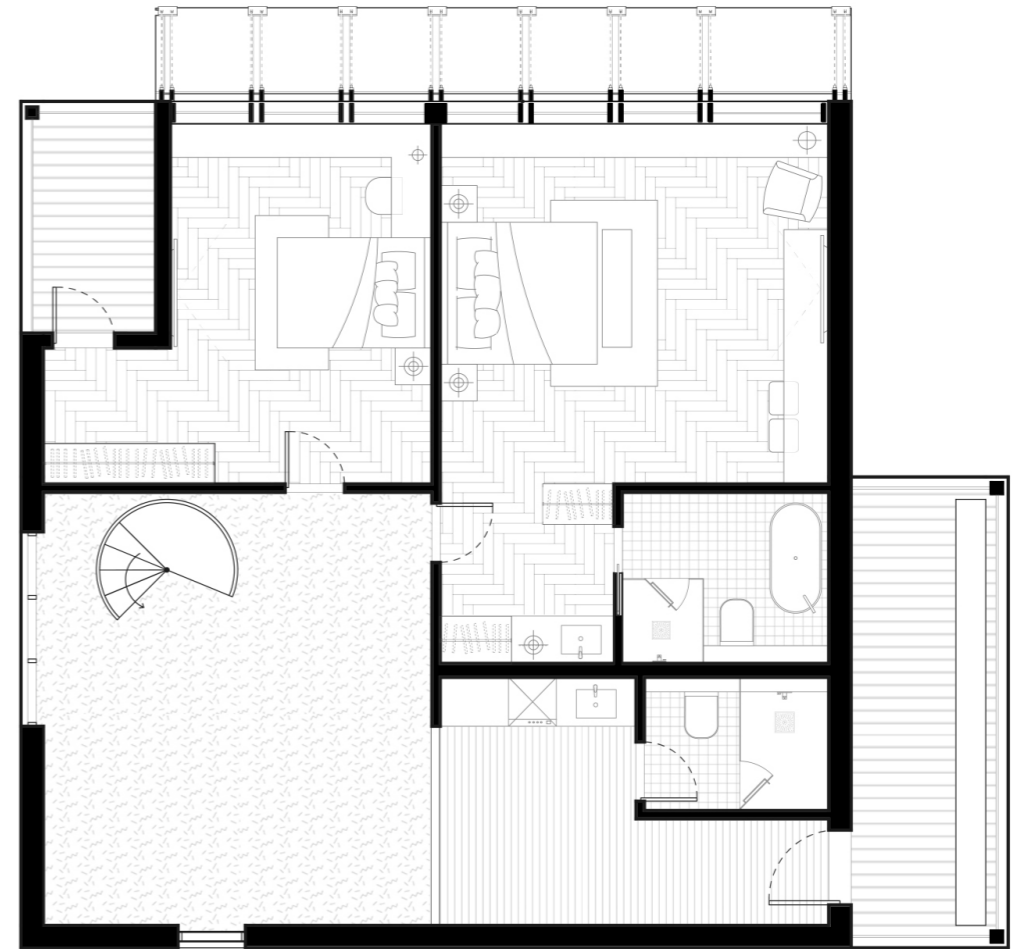
SECOND FLOOR PLAN
N.T.S.
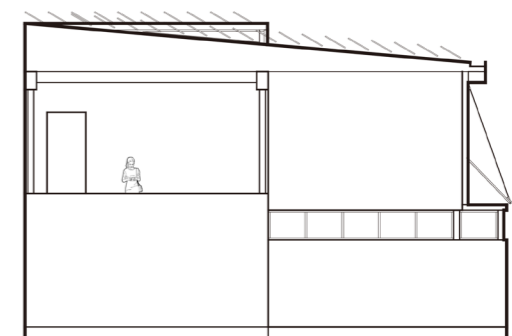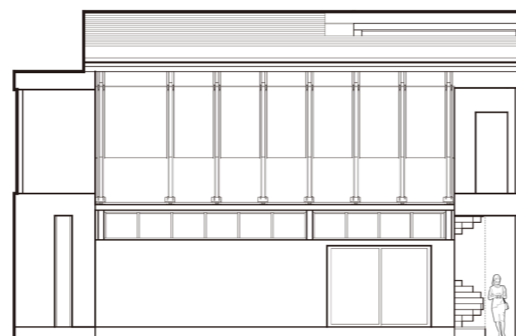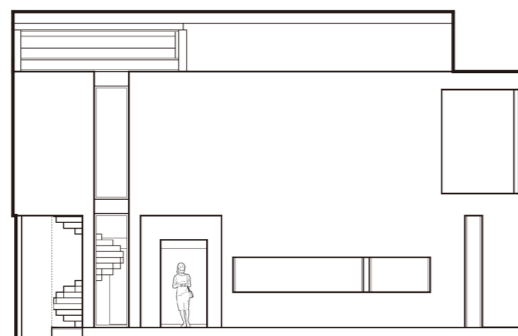
Compared to the existing housing on the property, where openings accounted for only 4.2 percent of the facade, our design increases the total opening ratio to 24.16 percent.
This marks a 20 percent improvement, enhancing natural light, ventilation, and visual connection between interior and exterior spaces.
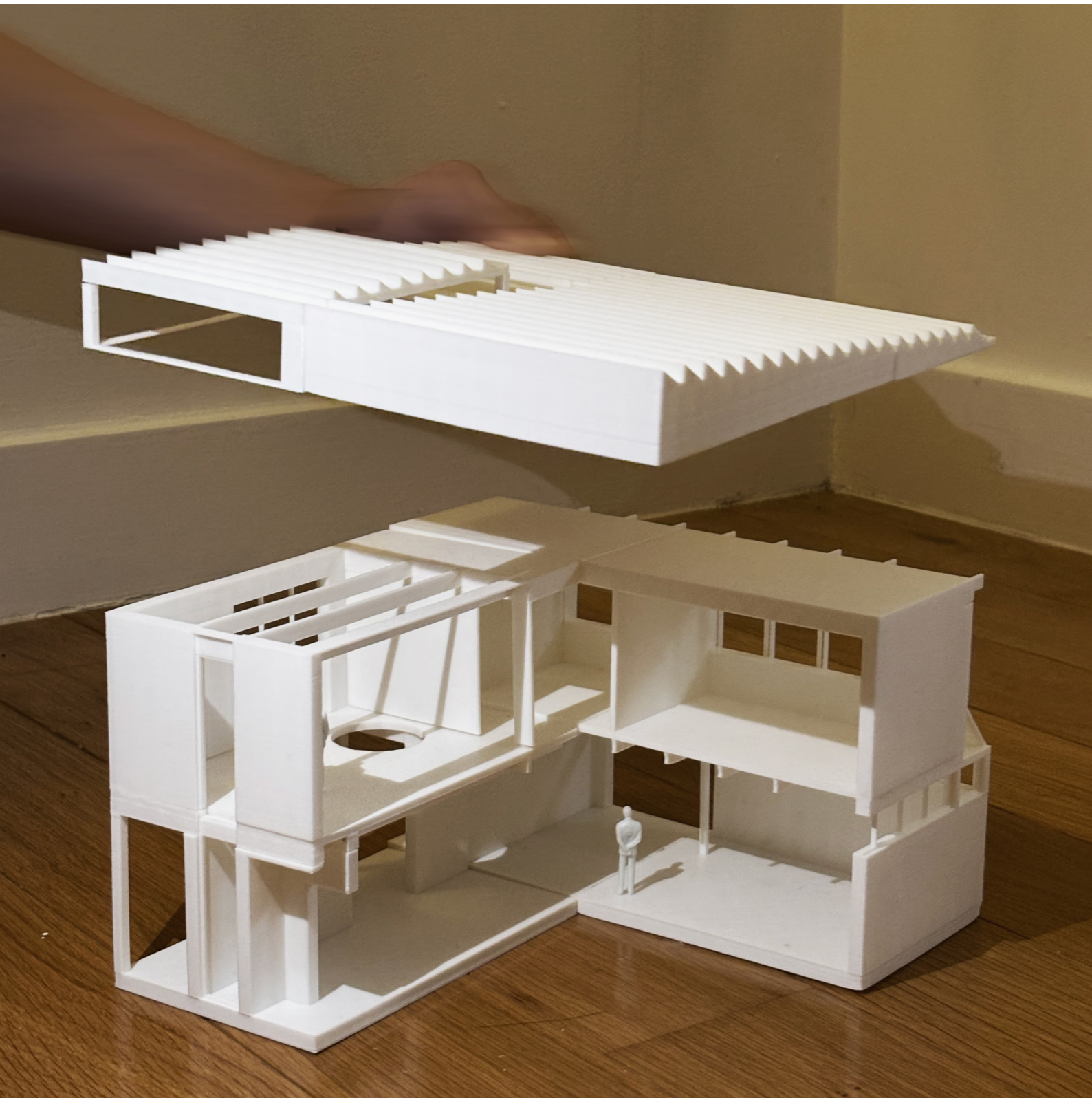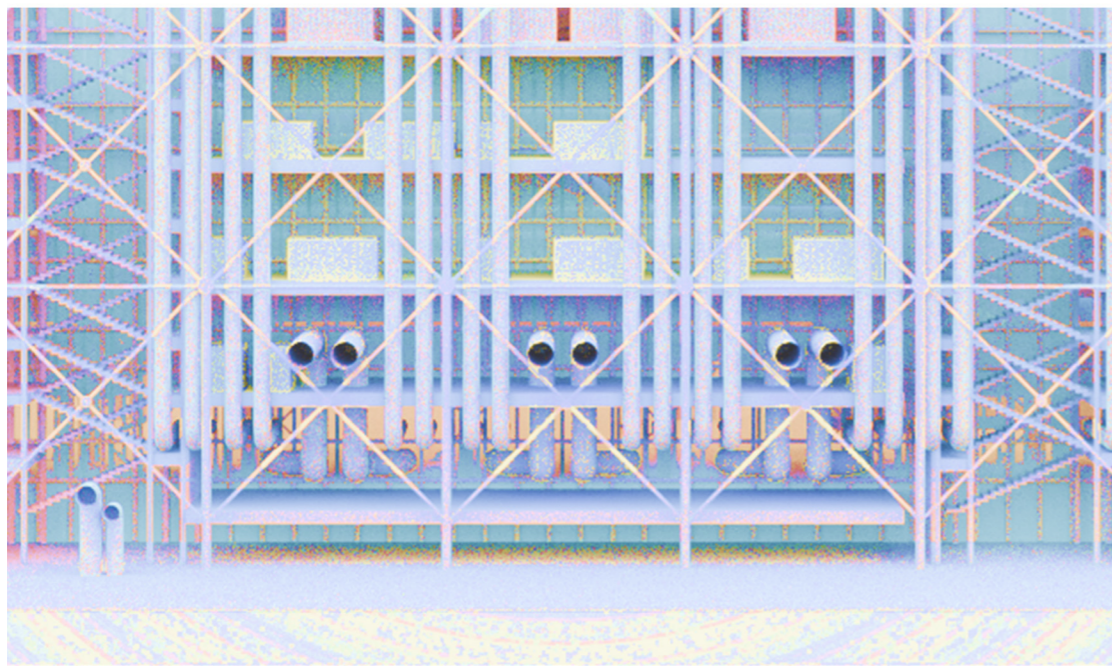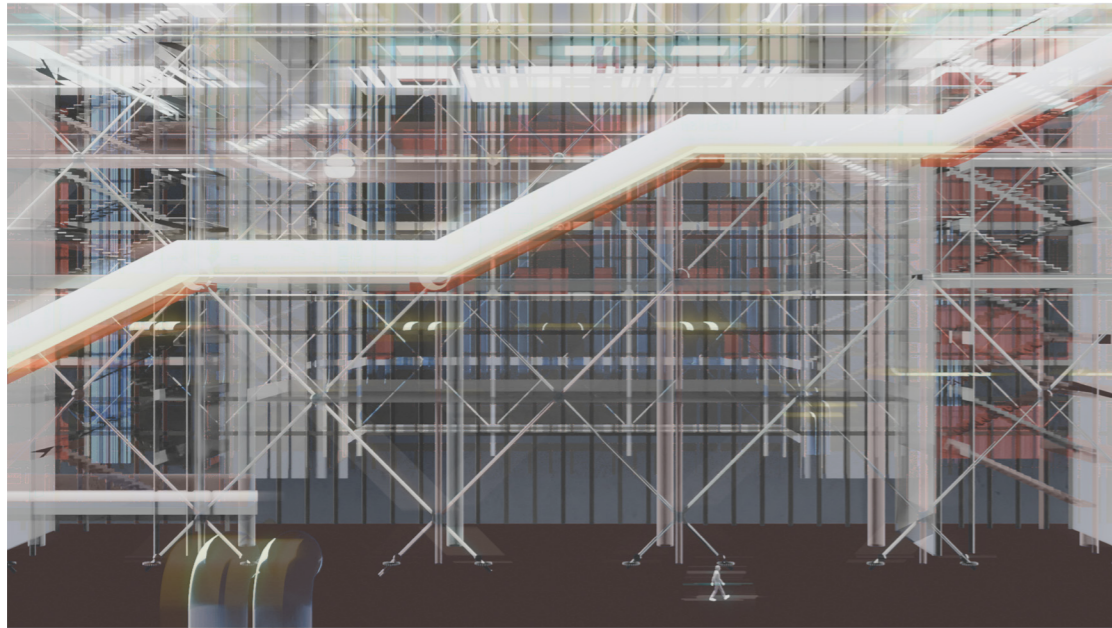
MORNING

NOON

AFTERNOON

NORTH SIDE ENTRANCE

LIGHT GUIDANCE

Rendering Systems

Individual Work
2024 Fall
Computational Design Practices
Instructor: Seth Thompson
Blender

Rendering Systems proposes that the computational image is a window into a simulated and systematized representation of reality. To create a rendering is, in effect, to create and frame a model of the entire world, from a single grain of sand to the most complicated urban environment.
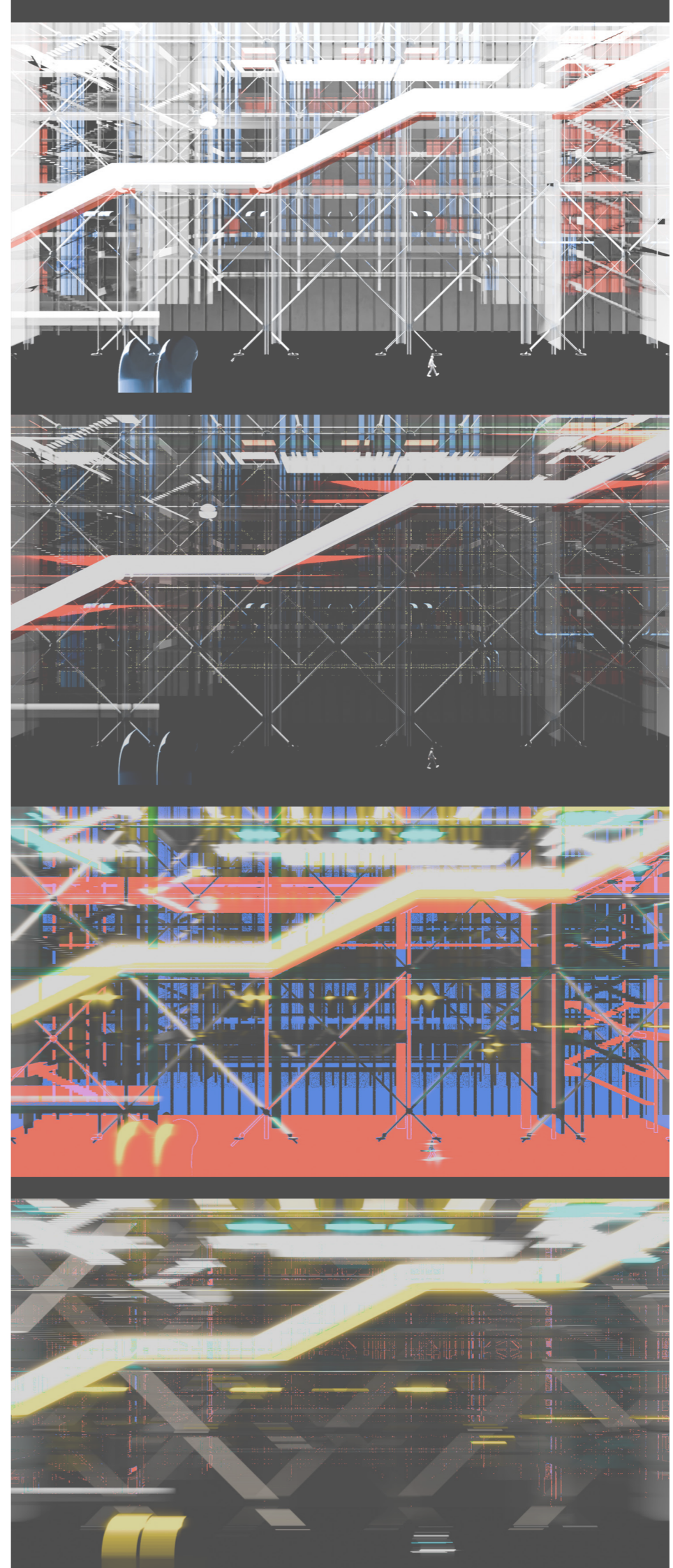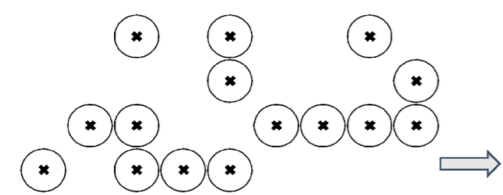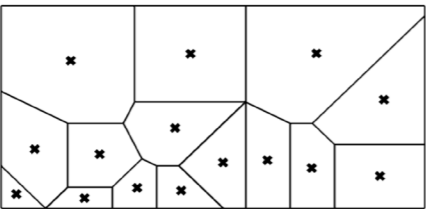
Design Intelligence

Group Work
2024 Fall
Group member: Shuyi Kong | Anzhi Li
Instructor: Danil Nagy
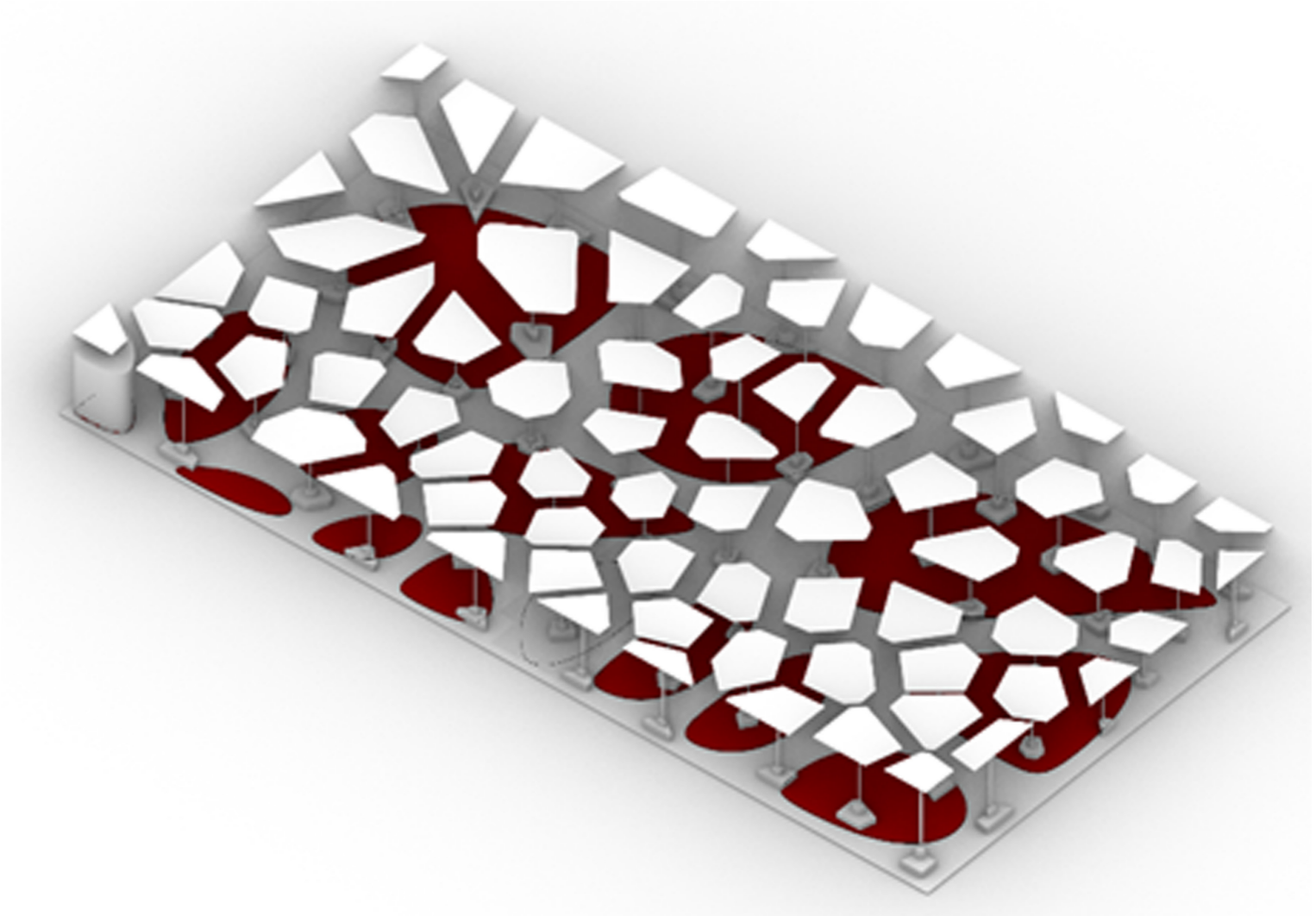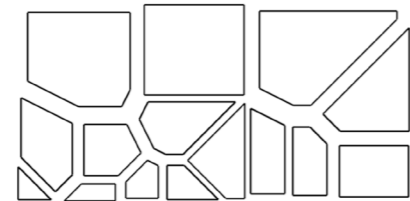Site: New York

Layout generation
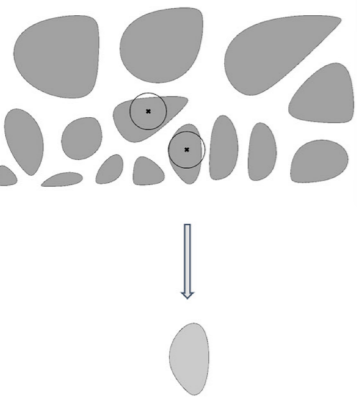
Choose the points by python
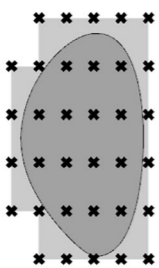
Build voronoi

Build curve boundaries
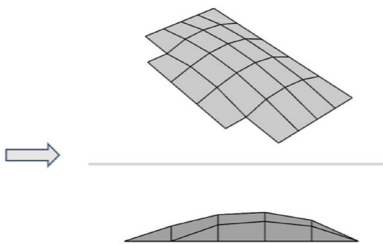

Terrain generation in dog parks

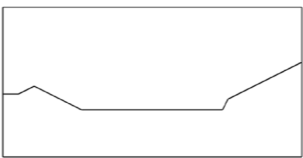Select area of dog park- closest point

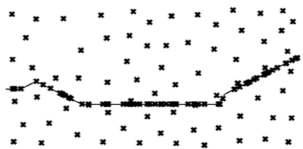Build mesh, set anchors

Use Kangaroo built terrain

Umbrella-like structure generation

Umbrella-like structure with height variation along the path.
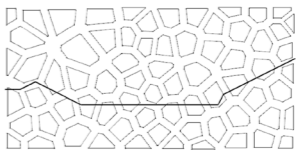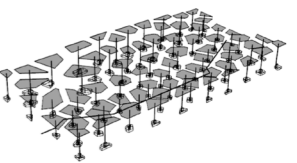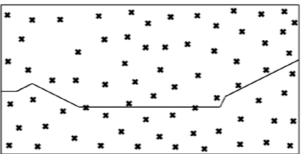
Determine the main path

Closest points
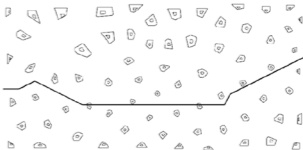
Remap the distance to the area of voronoi

Remap the distance to the height: closer-lower/further-higher

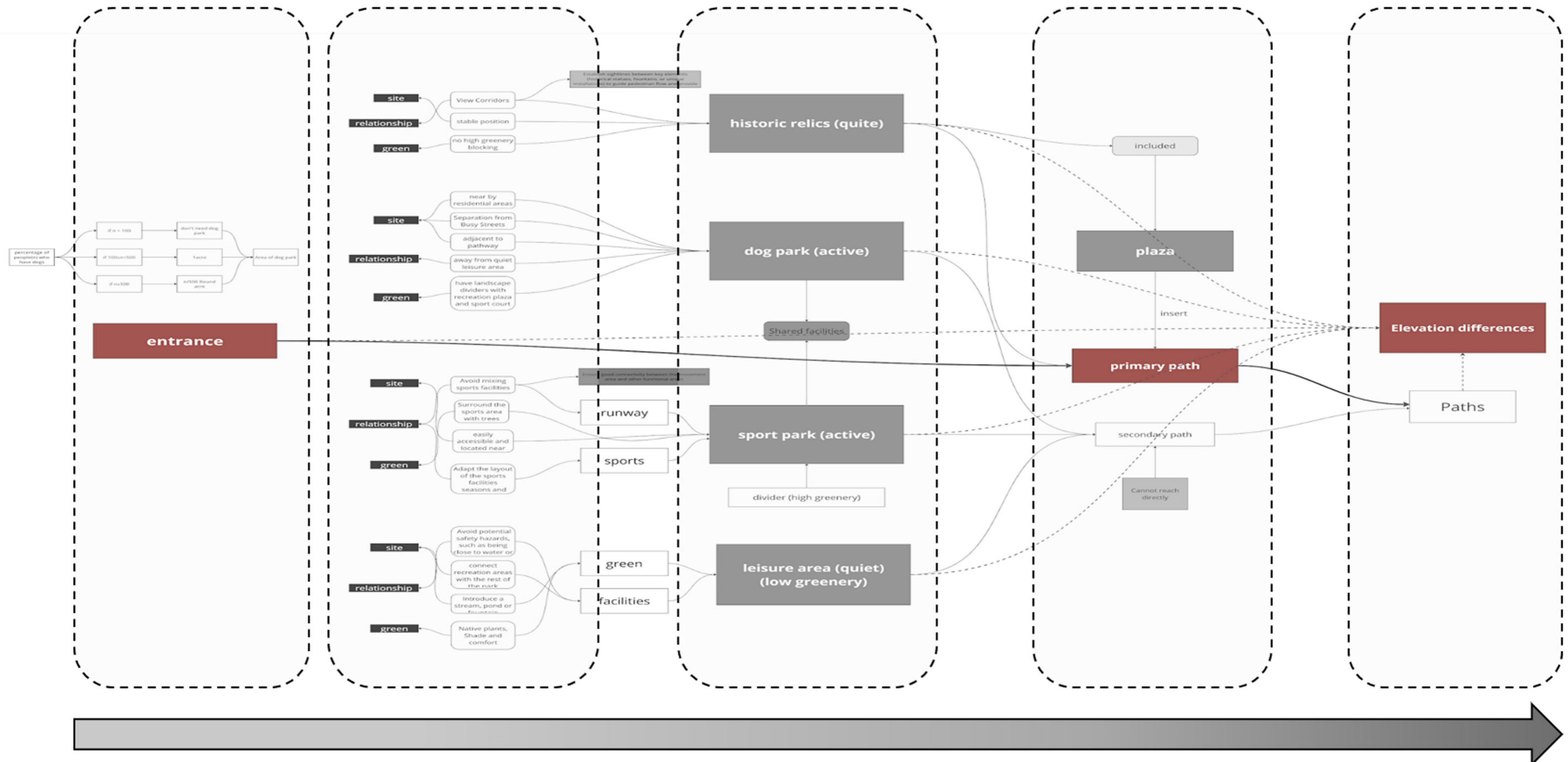Randomly select points

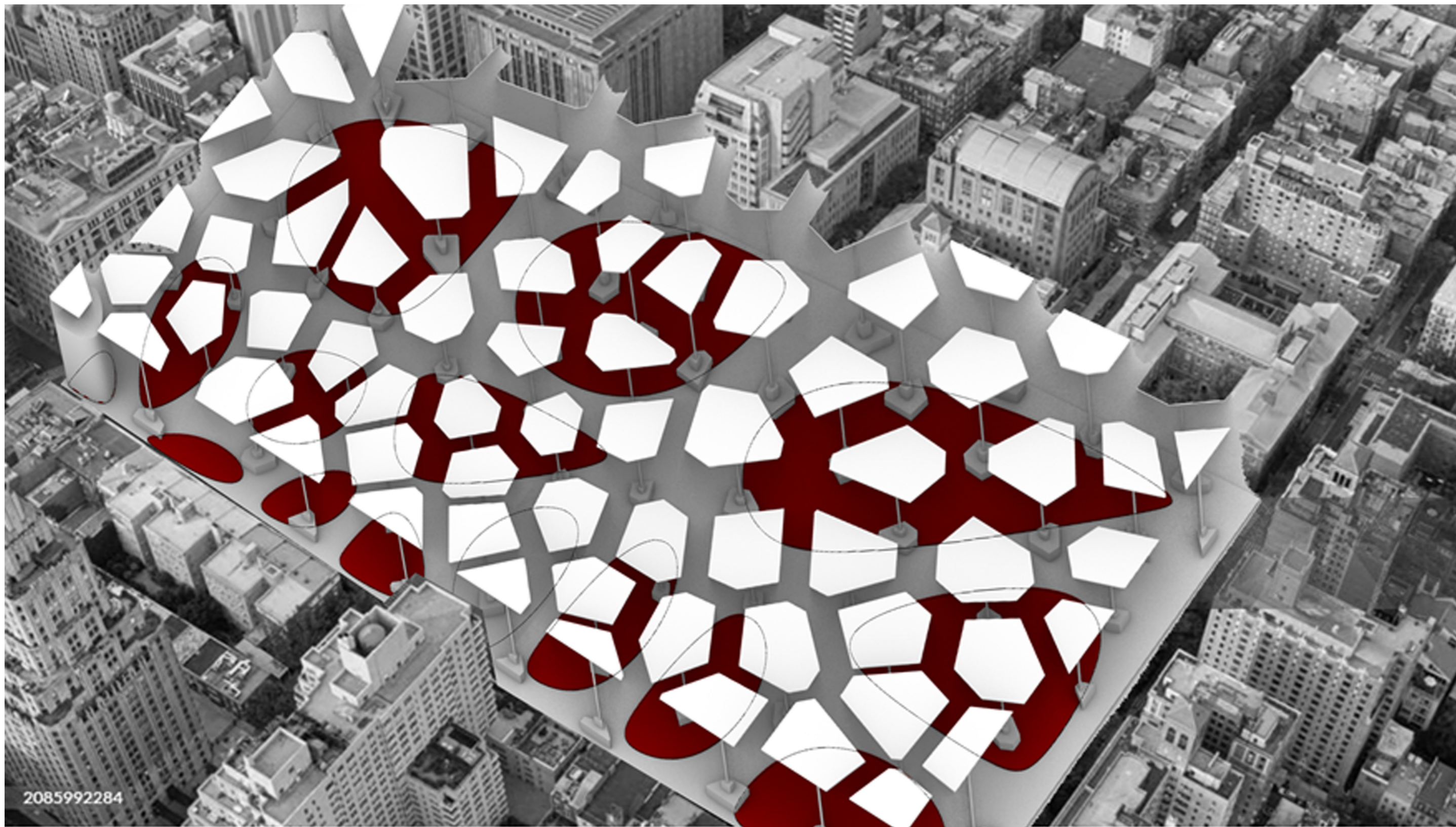Structure and seats

Establish Site Boundaries and Entrance

Define Parameter Relationships

Define Major Functional Zones (parameter)

Generate Path Network

Terrain Management

percentage of people who have dogs

if n = 100 → don't need dog park

if 100<n<500 → 1 acre

if n>500 → n/500 Round acre

Area of dog park

entrance

site — View Corridors

relationship — stable position

green — no high greenery blocking

Establish sightlines between key elements (historical statues, fountains, or unique installations) to guide pedestrian flow and provide

site — near by residential areas

Separation from Busy Streets

adjacent to pathway

relationship — away from quiet leisure area

green — have landscape dividers with recreation plaza and sport court

site — Avoid mixing sports facilities

Surround the sports area with trees

relationship — easily accessible and located near

green — Adapt the layout of the sports facilities seasons and

site — Avoid potential safety hazards, such as being close to water or

connect recreation areas with the rest of the park

relationship — Introduce a stream, pond or fountain

green — Native plants, Shade and comfort

historic relics (quite)

dog park (active)

Shared facilities

runway

sports

Have good connectivity between the recreation area and other functional areas

sport park (active)

divider (high greenery)

green

facilities

leisure area (quiet) (low greenery)

included

plaza

insert

primary path

secondary path

Cannot reach directly

Elevation differences

Paths

PORTFOLIO

Shuyi Kong