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Fall 2022

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GSAPP, Columbia University
2022-2023

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01

The Seasons in the City

ADVANCED STUDIO V / GSAPP / Fall 2022

Instructor: David Benjamin

Location: Time Square, New York, USA

In Collaboration with Hetian Guan

Research & Design: 50%, Drawings: 40%, Model Making: 70%

In addition to being highly relevant to ecological issues, building materials also influence **public awareness and social culture**. The publicity impact of glass curtain walls in high-rise buildings in the 20th century drew public attention to technology and development, and the use of glass in high-rises proliferated as a result. We want to re-wrap the glass buildings with the **short-life cycle, naturally degrading mycelium** as the **shading system**, and the **bamboo scaffoldings** involved in the long-term maintenance and renovation process. Putting the propaganda of environmental protection in the most prominent position, and exploring new ways of living and **new forms of cities** for people.



MATERIAL DECIDES "MATERIAL"?

CO2 CO2 CO2 CO2 CO2 CO2

Emulated by buildings such as Lever House (1952) and the Seagram Building (1958), the glass-box became an explicitly commercial symbol.

Dovey has asserted that capital has become increasingly concerned with the generation of images and signs rather than 'use' value.

In 2019, 22 flat glass plants reported direct emissions of 2.95 million metric tons of CO2 to the U.S. Environmental Protection Agency.

Architecture must be understood as 'referent.'

Material doesn't decide material.

Who decided the scalability?

Public influence, Brand effect

Public Conscious

Artistic Matters

One particular clash involved disagreement over how to protect the Secretariat Building from excessive heat and glare. Le Corbusier preferred stone facades but the rest of the board preferred to maximise natural sun-light and use all over glazing. Experiments were undertaken to discover the most heat-efficient material and Le Corbusier's brise-soleil lost out to tinted glass. Koolhaas has described these (at times fractious) architectural collaborations as "enablers", as teamwork often perverts the 'master's' usual style and contributes to the more idiosyncratic elements of a building.

Calvin Klein from the process

QUALITY LEADS TO "DECISIONS"

Age of Stone

Age of Glass

Age of Mycelium?

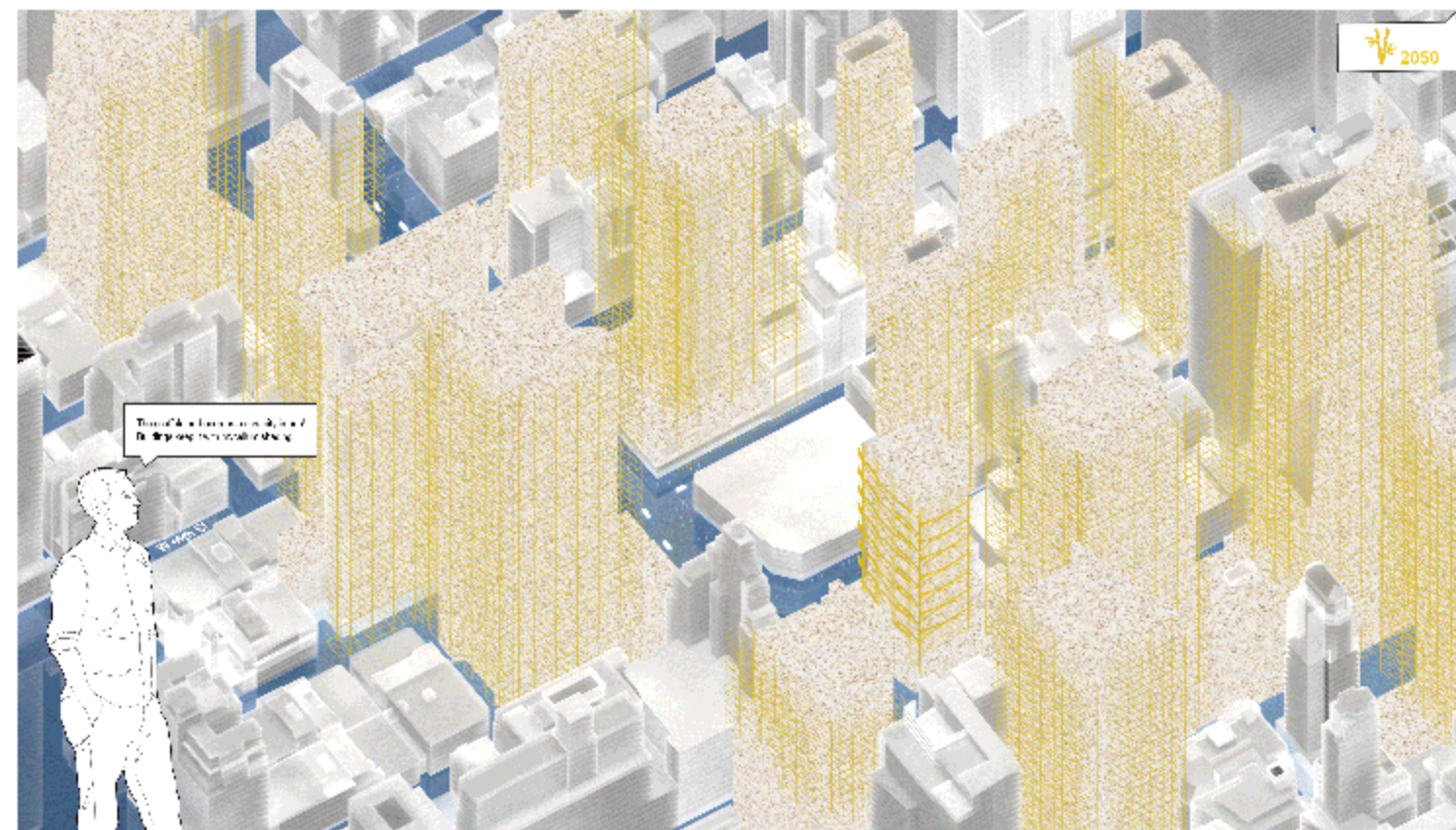
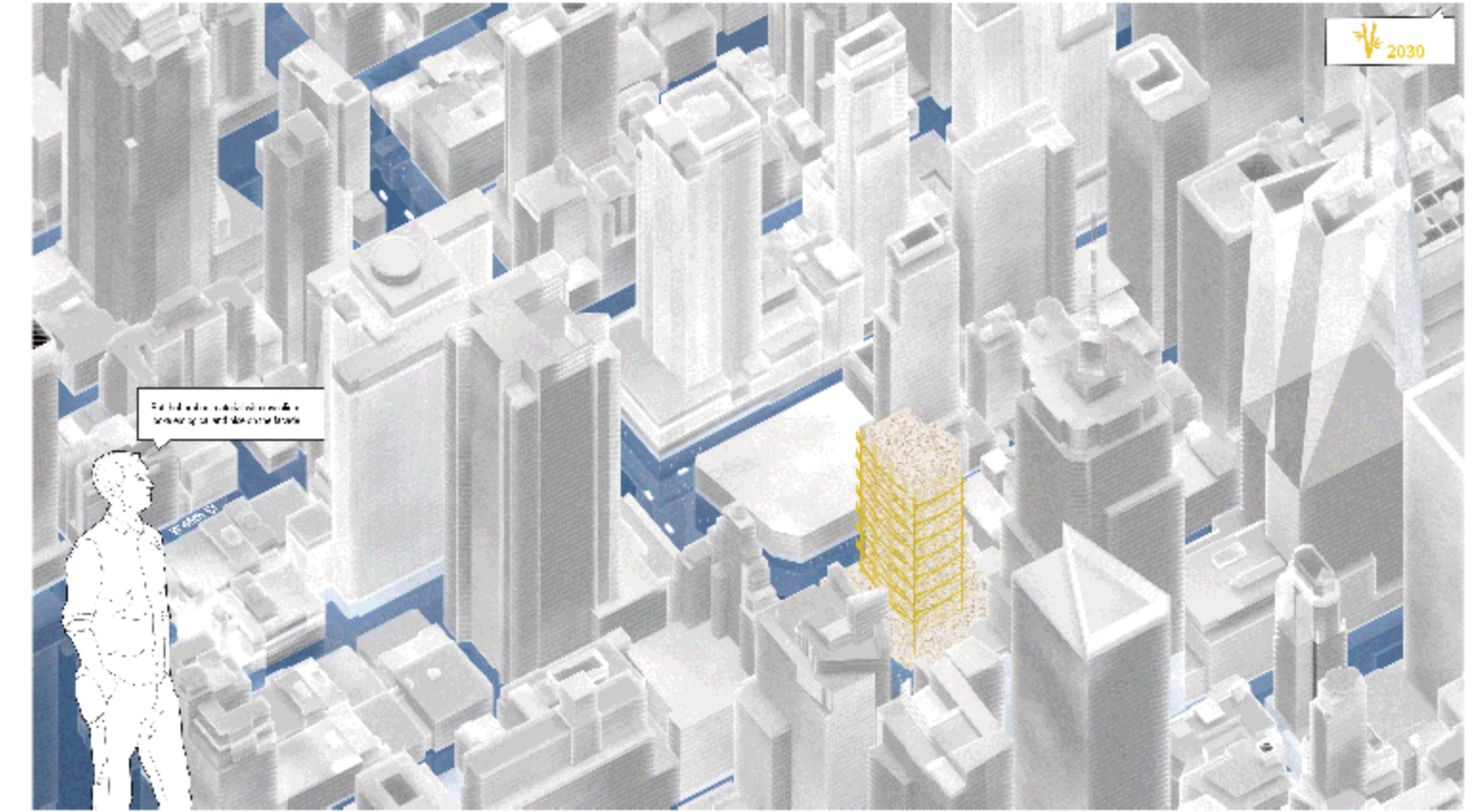
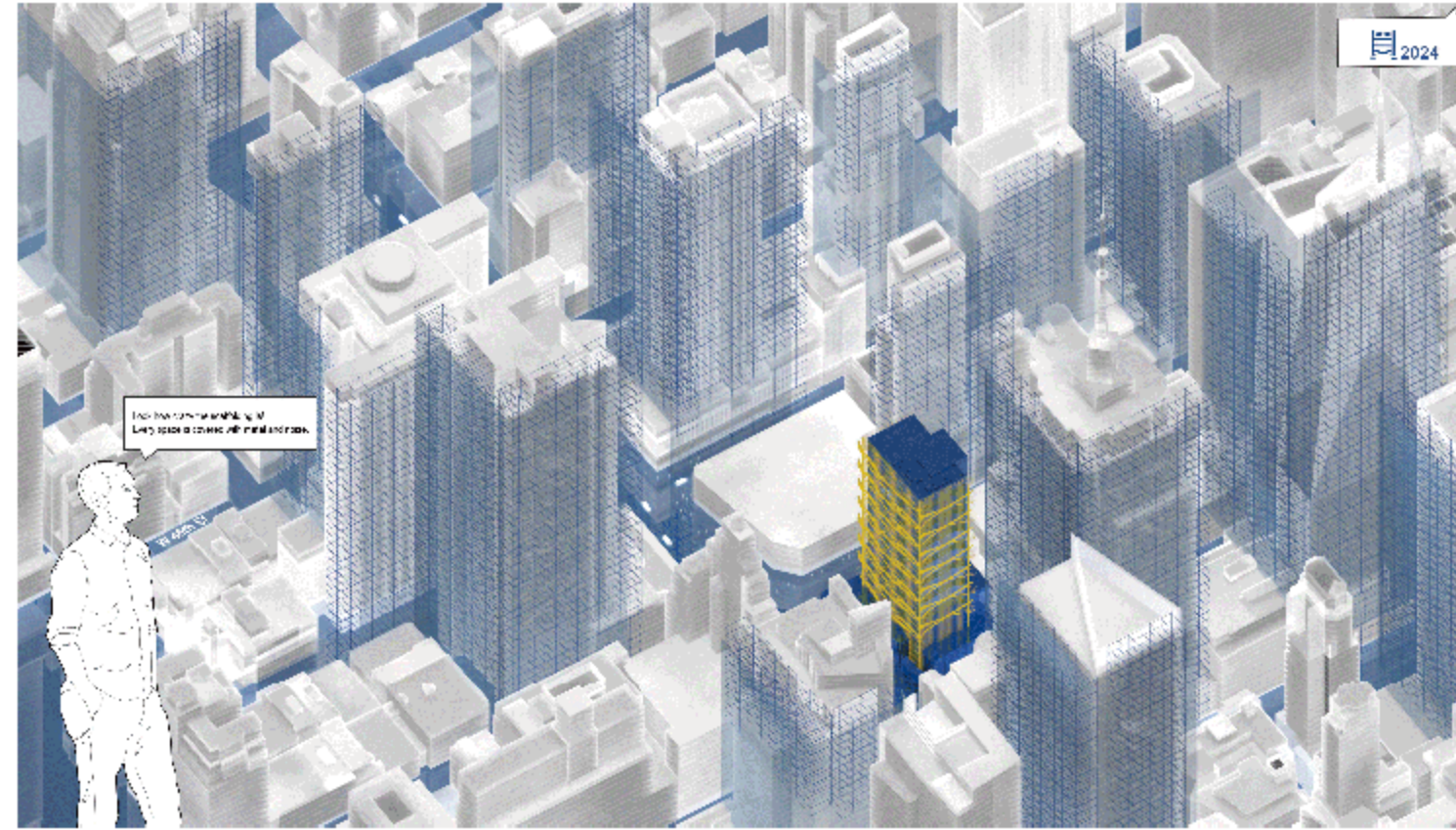
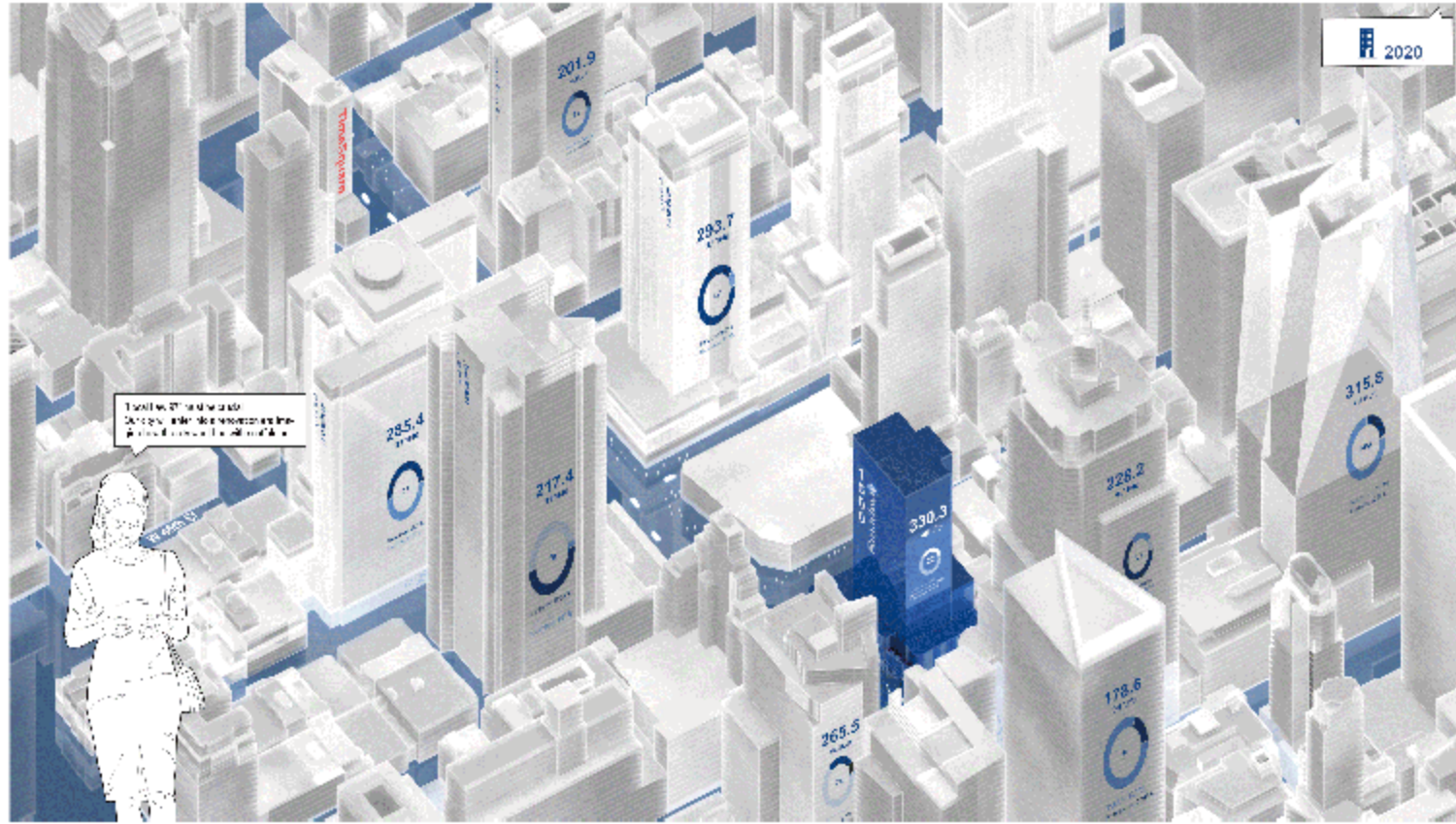
Life cycle and construction strength are the two qualities that considered as possible negative carbon material that could be used on the facade. Besides, the quality of the material could be reflected on the surface which could set on propaganda.

Stone was the first construction material that is used on high-rise building. However, the thickest part of the building could be over 2meters which also restricted the height of the building.

The use of glass symbolizes advanced techniques. However, the decision was based on the heat efficient quality that was discussed during the design of UN headquarters.

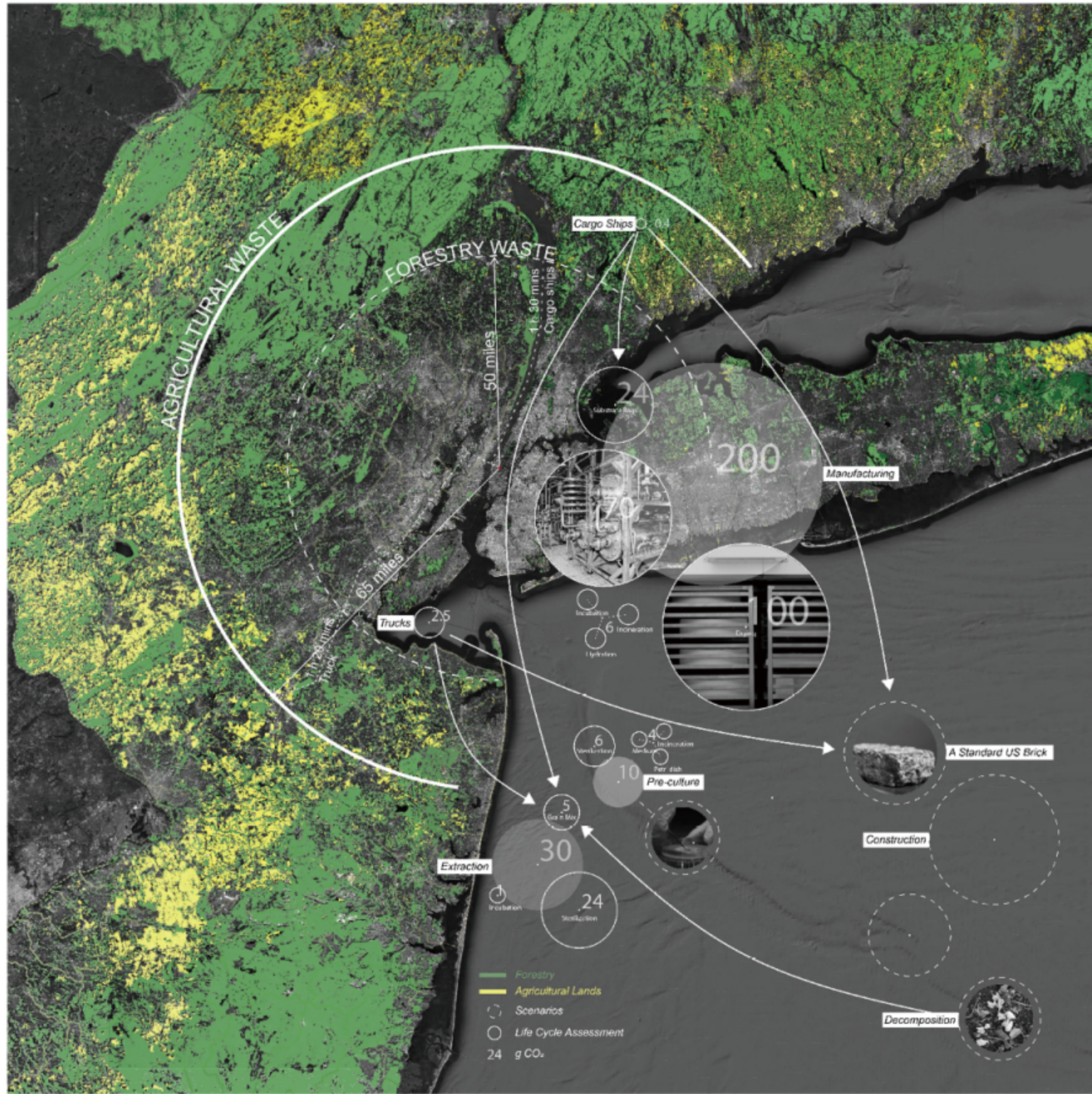
Public Conscious

Artistic Matters



Scenario

We chose Times Square as the starting point. In the context of Local Law 97, we can foresee a continuous renovation of high-rise buildings in Times Square. The renovation process will interrupt the normal operations of the building while generating significant carbon emissions and consuming labor, and after the high-rise is wrapped for a few months, it will be business as usual. We want to make a semi-permanent system with two low carbon materials, bamboo as a permanent scaffolding to reshape the exterior of the building, and mycelium as a seasonal shade on the façade periodically, the new system will redefine the renovation process.



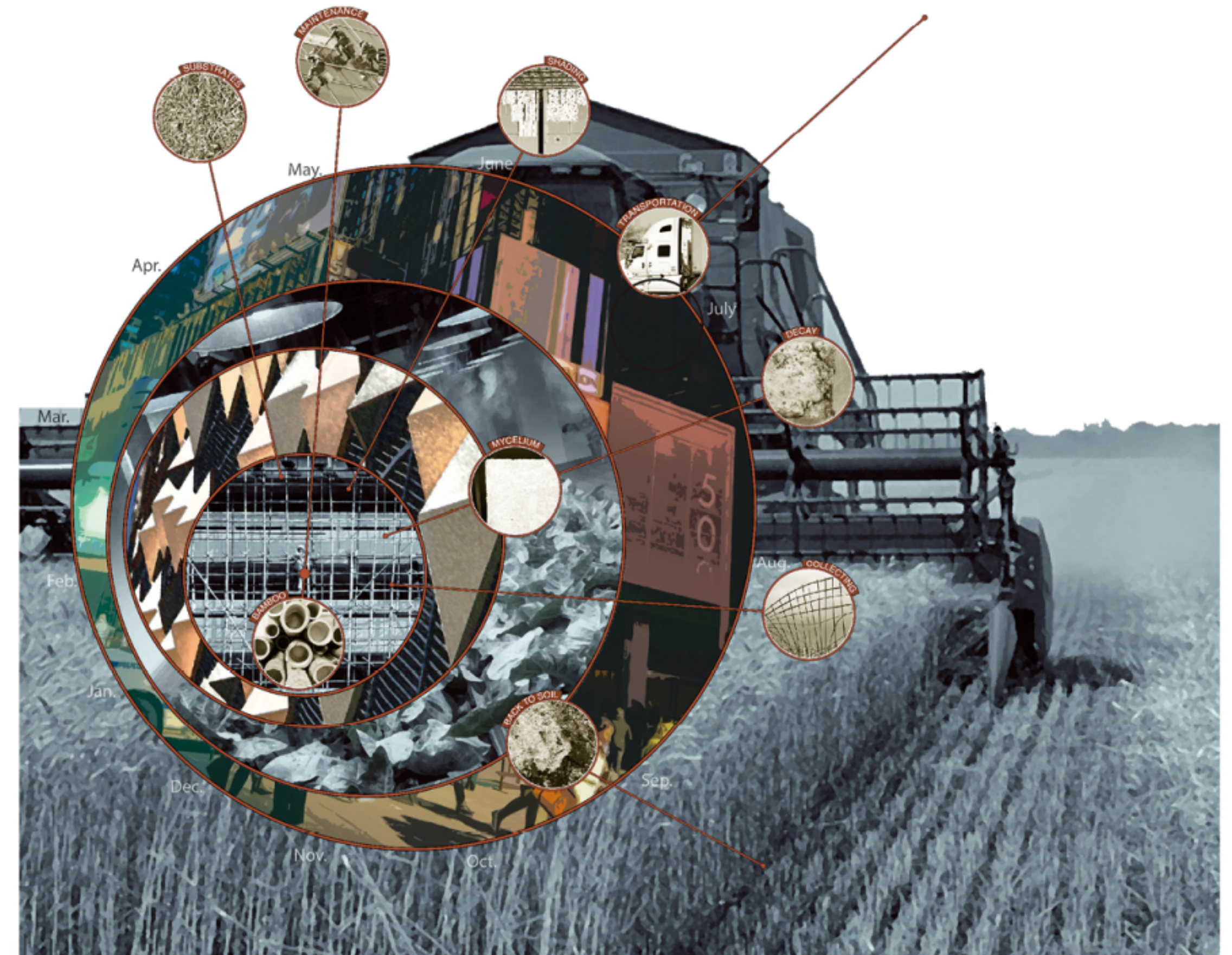
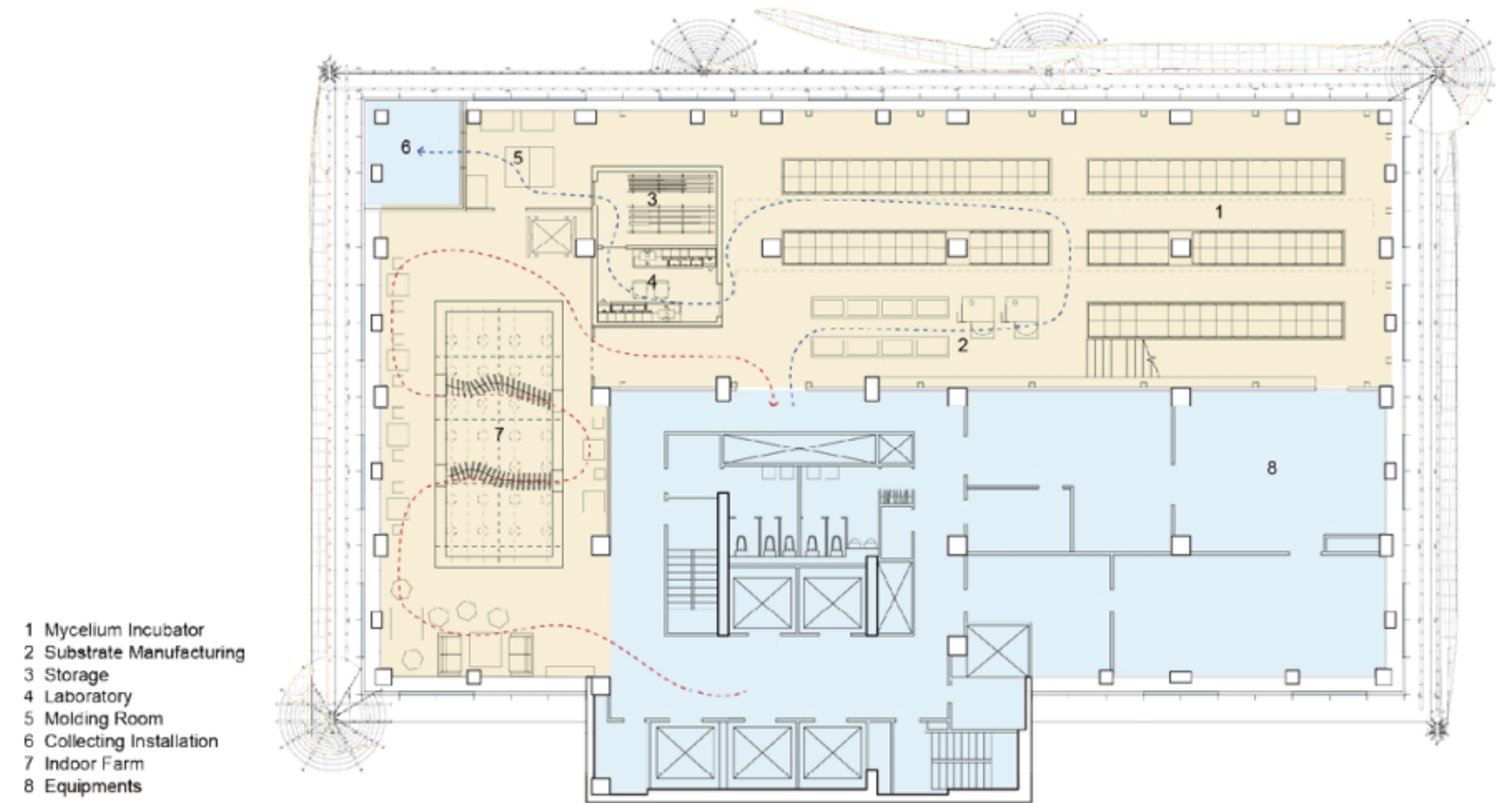
Carbon Footprint of a US-Standard Mycelium Brick

We calculated the carbon footprint per unit mycelium throughout the process according to the laboratory scale, the whole process is **carbon negative**, and the consumption of sterilization will be further reduced in industrial scale.

Mycelium Factory

1500 Broadway was built in 1970 with a massive hvac system, with equipment floors occupying two levels of space on the middle and roof levels respectively. **By installing a shading system and increasing natural ventilation, we were able to reduce the working time of the HVAC system by 70%, thus saving space for the mycelium plant and collection unit.**

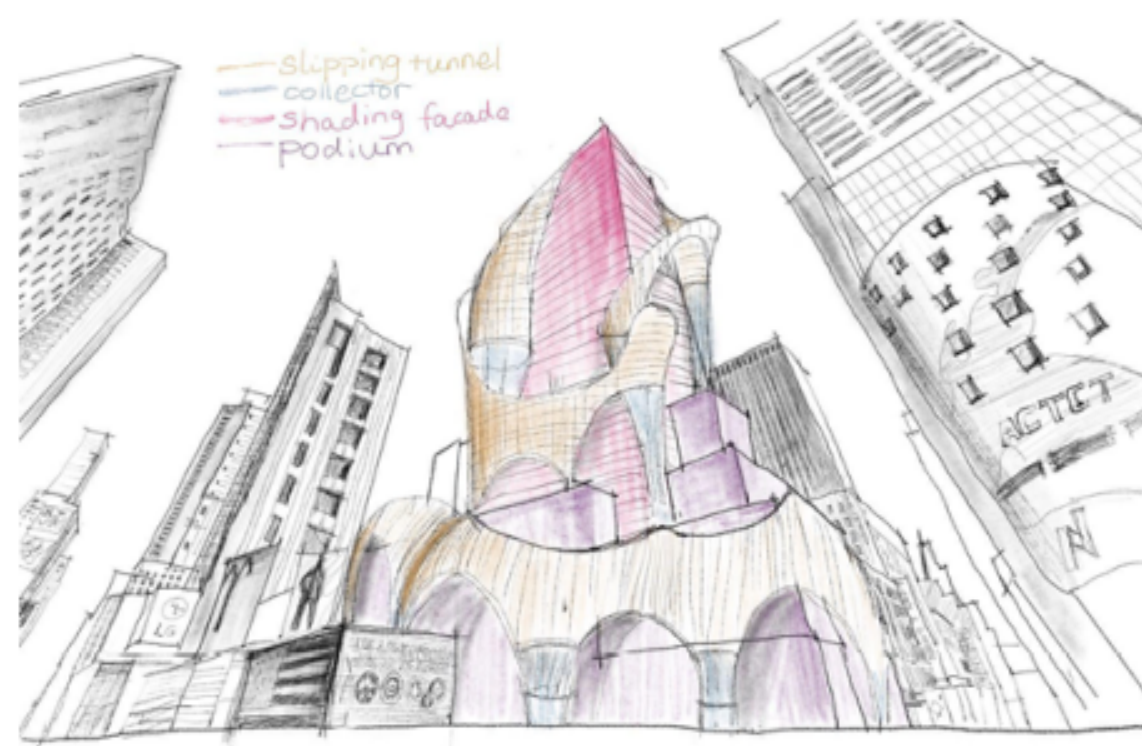
We selected agricultural waste as substrate, which is **transported from the farm to the mycelium plant for manufacturing in April each year, the mycelium shading panels are installed in May and gradually decaying and falling on the façade until the end of autumn.**





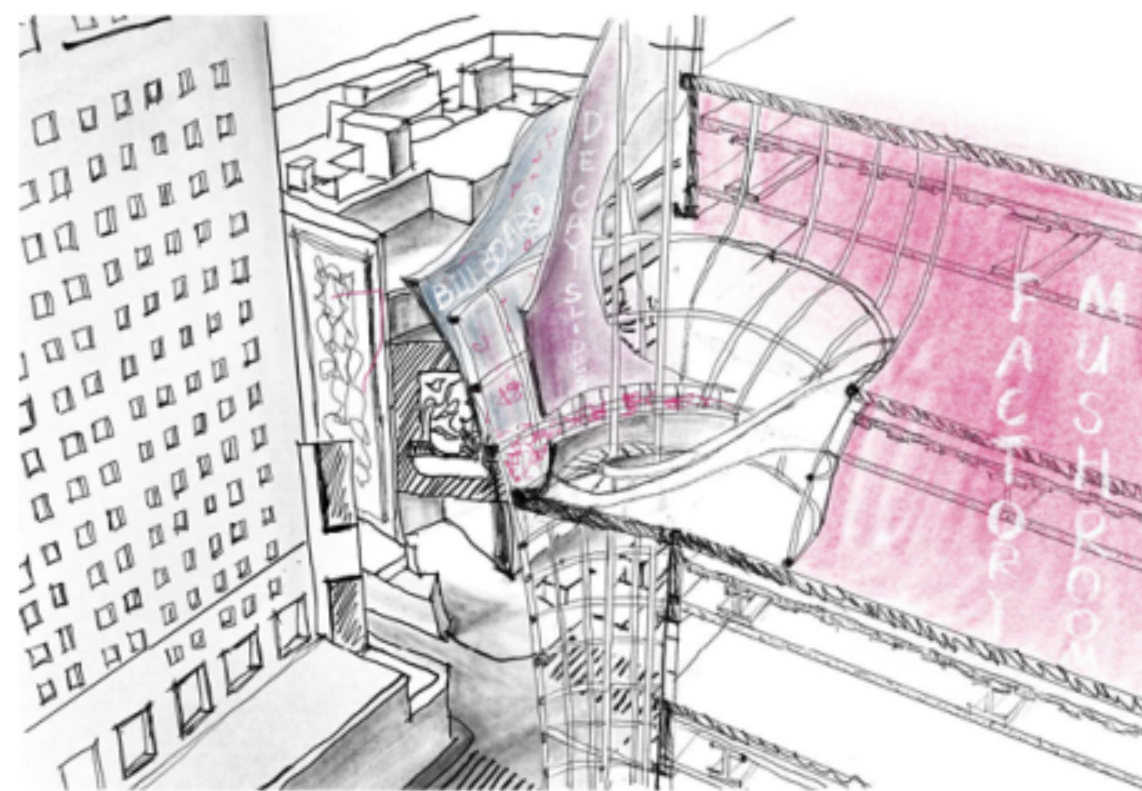
Seasonal Quality

In the process of making mycelium model, we found that the growing of mycelium shows a quality of seasonal from growing to decaying similar with tree leaves. This quality is followed by its **texture change** which led to our focus on the **aesthetic quality** of the material.



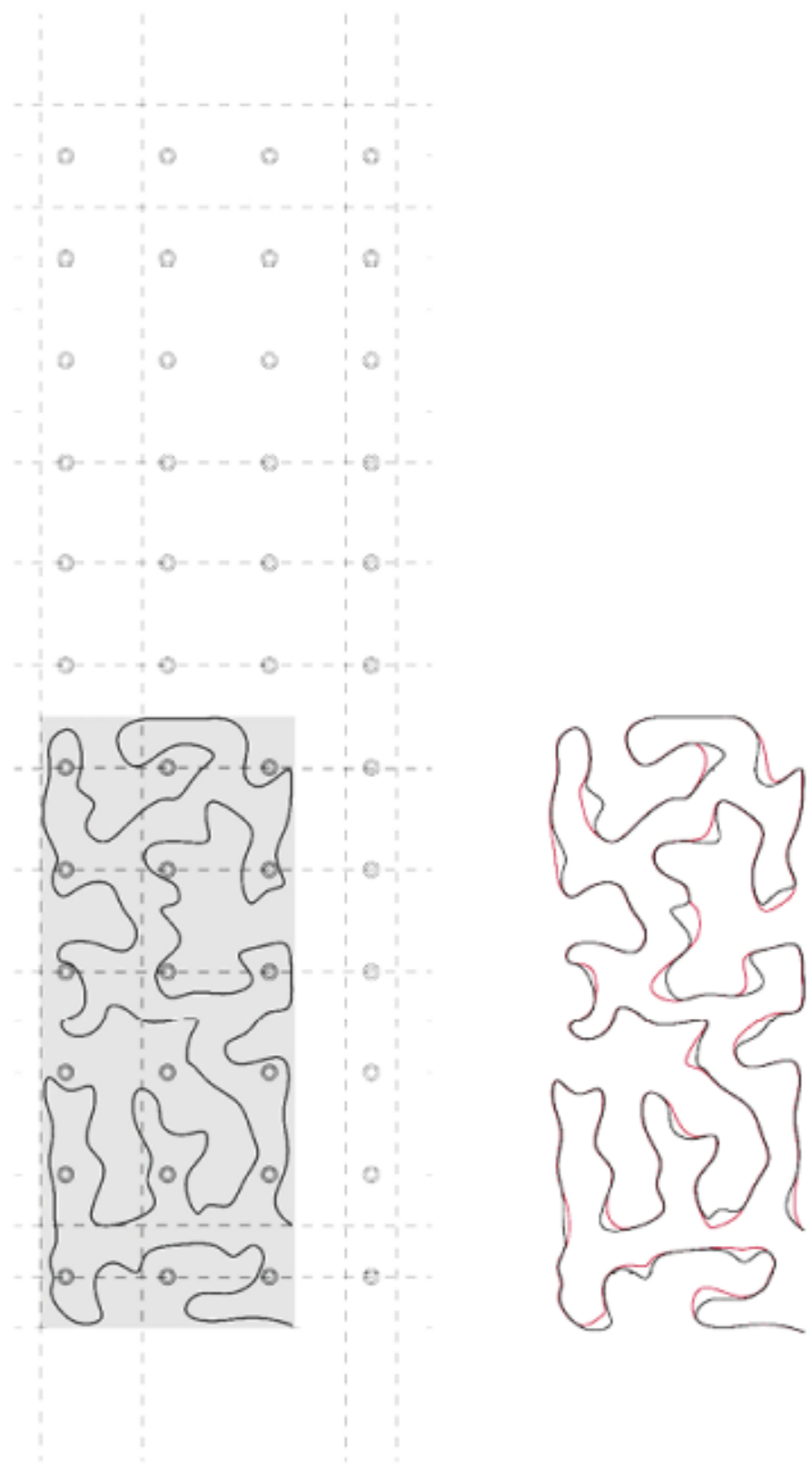
Shading Billboards

Starting from the simplest form of shade, we wanted to maximize the volume of the mycelium without overly affecting the view of the interior. The inner curves of the mycelium panels form an interesting space in the room, while the outer curves add to the effect of the street view. The cross-level volume of the collection device will make it more visible as well.



Collecting Unit



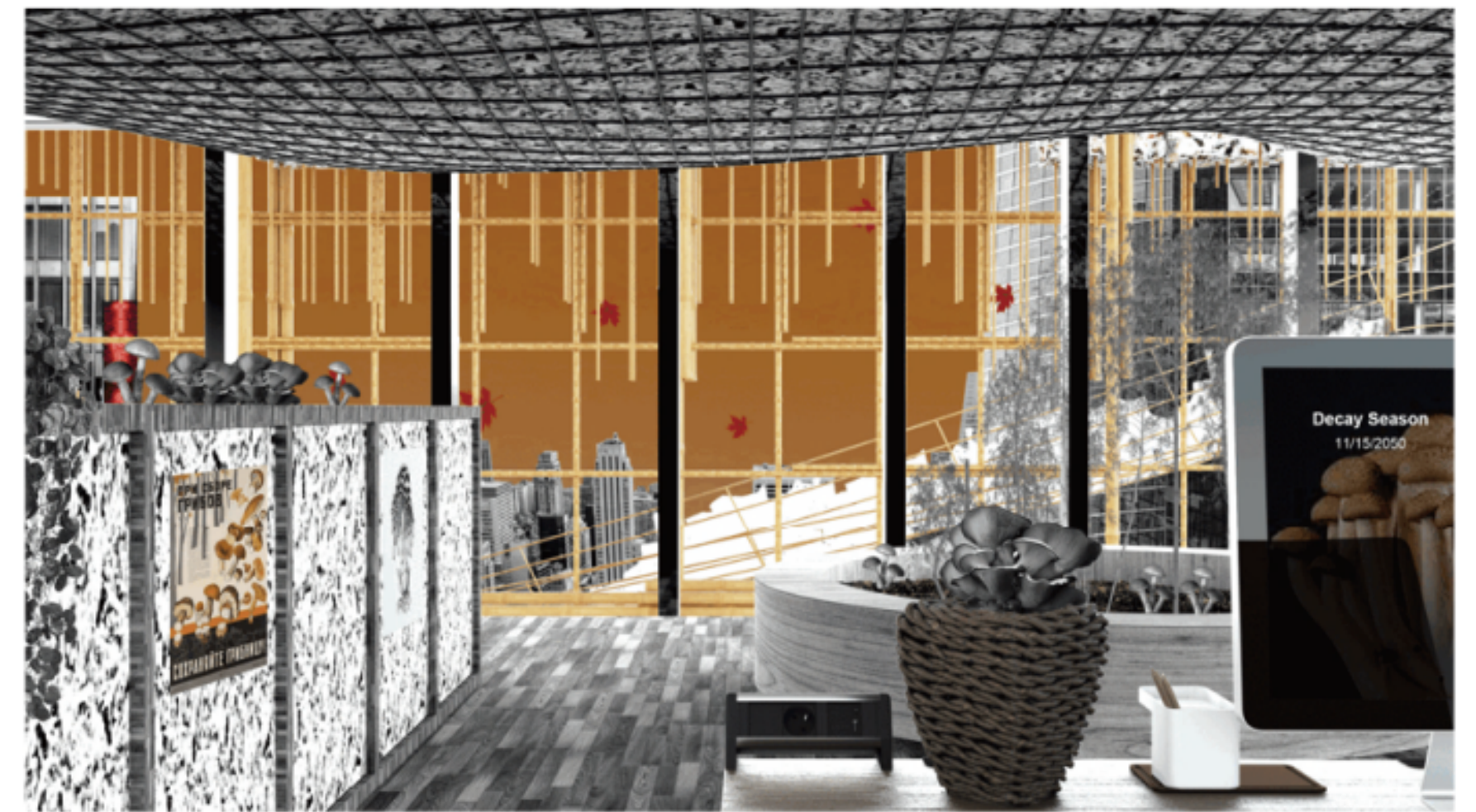
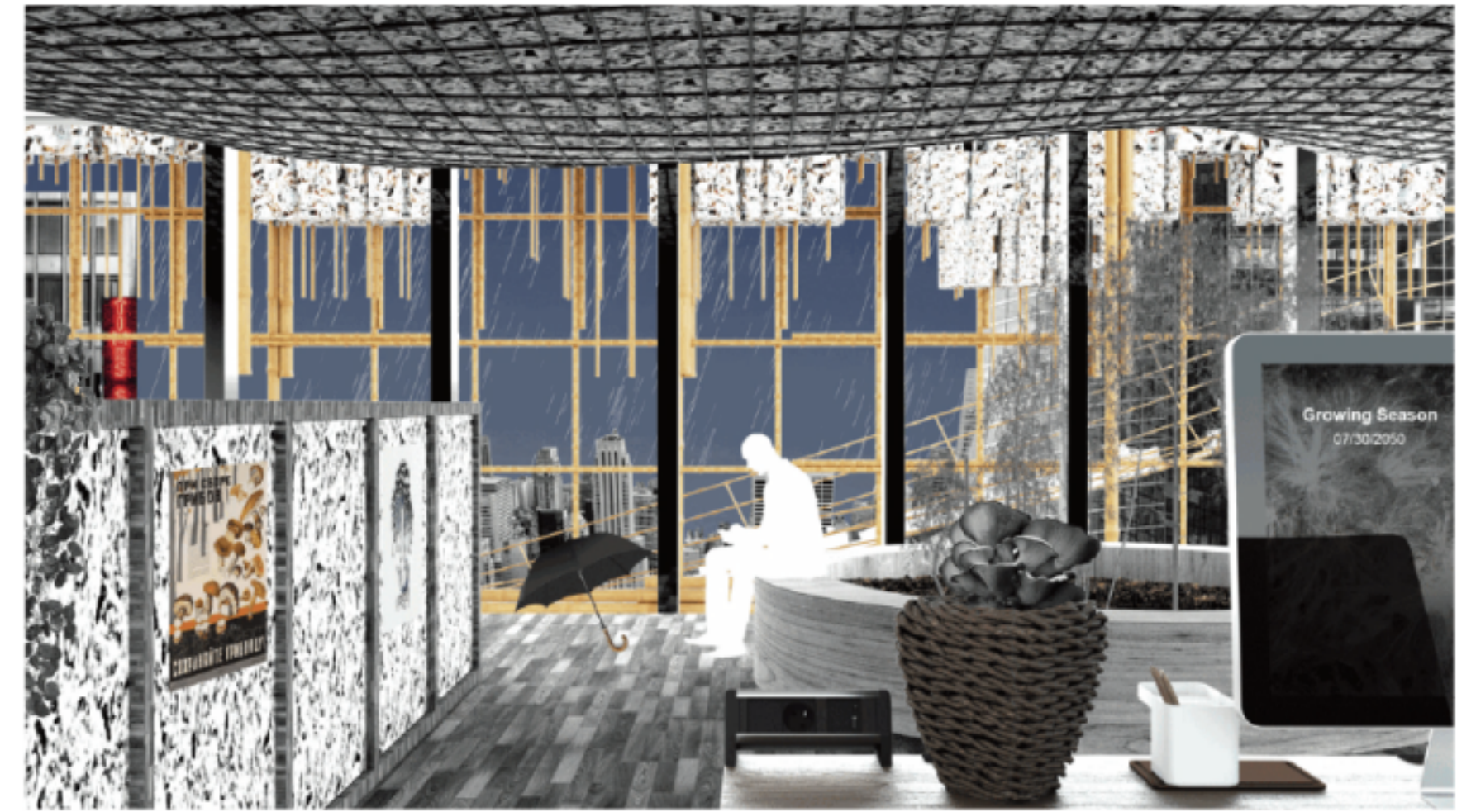


Mycelium Shading Board

In order to avoid additional carbon emissions during the manufacturing process, the mycelium shade is manufactured using a combination of manual and mold. Four inches is the maximum size of mycelium that can be exposed to oxygen for normal growth, and this is the most basic module for the shade. The smallest mold unit is a 4 inch high, one inch wide strip of mycelium, which is stacked together and filled with mycelium after a week of incubation, bamboo is used to hold the layers in place. Each shade will occupy two spaces outside the curtain wall panels and will be 8feet wide The initial height varies from 5feet to 8feet.









02

Disabling Modernities

ADV STUDIO VI / GSAPP / Spring 2023

Instructor: David Gissen

Location: Vienna, Austria

Urban Design:

In Collaboration with Yiyi Gao, Candice Ji, Polina Stepanova

Research & Design: 25%, Drawings: 25%

Architecture Design: Individual

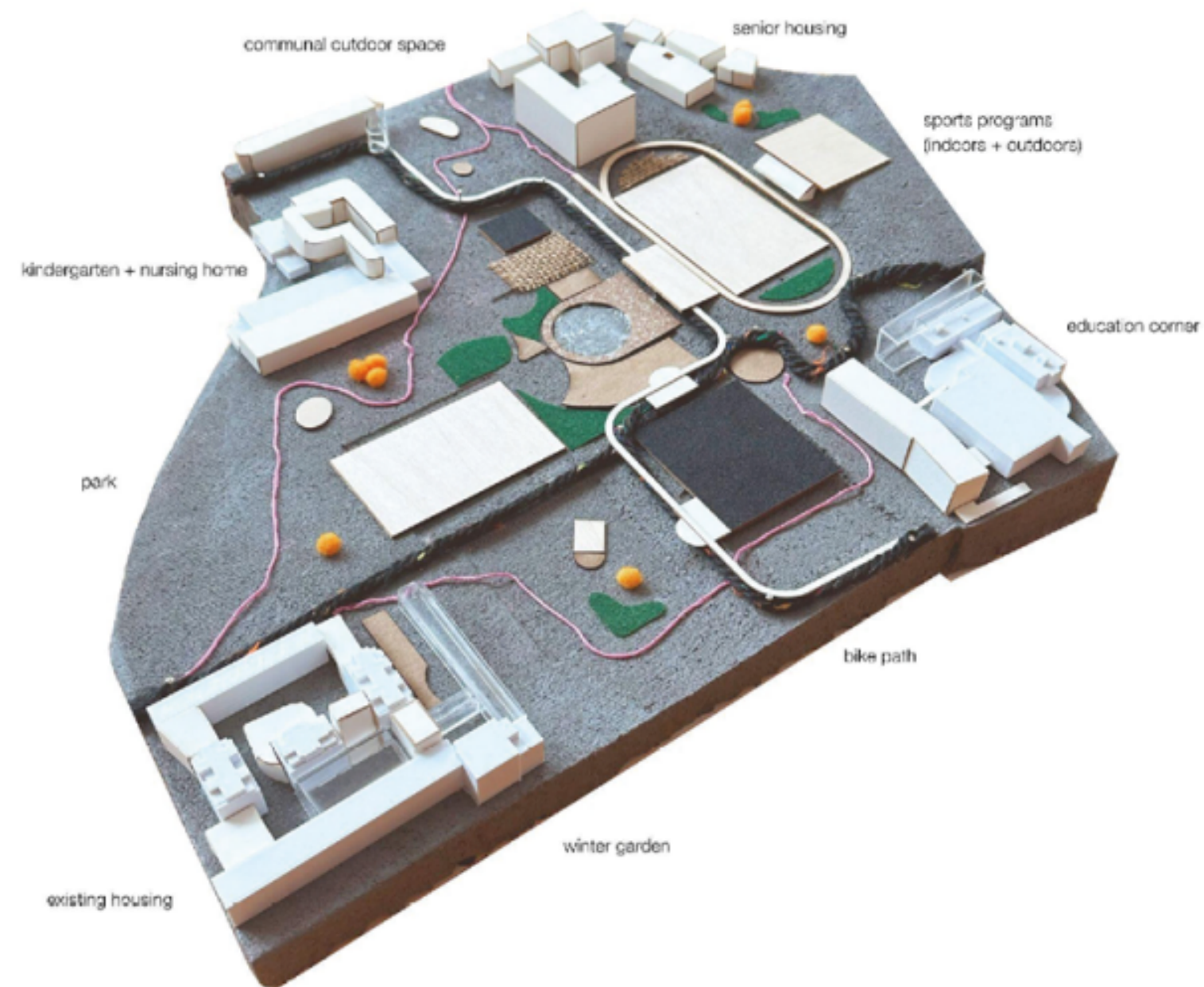
The Postsports Park Site sits in the inner area of the district of Hernals (17th district) of Vienna. This very large, terraced area includes athletic fields, parks, housing and an elementary school. The center of the site has been leased for almost 100 years by a Viennese sports organization that is looking to revitalize its facilities and to make them more welcoming and usable. This part of the site has several full-size soccer fields, tennis courts and other sports facilities.

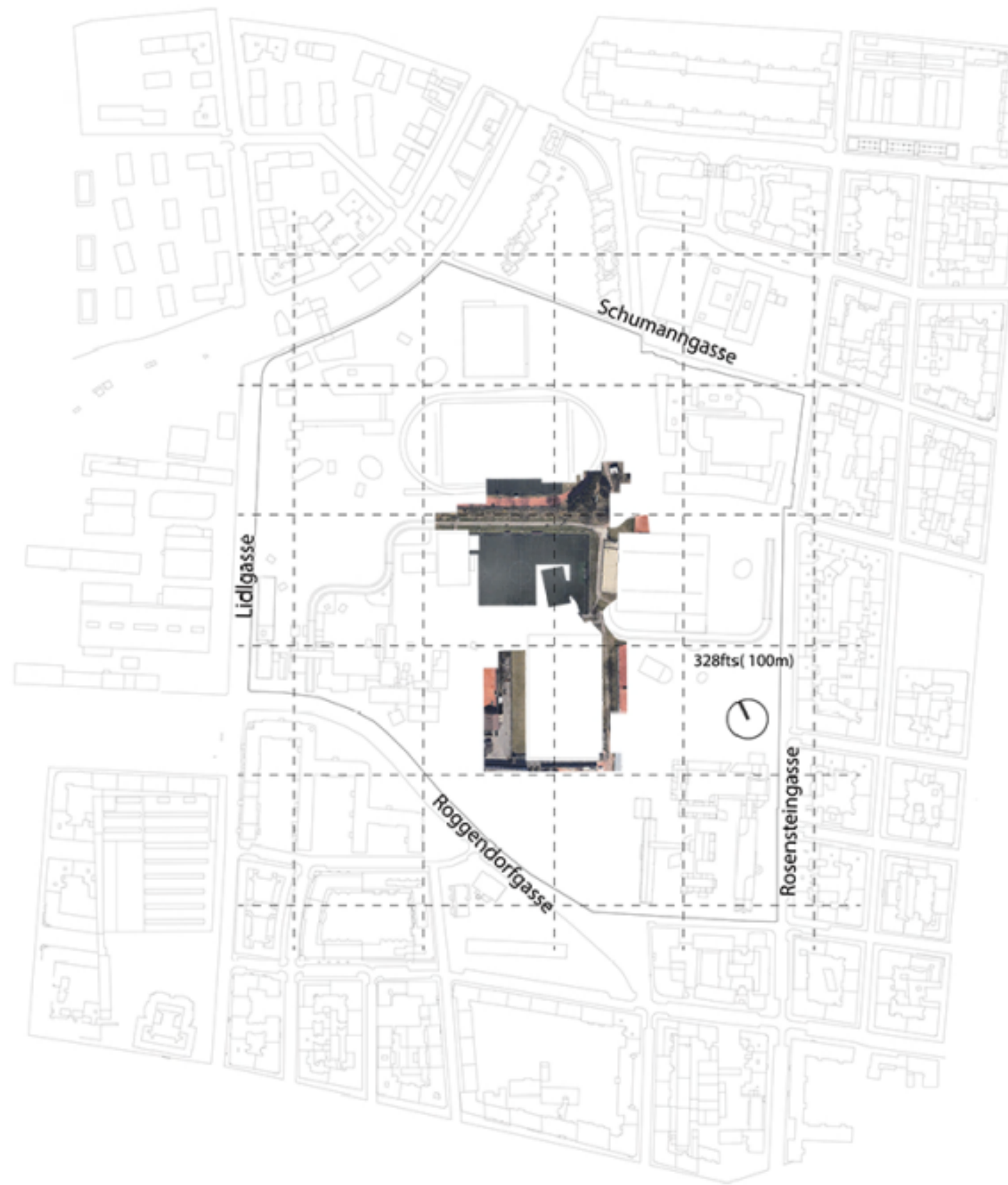
If we take a look at the plan-view our site, we can see that about 70% of the site area is occupied by sports field & facilities, including tennis, running track and hockey – almost all of these are high-impact sports requiring repeated impacts or collisions with a hard surface or object, that place a significant amount of stress on the body's joints and bones.

From north to south, the elevation change of our site is 21 meters/70 feet which is a rough equivalent to 120 steps... this steep slope is noticeable for anyone trying to go through our postsportsplatz. With this in mind, we recognize that for a resident who needs to go through our site to access those amenities, they will have to climb an equivalent of 6 floors, which is already inaccessible to begin with. The physical barrier of the site with its edge condition and typography presents an opportunity for us to leverage these conditions and make improvements.

Site Design

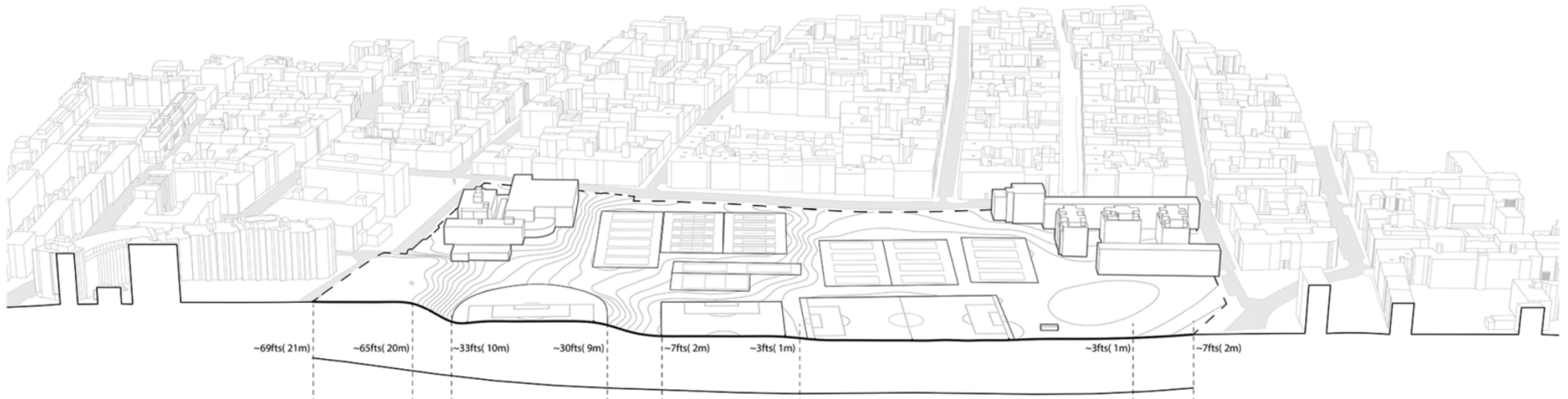
We identified similar patterns between the precedent building Alteriaa and our site, which are the mismatch from the city fabric, barriers to neighborhood, enclosed communal spaces and facilities, and strong emphasis on athleticism and vitality. To disable these features, we identified key words as design values. **We first integrated the four corners back to the surrounding city fabric by adding extensions to the existing buildings on site.** For the remaining open space, it became an open axis in the city hosting a diverse range of activities. We are keeping part of the professional sports courts on the site, and to reduce the strong emphasis on athleticism, we are **repurposing some of the sports fields into spaces promoting other types of activities, welcoming a more diverse group of users.** People using the site are no longer just those actively running and jumping, but also those playing, walking slowly to enjoy the park and changes of tactile on the ground, or sitting down at the center plaza to watch others.

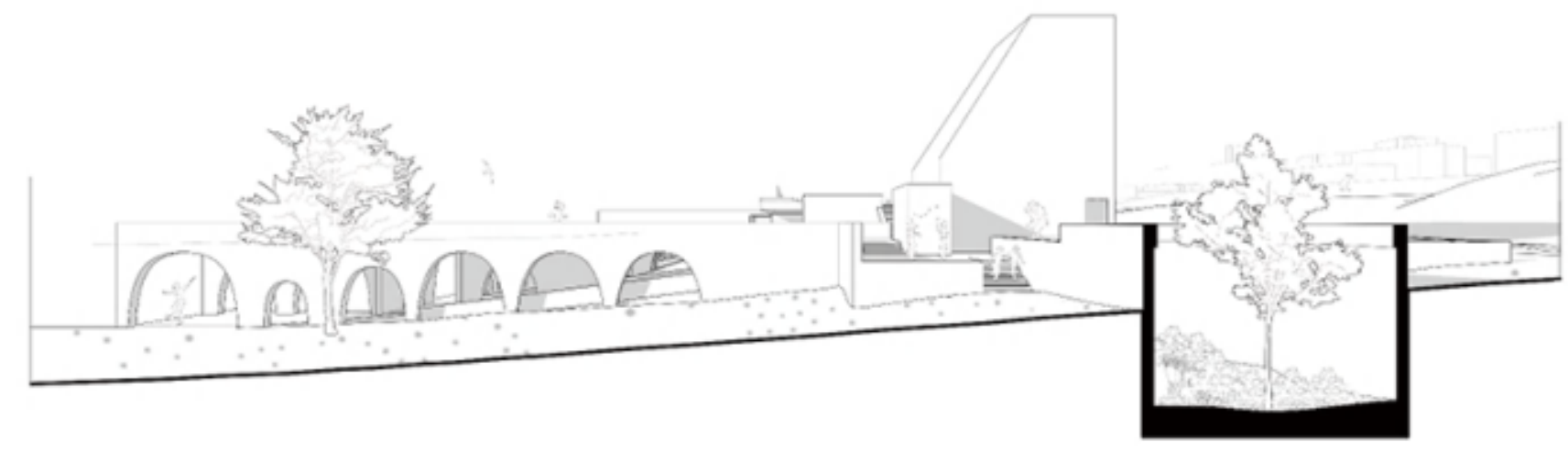
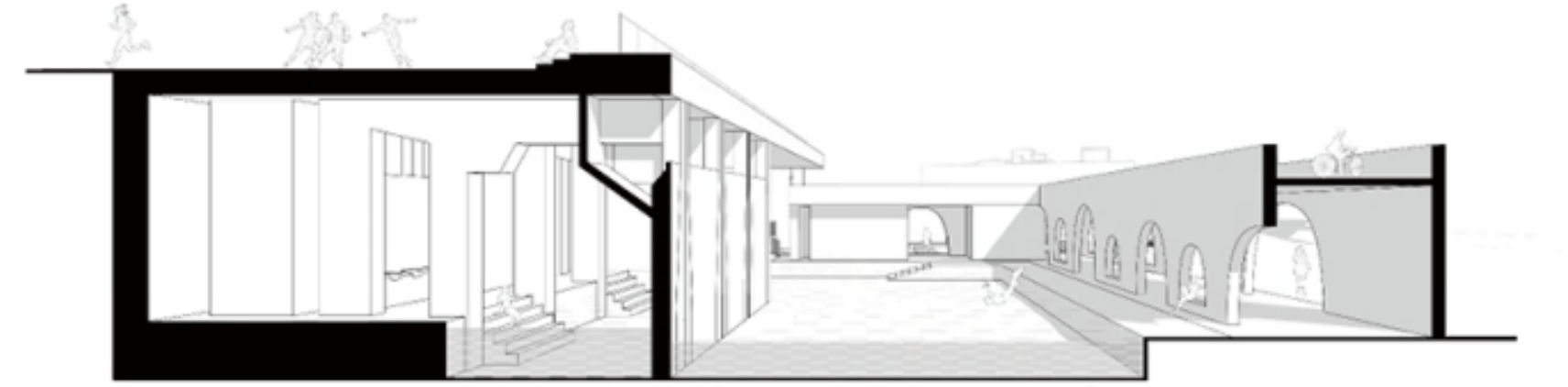
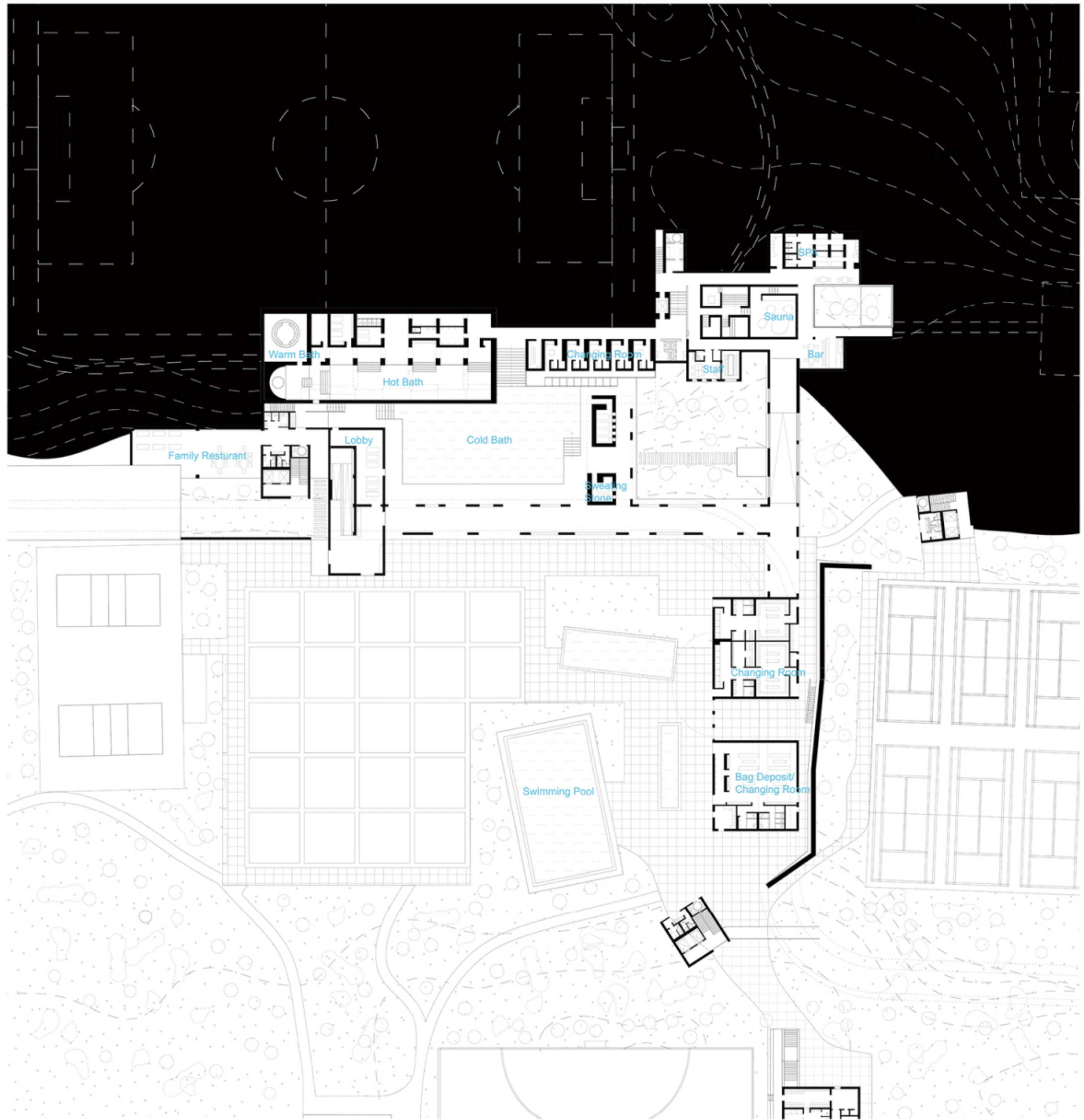




Bath House

One of the largest steep slopes on the site is under the soccer field in the centre of the site, and I have designed this part of the building in depth to demonstrate **the possibilities of the excavation strategy**. The new buildings are essentially situated on the steep slope between the playing fields while the largest plaza replaces what was once a professional soccer field. In contrast to the existing overly intense sporting atmosphere of the site, the **main function of the design is a very static bathing area** so that the site is now arrange from the outside to the inside forming **a spatial structure of forest, sports fields and public bath house**.

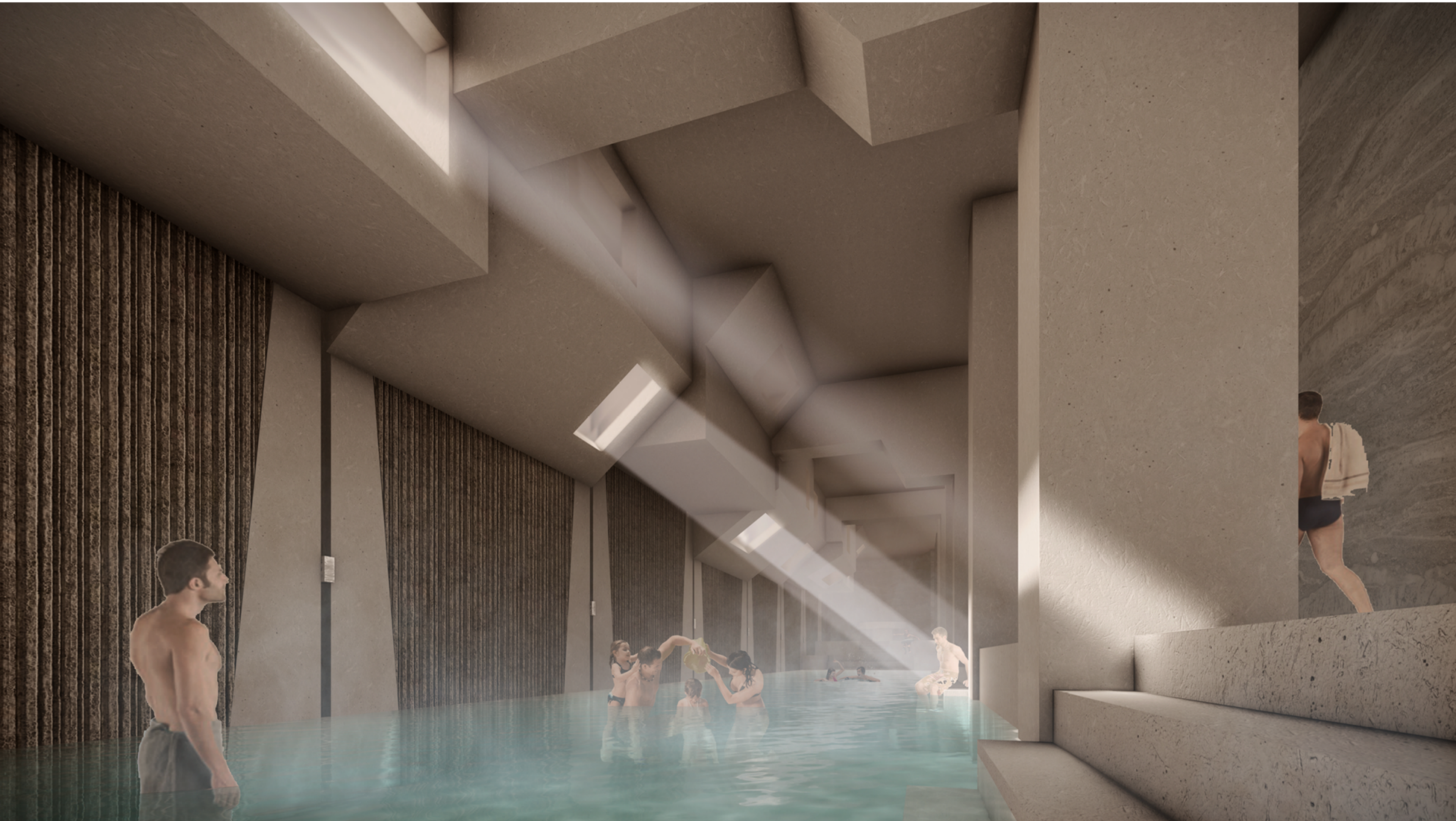




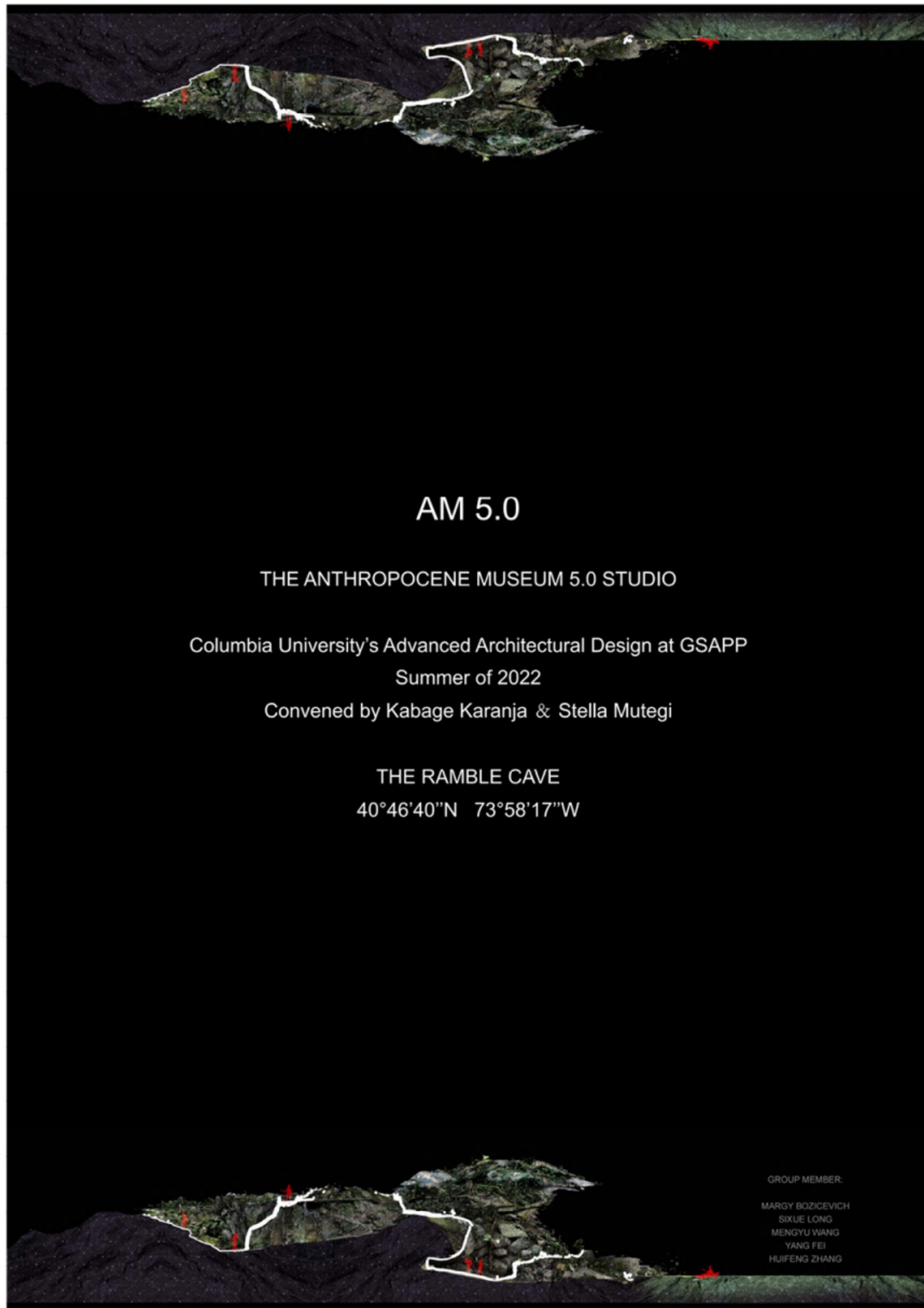
Four Courtyards

At the same time the site takes on the role of linking the east-west and north-south directions of the site. So I've chosen to design different courtyard to accommodate the inward use of the baths and the public circulation. The first courtyard is called a court of water which is surrounded by the related spaces of the baths in fragmented manner. Its most distinctive feature being the continuous arcade, which forms the facade of the square. It is a space rich in visual communication. *The baths and courtyard under the soccer field quietly transformed the exclusivity of the professional sports fields in the underground space.*









AM 5.0

THE ANTHROPOCENE MUSEUM 5.0 STUDIO

Columbia University's Advanced Architectural Design at GSAPP

Summer of 2022

Convened by Kabage Karanja & Stella Mutegi

THE RAMBLE CAVE

40°46'40"N 73°58'17"W

GROUP MEMBER:

MARGY BOZICEVICH
SIXUE LONG
MENGYU WANG
YANG FEI
HUIFENG ZHANG

03

Way to the Cave

Anthropocene Museum 5.0

ADVANCED ARCH DESIGN STUDIO / GSAPP/ Summer 2022

Instructor: Kabage Karanja & Stella Mutegi

Location: Central Park, New York, USA

Research In Collaboration with Sixue Long, Mengyuan Wang, Hui Feng Zhang,

Margy Bozigevich

Guideline Design: Individual

The designer regards Manhattan as a museum of discomfort and envisions three galleries. The first gallery is called "comfort", where the designer perceives the modern city as a modern cave of comfort, while modern architecture takes the human body as the protagonist and wraps people's bodies with the spatial design logic of modular man, which aims to create comfort, but in the process, comfort conceals many problems. To challenge this spatial logic, the second gallery "round dance" depicts the spatial potential of ramble in Central Park, referencing the interaction between Lenape people and nature, ramble is considered as the foyer where the dancing activities take place and people become intimate with the site and each other. The third gallery is called "position yourself", for this part, the designers developed a guide to the site: Derived from his own experience in the site, by depicting a series of spaces in the ramble cave, he propose the best way to experience the site and an entrance path that is completely natural and allows for barely entry. If the tour is guided, visitors can learn to position themselves on the site, in this way discomfort opens up more spatial and experiential possibilities.



HISTORICAL IMAGES

The cave was discovered by workers building the park in the 1850s. Designers Calvert Vaux and Frederick Law Olmsted incorporated it into their plans for the Ramble (below, in 1900), which they envisioned to be "a wild garden."

Unfortunately for urban explorers, both ends of the cave (one was accessible through the lake, the other beside the Ramble Arch) were sealed in 1934.

The steps by the Lake are still there however. Unless you know of their existence, they and the Cave, they are the easiest things in the world to walk past, blissfully unaware of this once lovely feature of a young Central Park.



DARK HISTORY

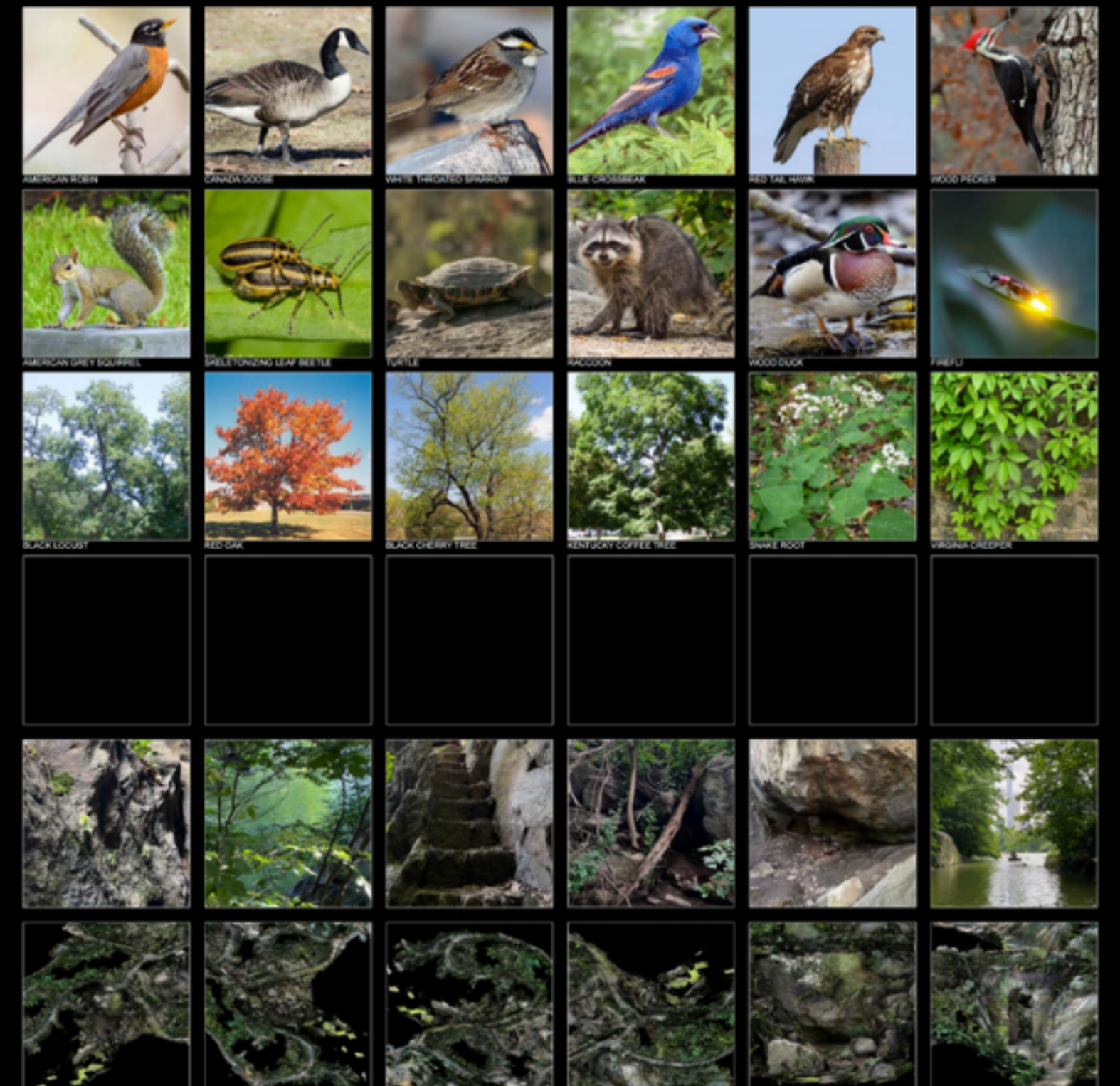
After the turn of the century based on newspaper accounts, the cave gained a darker edge. According to reports, there have been negative stories about fugitives, robbers, sexual harassment and even suicides. All of this unsavory activity led park officials to shut the cave off to the public.



SPECIES

With its 1.6 million population and sky-high skyscrapers, "wild animals" are not the first thing you think of when you hear Manhattan. However, that doesn't go for Central Park. The 840-acre acres of green meadows, trick forests, and blue lakes are the home for a quite rich and diverse wildlife population in the heart of the island.

Many of the animals take permanent residence in the park, while a large enough portion uses it as a holiday home for the summer. Some of them even managed to gain mainstream media popularity.



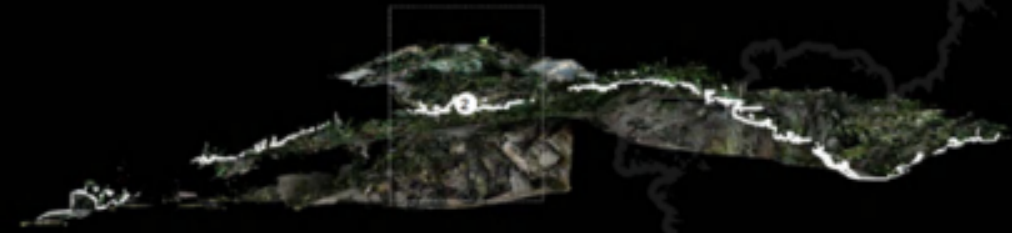
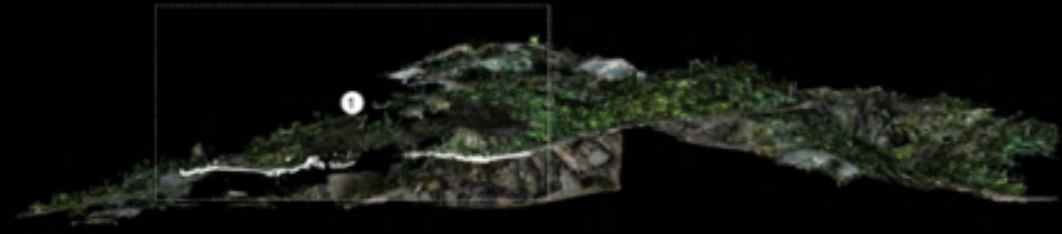
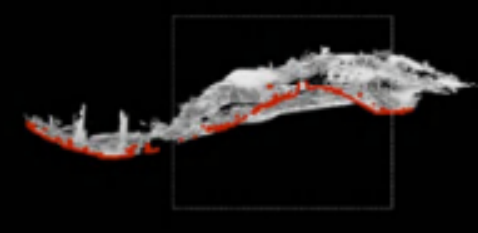
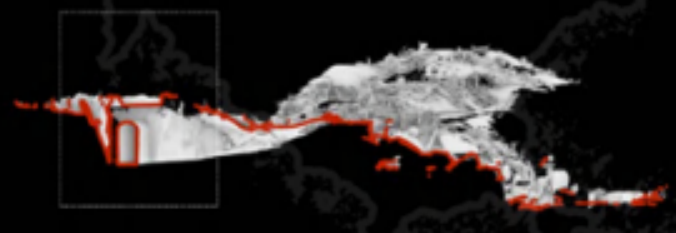
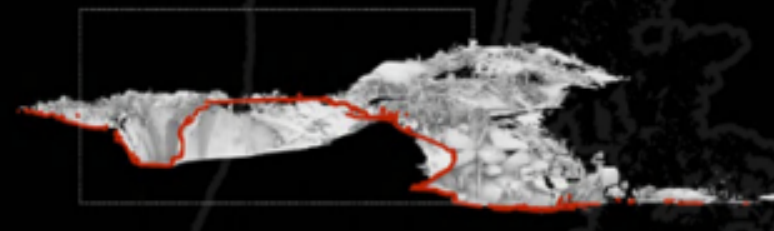
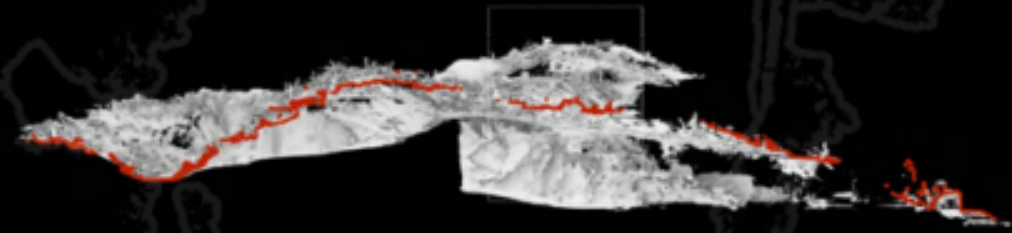
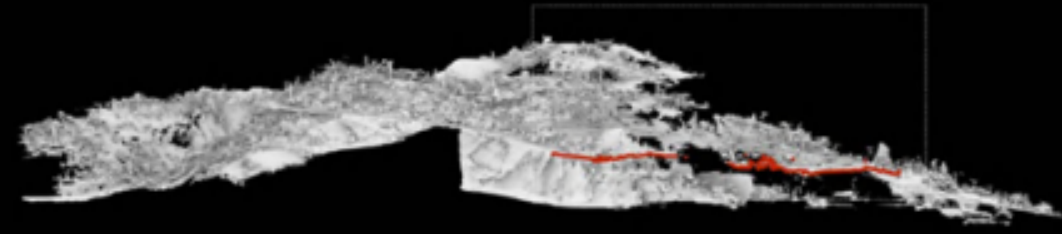
GEOLOGY AND TOPOGRAPHY

At the southern end, by the Lake, rough stones were laid out to form a narrow staircase leading from the lake-side path down into the cave, with a border of larger stones hiding the stairs from view except from above. The rock and mud around the cave, 81 Manhattan Island's geology. Later in its life it would become known as the "Indian Cave", supposedly because the floor showed evidence of early Native American inhabitants, though evidence of this is hard to find.

AM 5.0

THE ANTHROPOCENE MUSEUM
THE RAMBLE CAVE

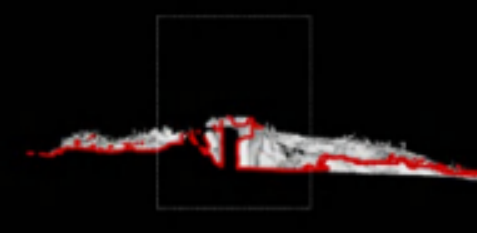
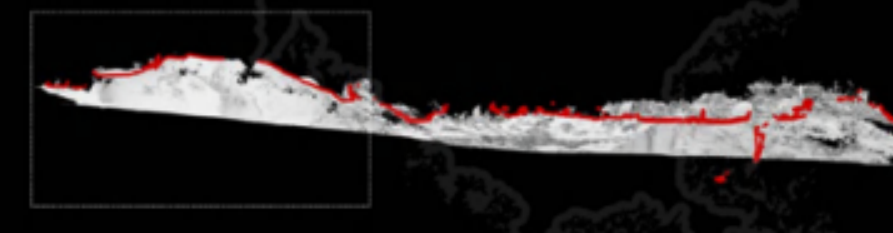
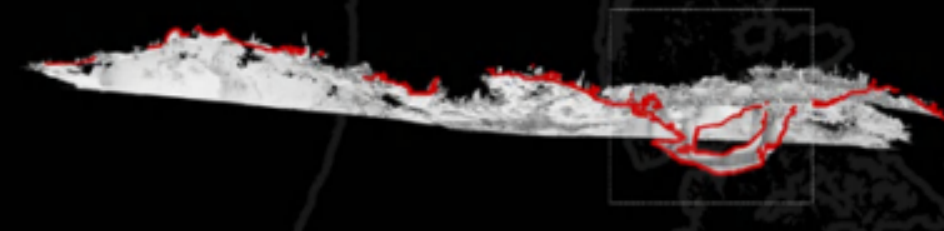
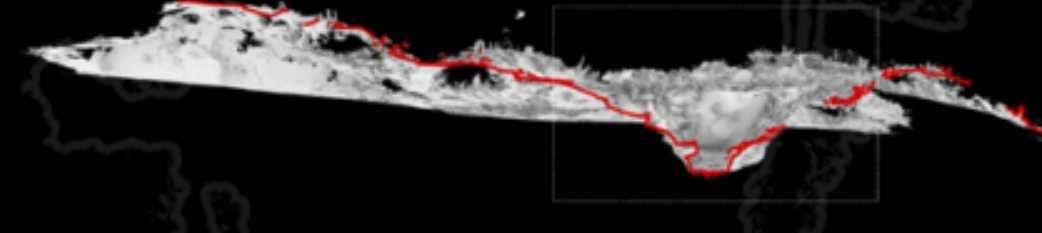
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AM 5.0

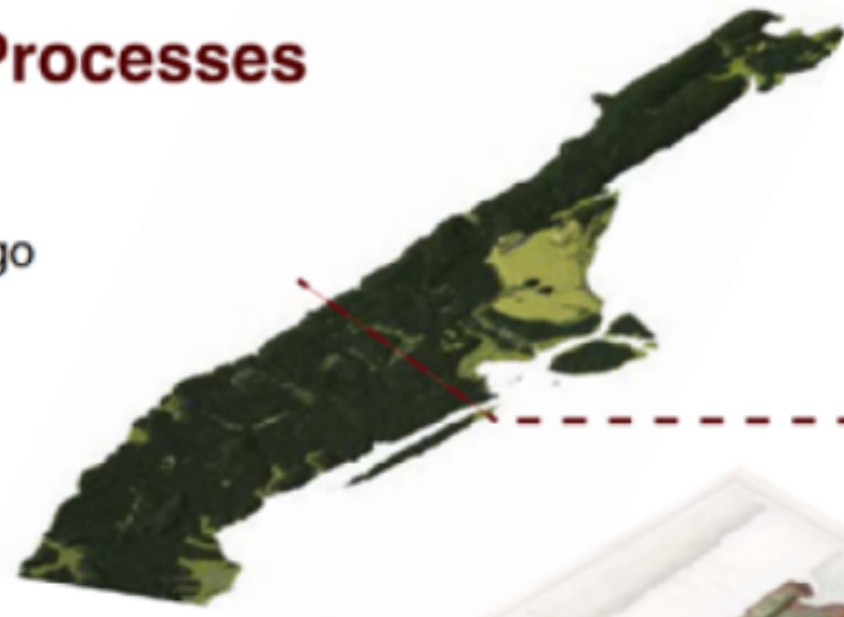
THE ANTHROPOCENE MUSEUM
THE RAMBLE CAVE

40°46'40"N 73°58'17"W

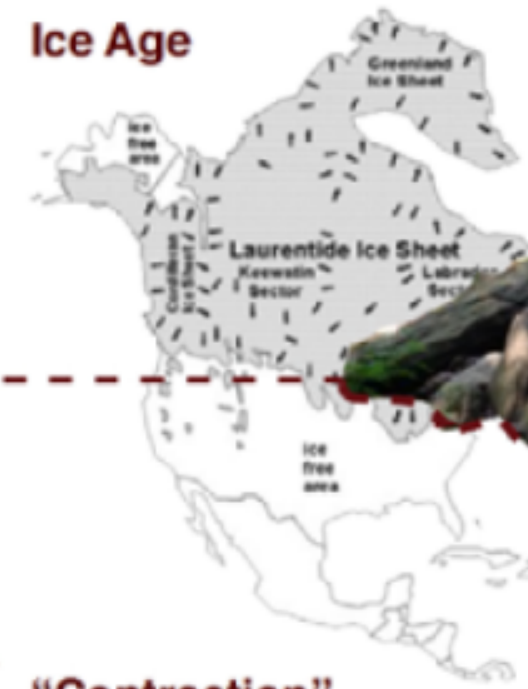


Mapping Processes

20,000 Years Ago



Ice Age



Glacial Erratics



"Contraction"



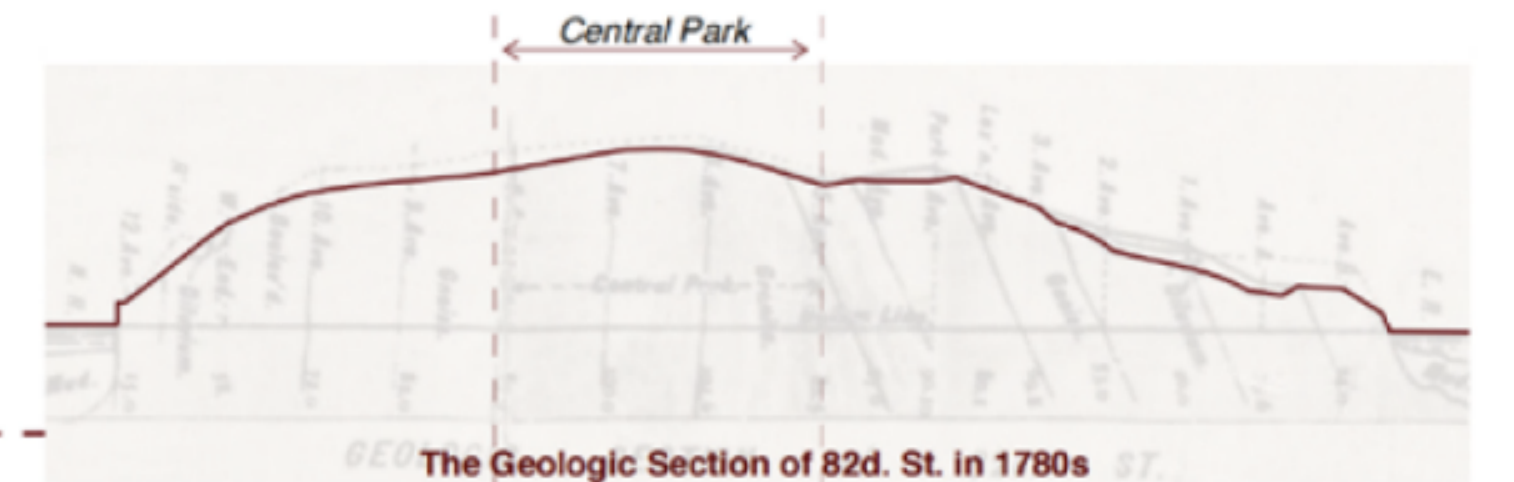
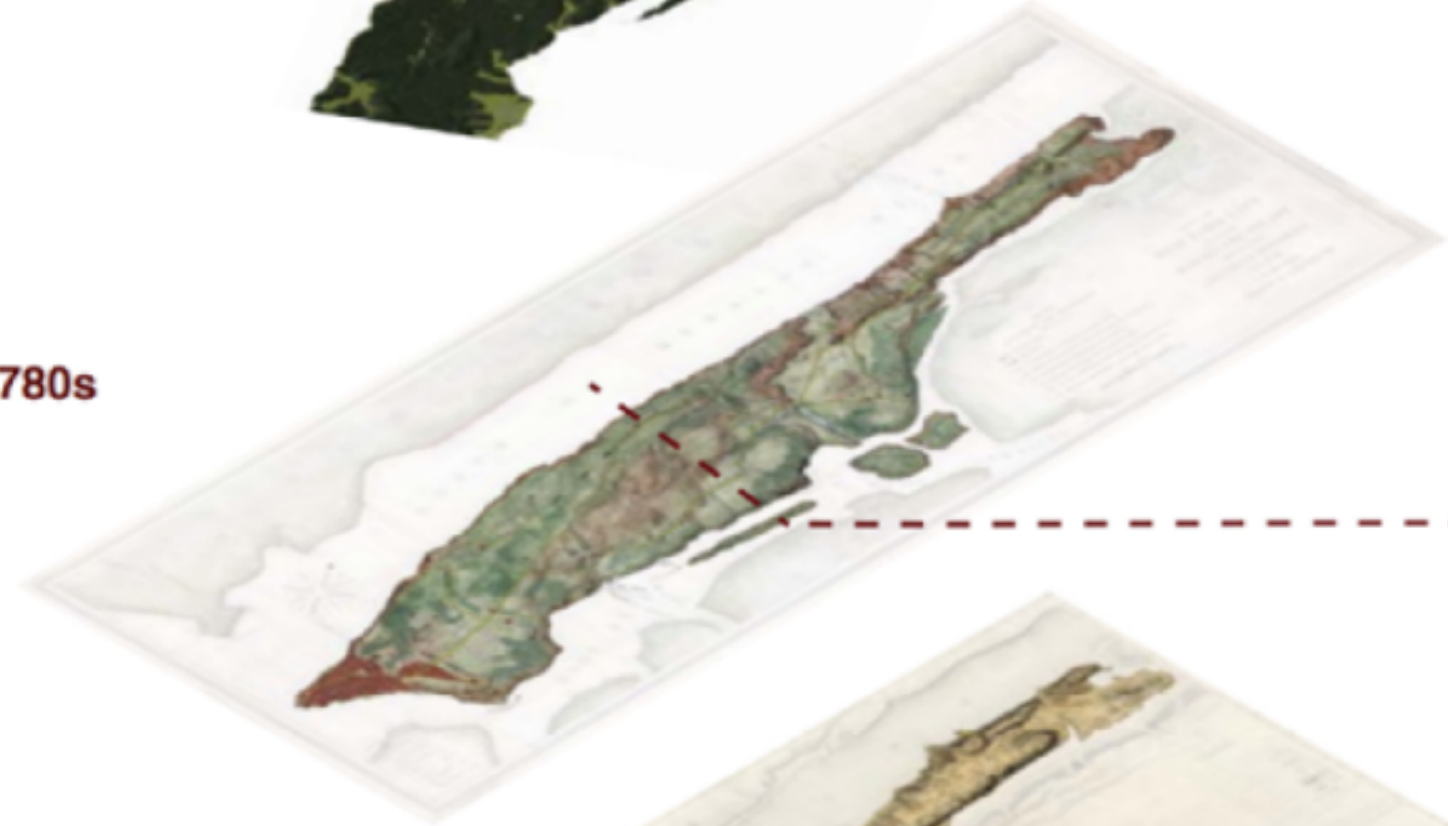
Measure the "Obstacles"

There is little uncertainty as to the success of these measurement; they are at least sufficient for most situation.

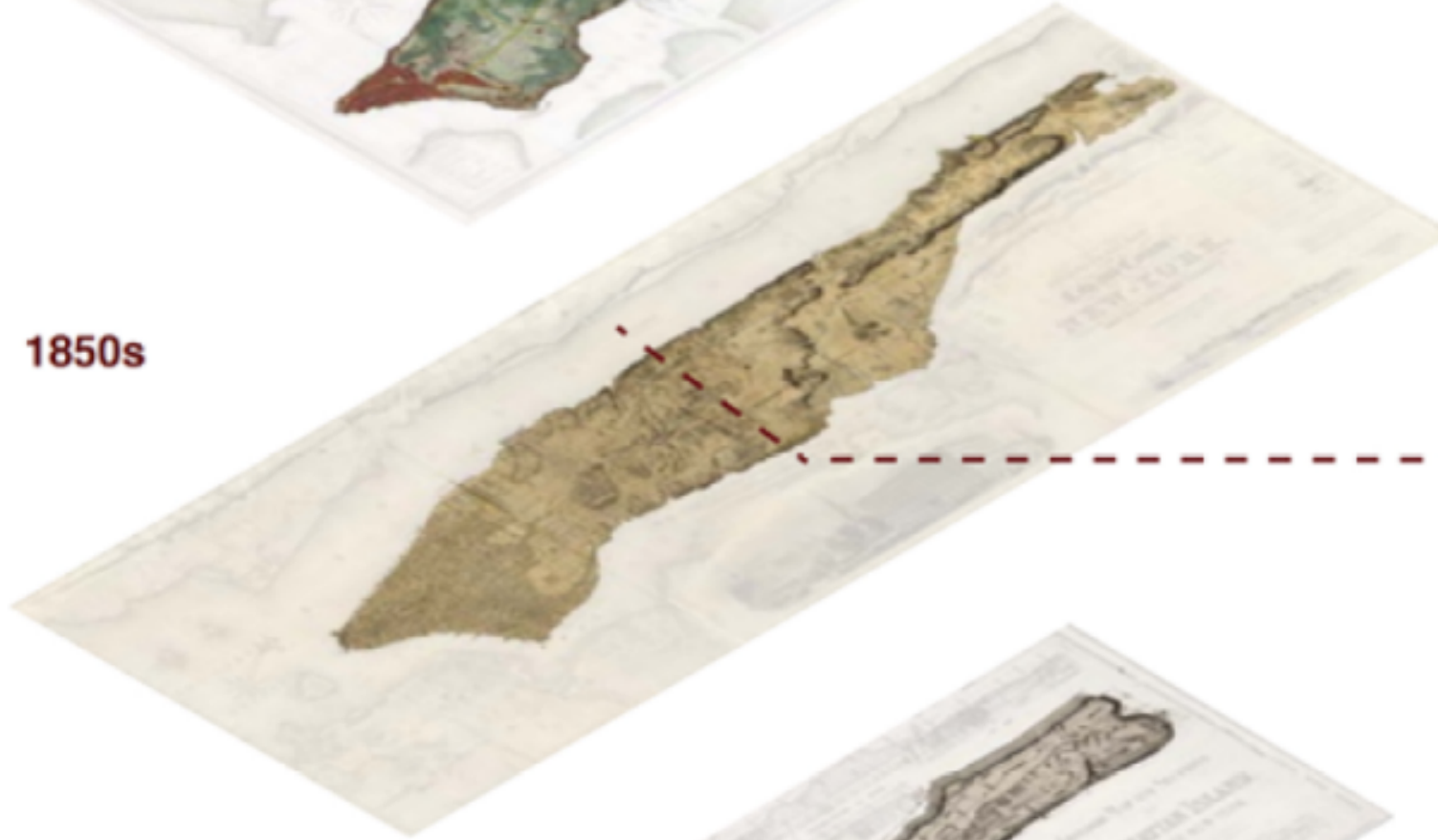
"The result, of course, is a ubiquitous and standardized built environment, one that looks the same in New York as it does in Anchorage or Albuquerque. The experience and challenge of spatial discovery are consequently impoverished, with differences blended into the lowest common denominator and finally eradicated. Every place, regardless of special characteristics, begins to look and feel alike--neutral, flat, and bland."

-----James Corner - 'Taking Measures Across the American Landscape'

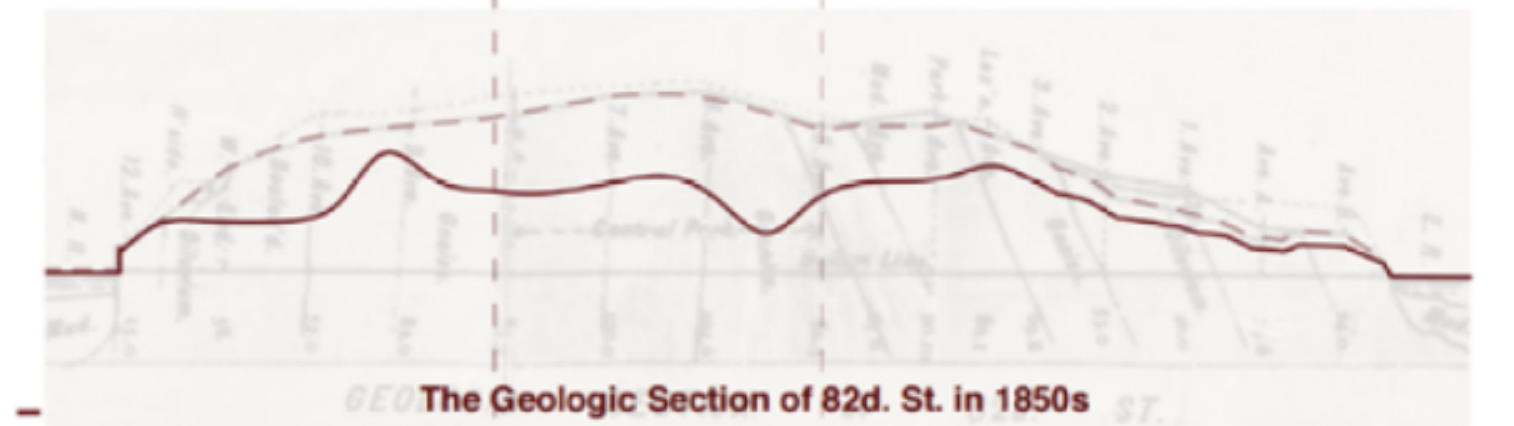
1780s



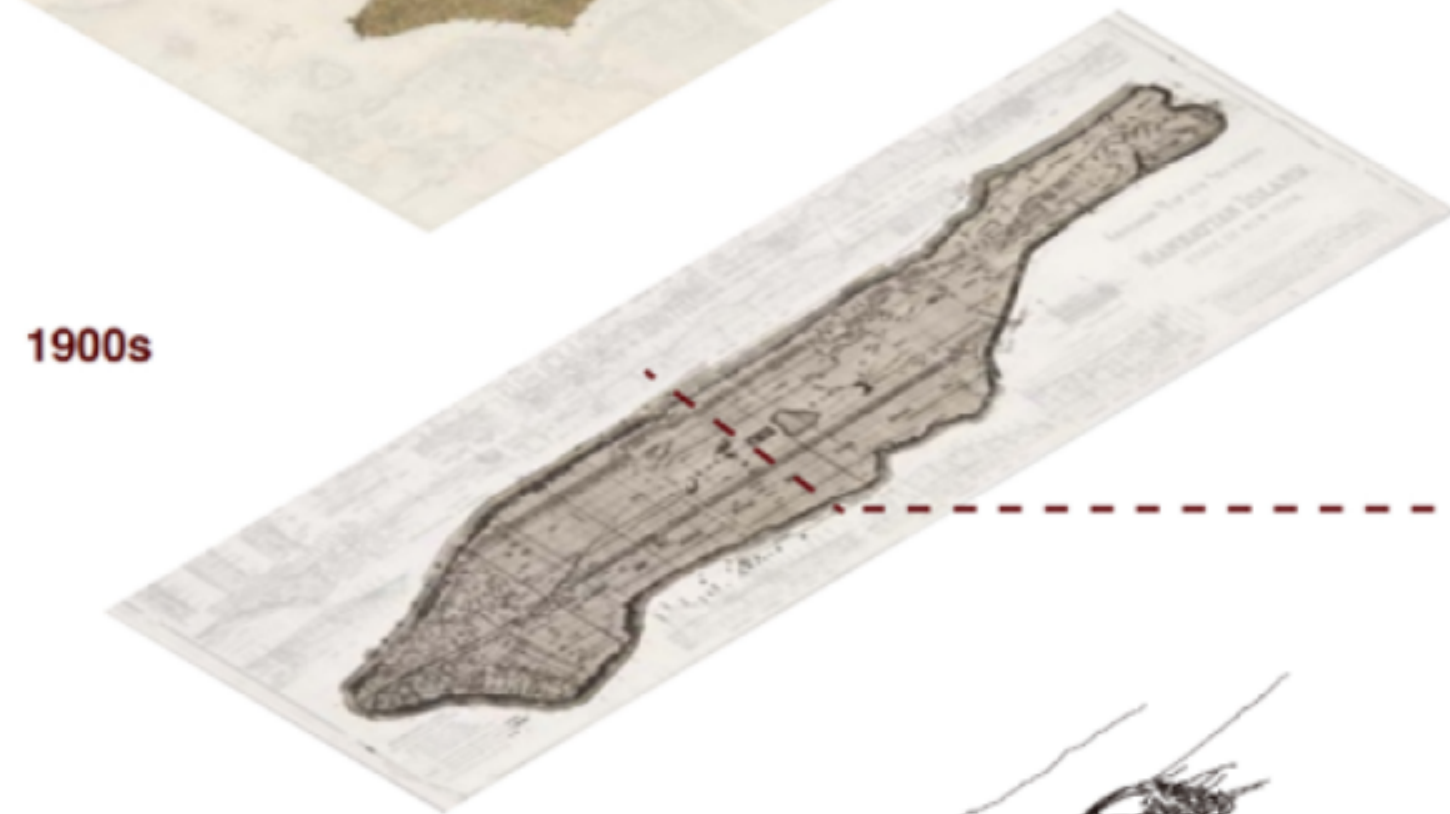
1850s



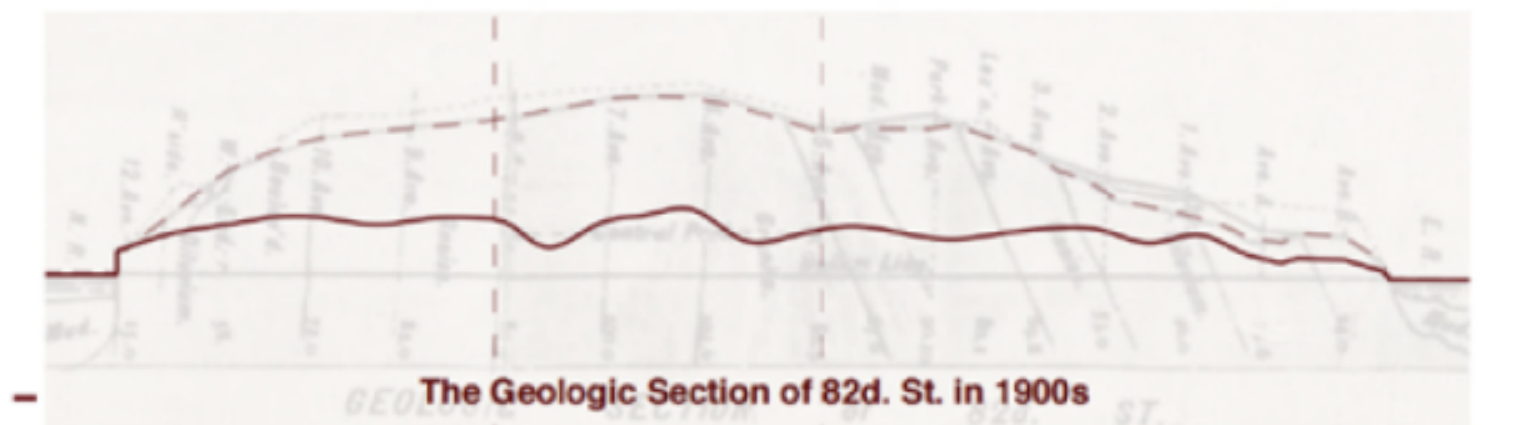
Seneca Village



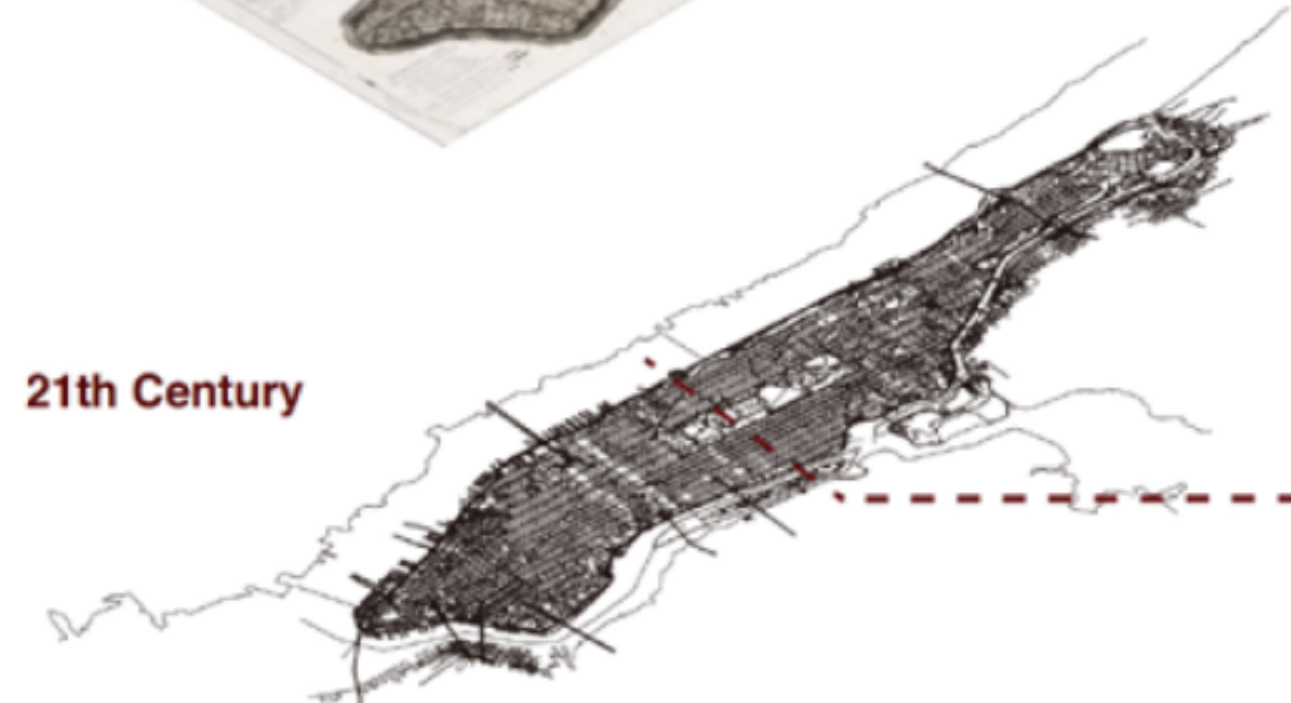
1900s



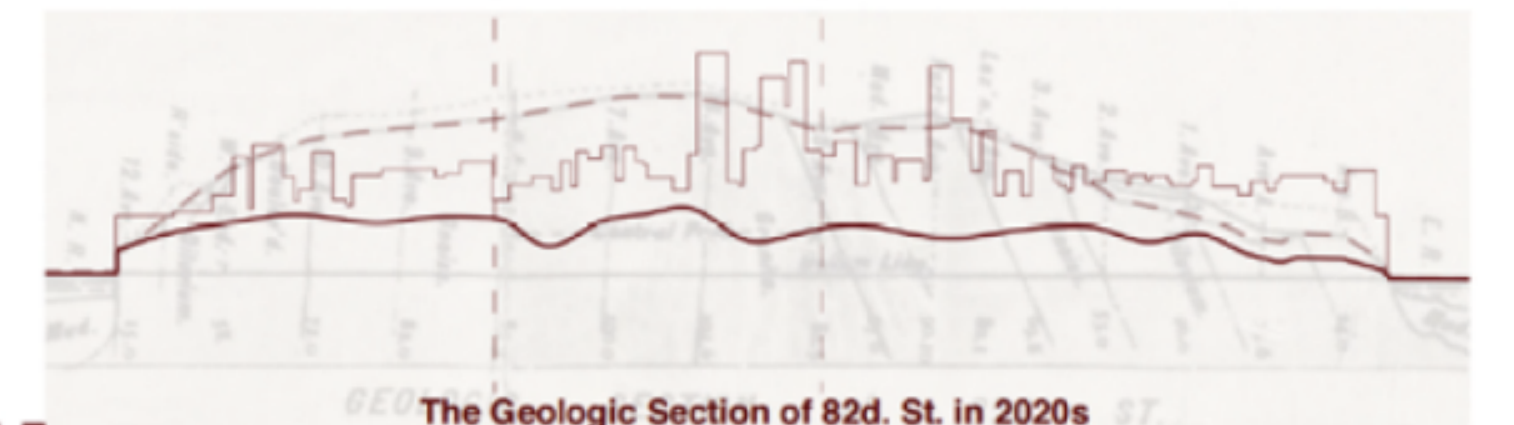
Central Park & Grids



21th Century



The Skyline





AN Modern Comfort Case

Infrastructure

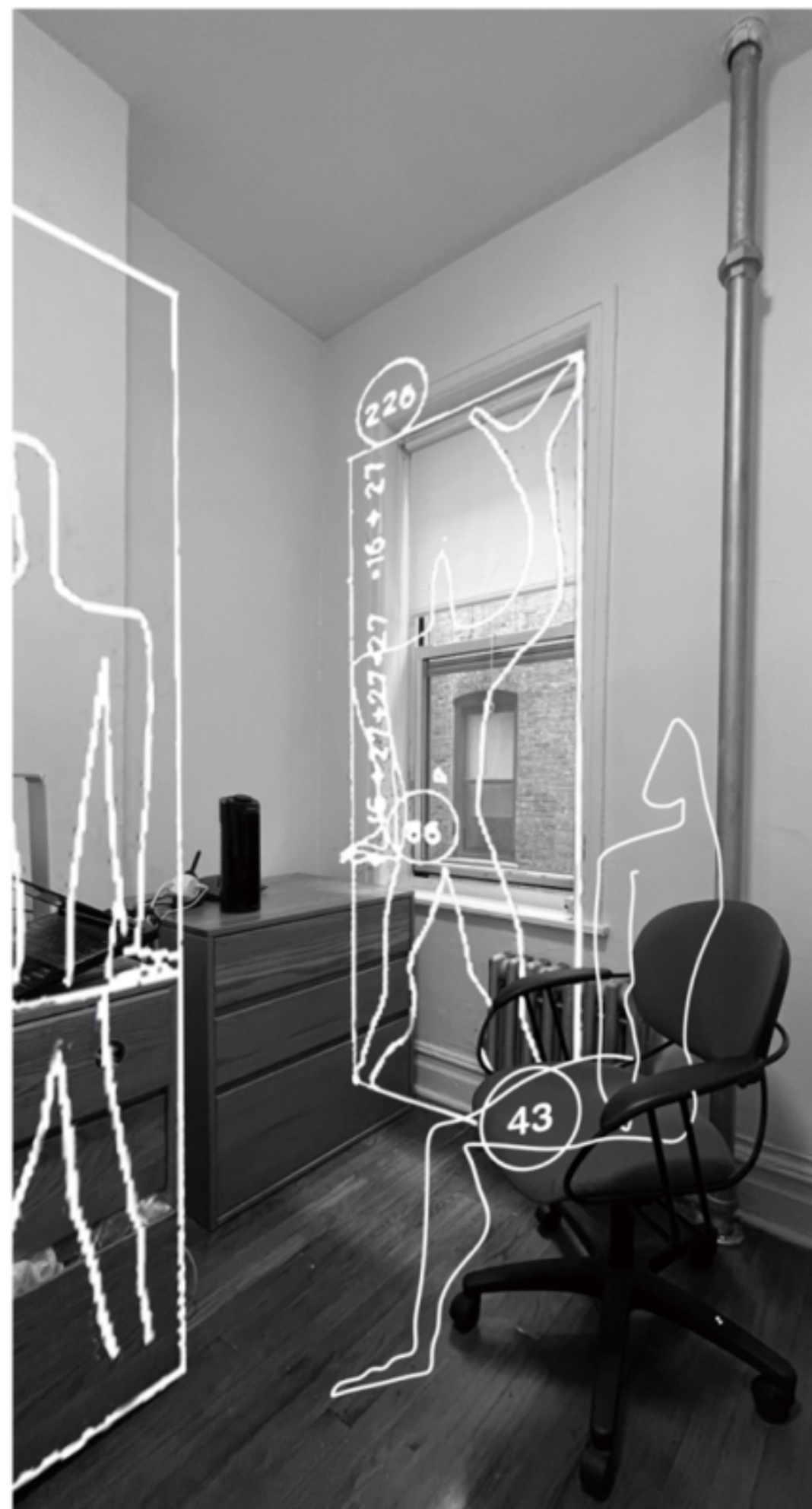
Suburb

Rural Area

Transportation

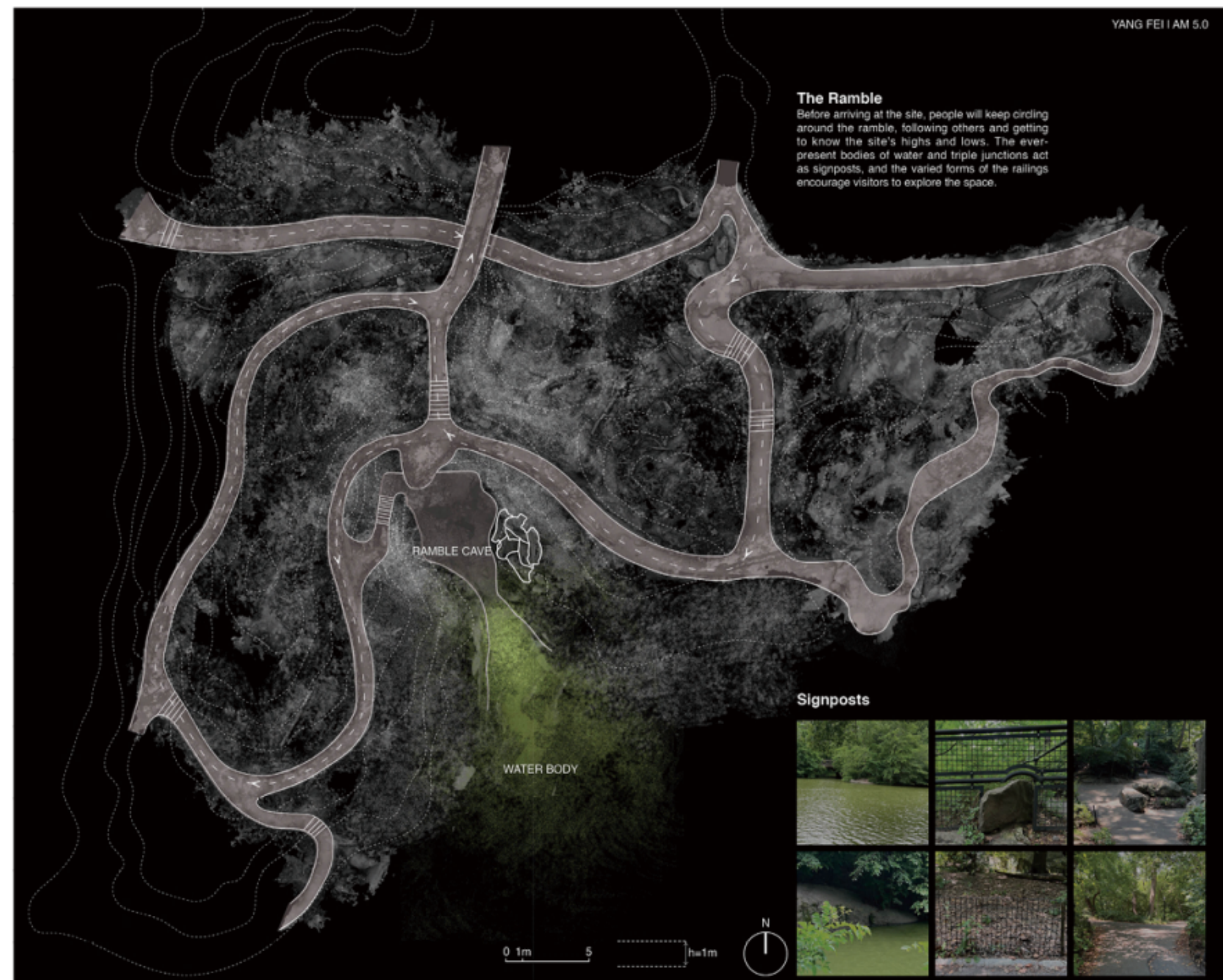
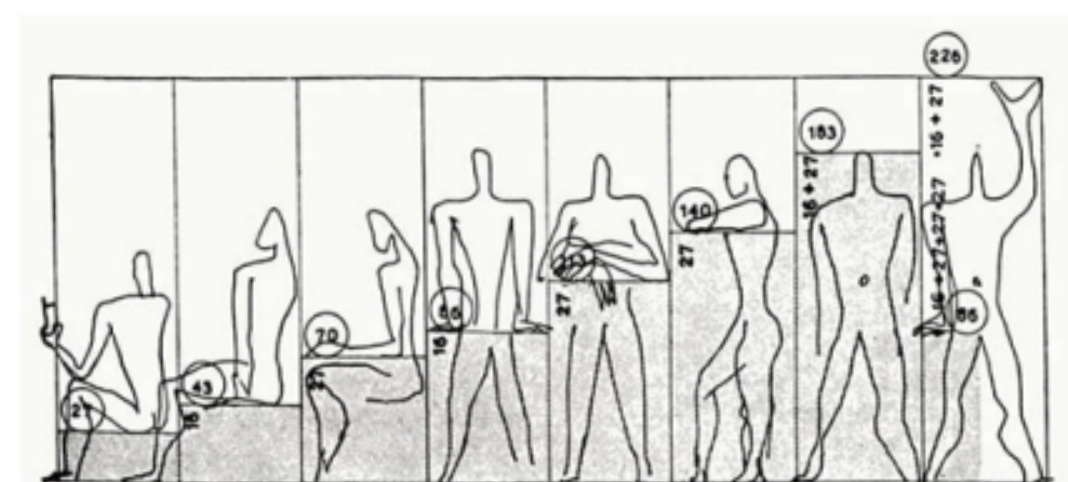
“What’s not visible here or even deeper down?”

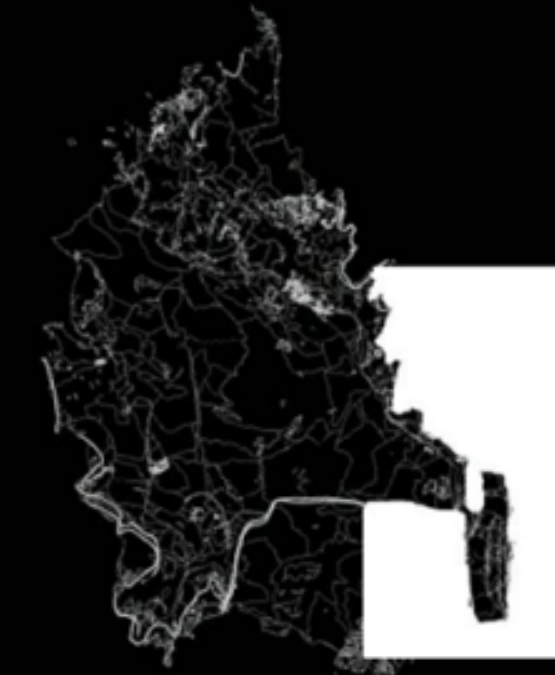
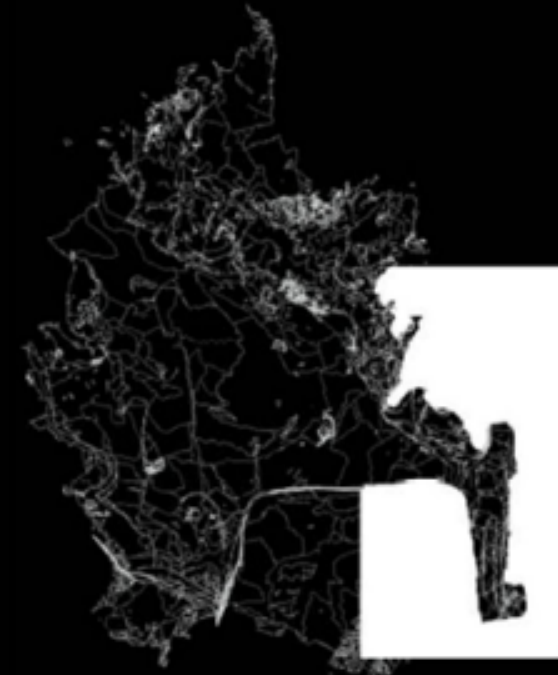
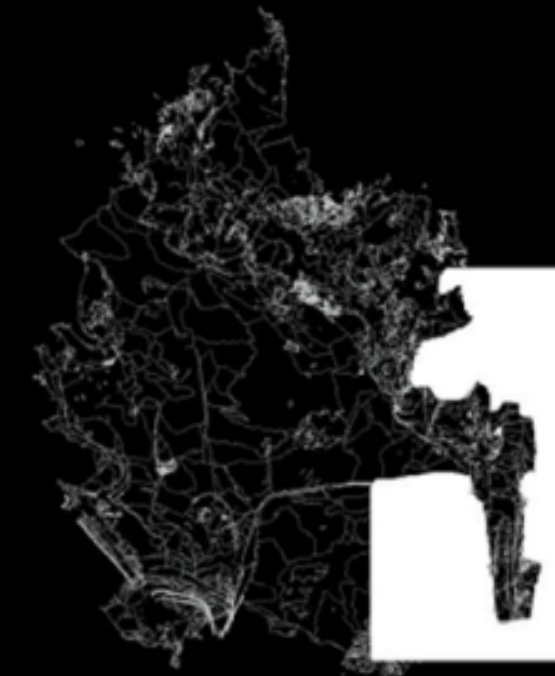
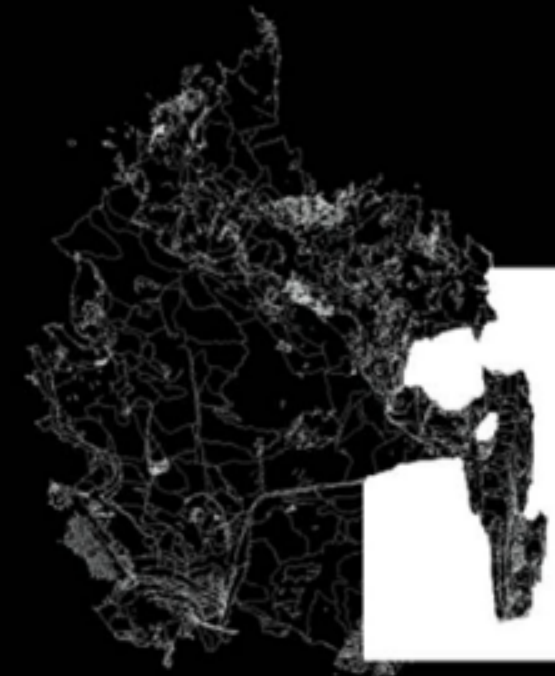
“Discomfort”



Discomfort

On a smaller scale, we can see how modern architecture creates a comfortable environment. This is my dormitory on 111th Street, the heating ducts, the delicate furniture, the lighted windows are all designed to follow the human scale, these comforts limit our possibilities, we gradually can only make specific postures and movements to cater to them, we sit we lie down, we stand at the bar. What problems does this bring? As shown in the modular man illustration, there is only one diagram of the human body and figures, and there is no doubt that we have overlooked too many things. To conclude, the Manhattan showroom demonstrates the potential problems of comfort





1 Rock Steps

The muddy ground, the wet rock walls, the space where you cannot straighten your upper body, and the branches hanging over your head to block your view, together constituted an uncomfortable experience, but this brief discomfort was not annoying...

3 "Opera Theater"

After the cave is closed, the huge rocks become the center of gravity of the space, and the fallen tree trunks act as natural dams separating the land and water bodies, on which people can sit and watch the rock walls or watch the show under the boulders.



Souvenir store and Barrier-free access

At the end of the tour, visitors can take away a fallen leaf as a souvenir. The exhibition hall varies greatly in different seasons and weather, and the water body offers the option of coming by boat, which is an accessible facility for the exhibition.



Temporary Exhibitions

What would happen if the human scale was no longer the protagonist of the space? I documented my own exploration process in ramble cave, a process of placing myself on the site, on the basis of which a new set of modular illustrations can be developed, challenging the existing modular logic, where rocks, trees, and rivers can become the protagonists.



2 Dancing Path

Thinking about how Native Americans would dance on the grounds, I studied how they connected themselves to the grounds through dance. Take Grass Dancing as an example, whenever there was a major gathering, the tribe would select the best dancers to dance on the grounds in advance, while praying, they would trample down the grass that was too high on the grounds to meet the needs of the gathering of all the tribe, which was Buffalo food so the Indians did not choose to cut them down.



1 Rock Steps

The muddy ground, the wet rock walls, the space where you cannot straighten your upper body, and the branches hanging over your head to block your view, together constituted an uncomfortable experience, but this brief discomfort was not annoying...

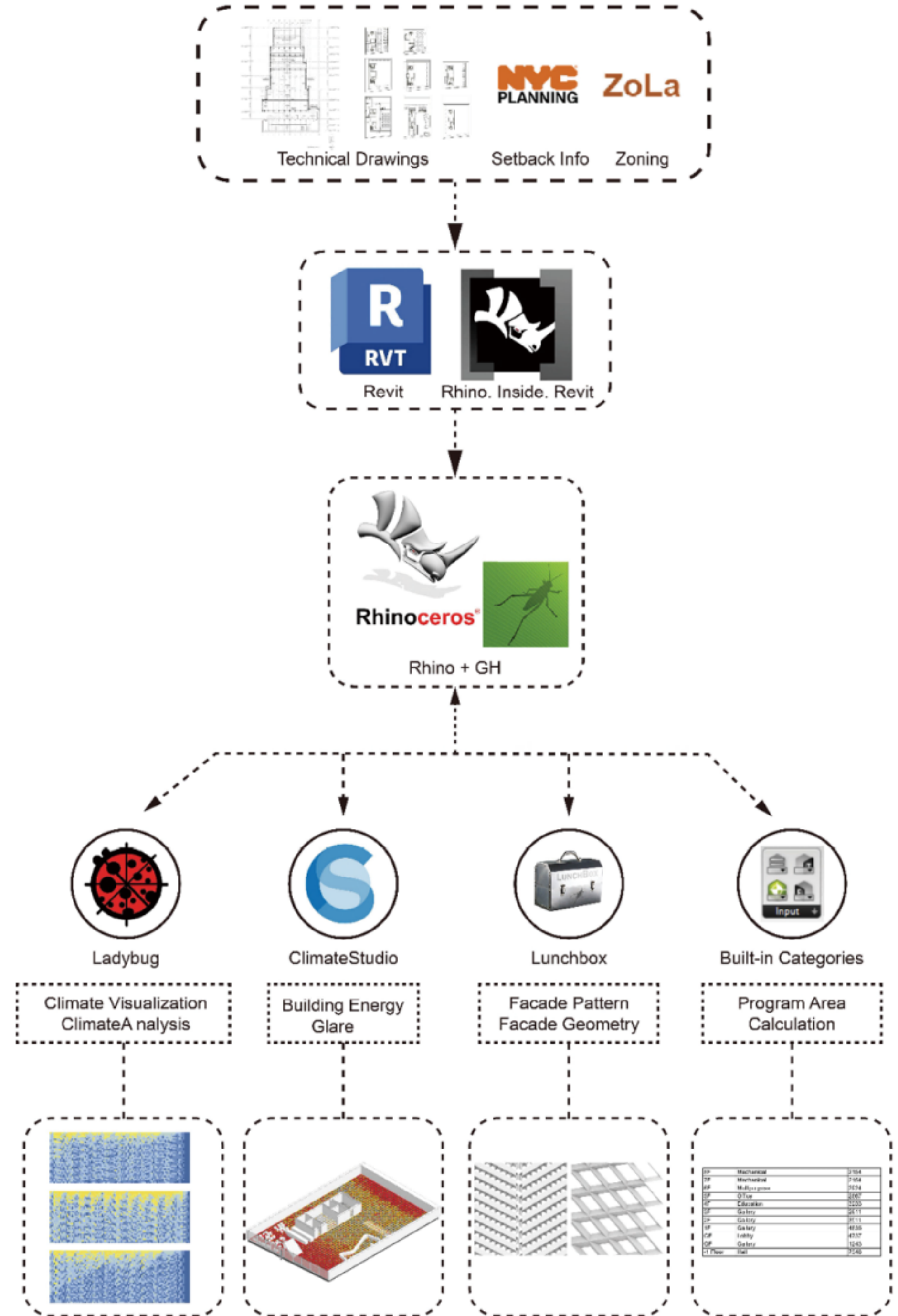


RETHINKING BIM

TEAM: BuildingNEW
 INSTRUCTOR: Joseph Brennan
 TEAM MEMBERS: Ming Ding, Mingrui Jiang, Yang Fei

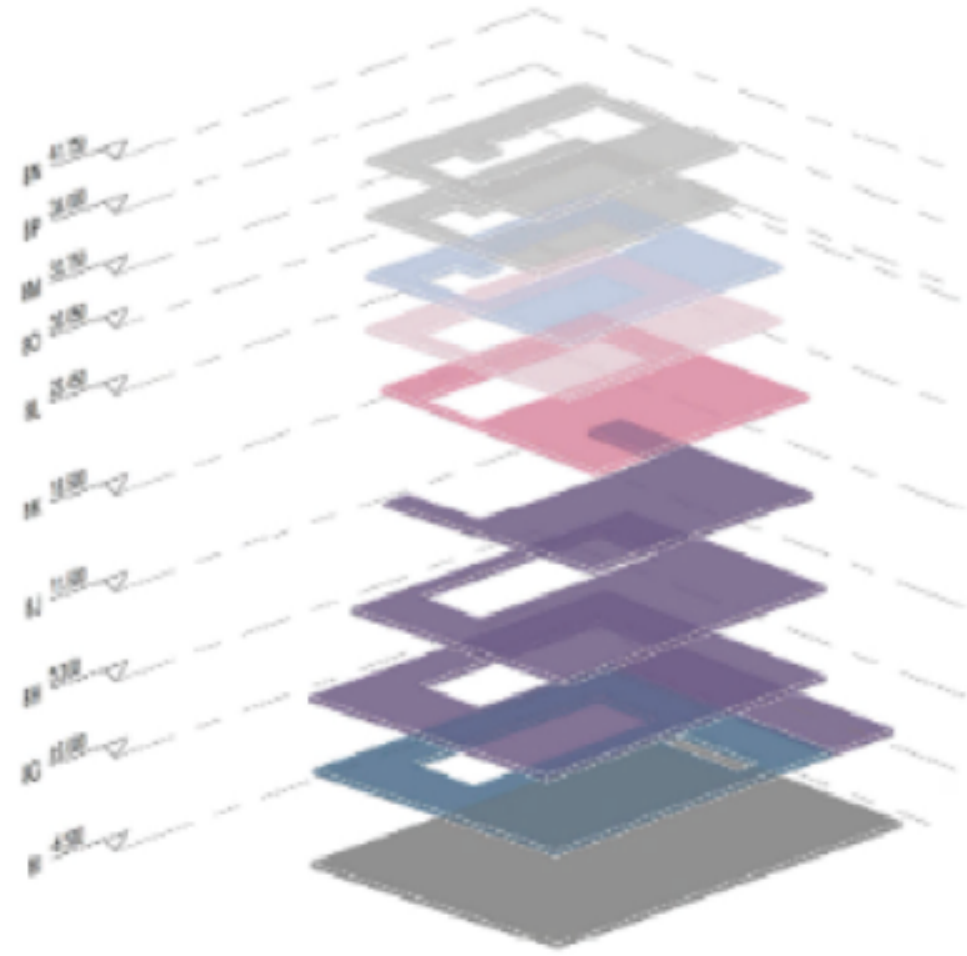


WORKFLOW

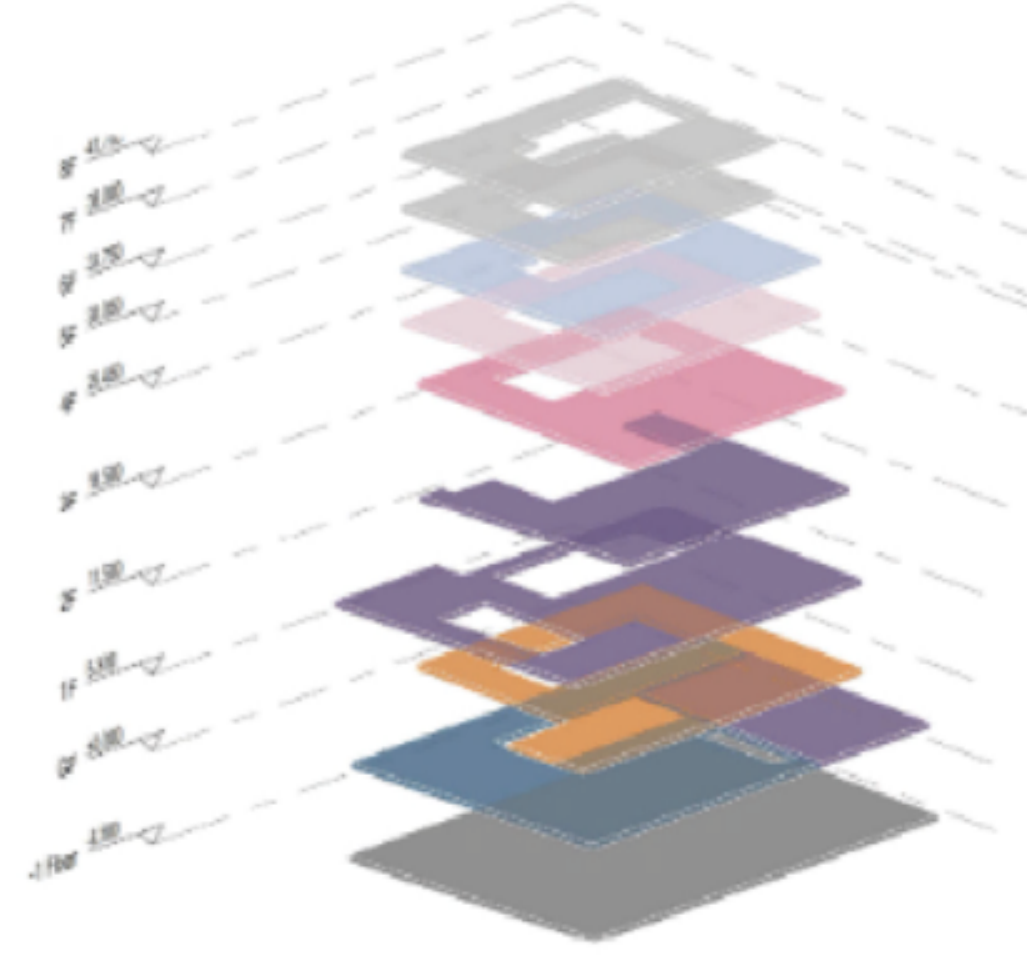


PROGRAM COMPARISON

Original



Revision



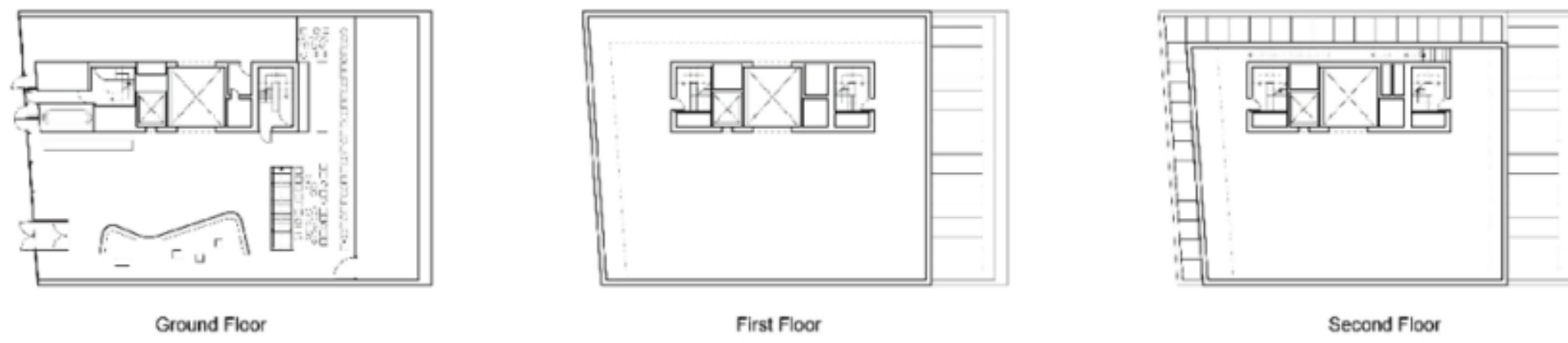
Floor Schedule		
Level	Floor Program	Area
8F	Mechanical	2154
7F	Mechanical	2154
6F	Multipurpose	2624
5F	Office	2967
4F	Education	3233
3F	Gallery	2911
2F	Gallery	3011
1F	Gallery	4035
GF	Lobby	4737
GF	Gallery	1243
-1 Floor	Hall	7348

Mechanical	4,308 sq ft
Multipurpose	2,924 sq ft
Office	2,867 sq ft
Education	3,233 sq ft
Gallery	12,900 sq ft
Lobby	4,737 sq ft
Hall	7,348 sq ft

Floor Schedule		
Level	Floor Program	Area
8F	Mechanical	2347
7F	Mechanical	2347
6F	Multipurpose	3118
5F	Office	3061
4F	Education	3427
3F	Gallery	2102
2F	Gallery	4428
1F	Community	4122
GF	Lobby	4344
GF	Gallery	1860
-1 Floor	Hall	7348

Community	4122 sq ft	+4122
Mechanical	4694 sq ft	+336
Multipurpose	3118 sq ft	+251
Office	3061 sq ft	+194
Education	3427 sq ft	+194
Gallery	9390 sq ft	-3510
Lobby	4344 sq ft	-393
Hall	7348 sq ft	

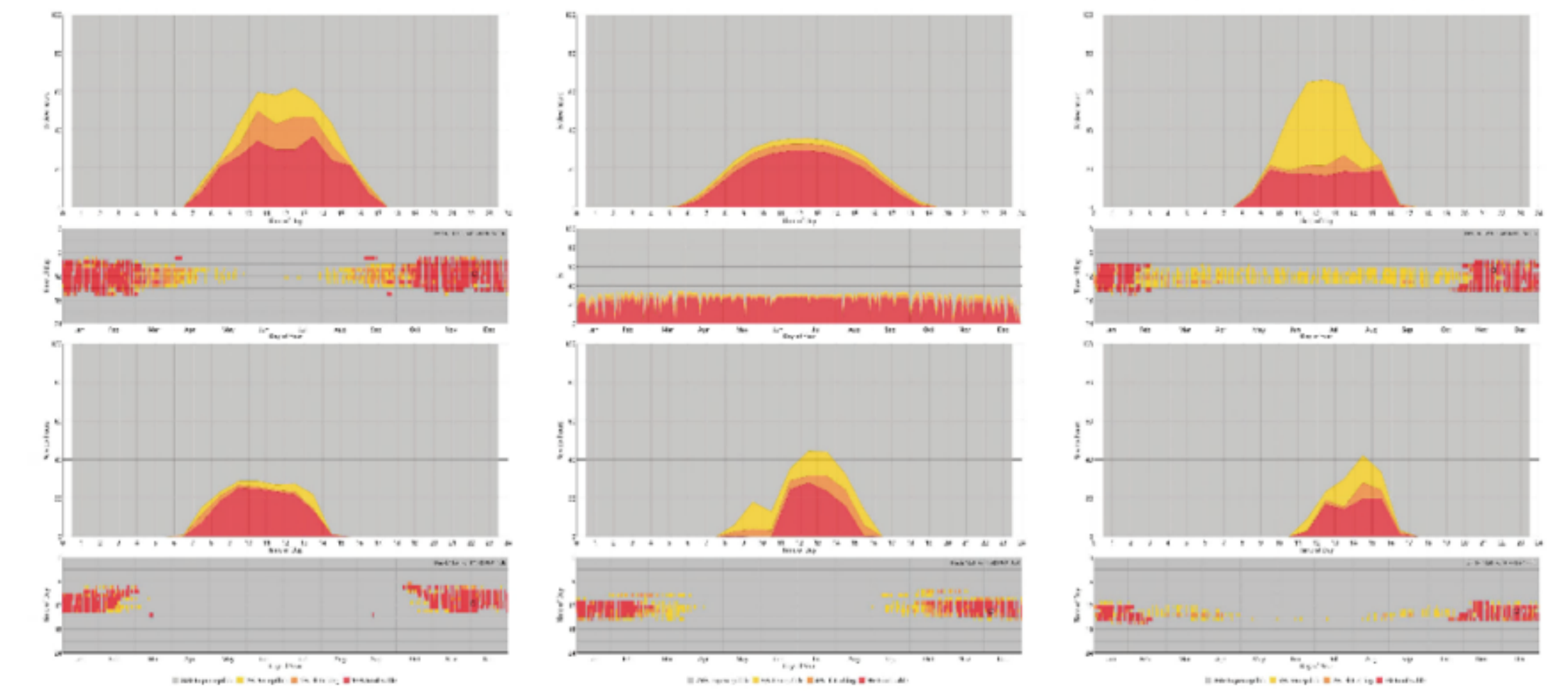
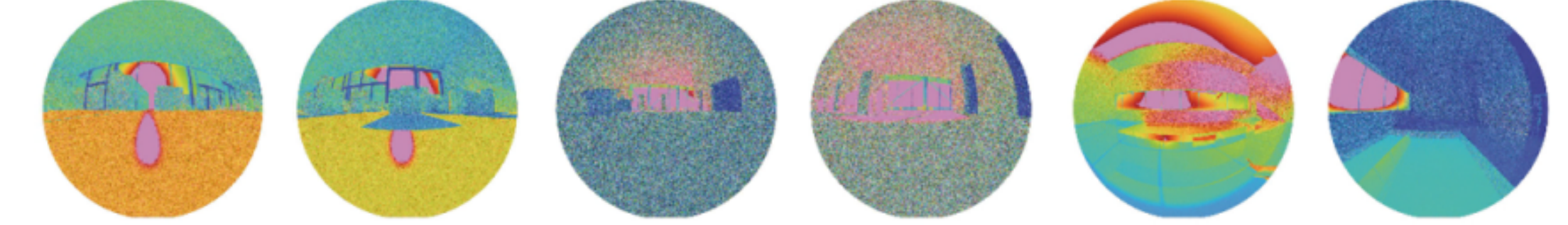
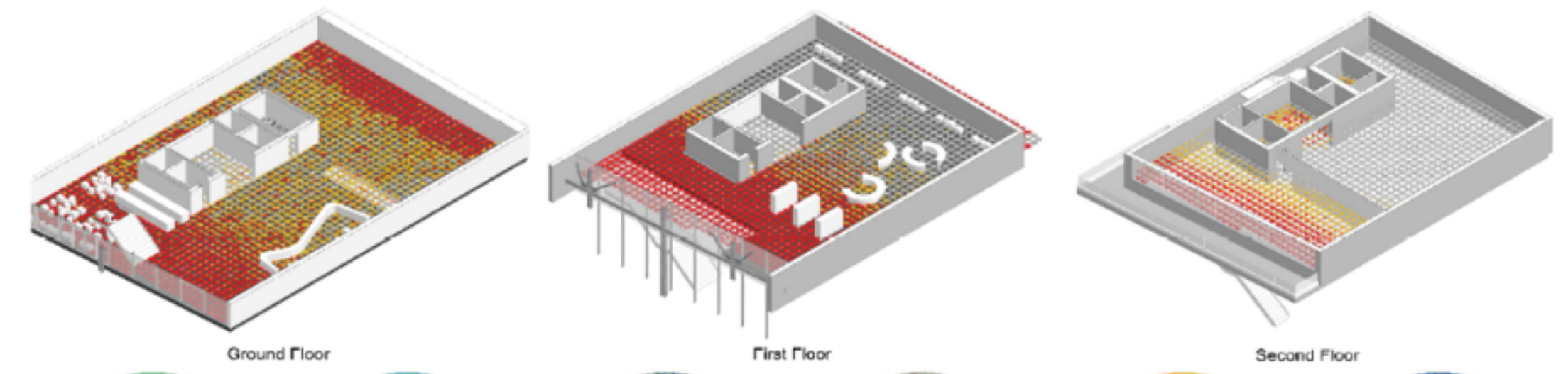
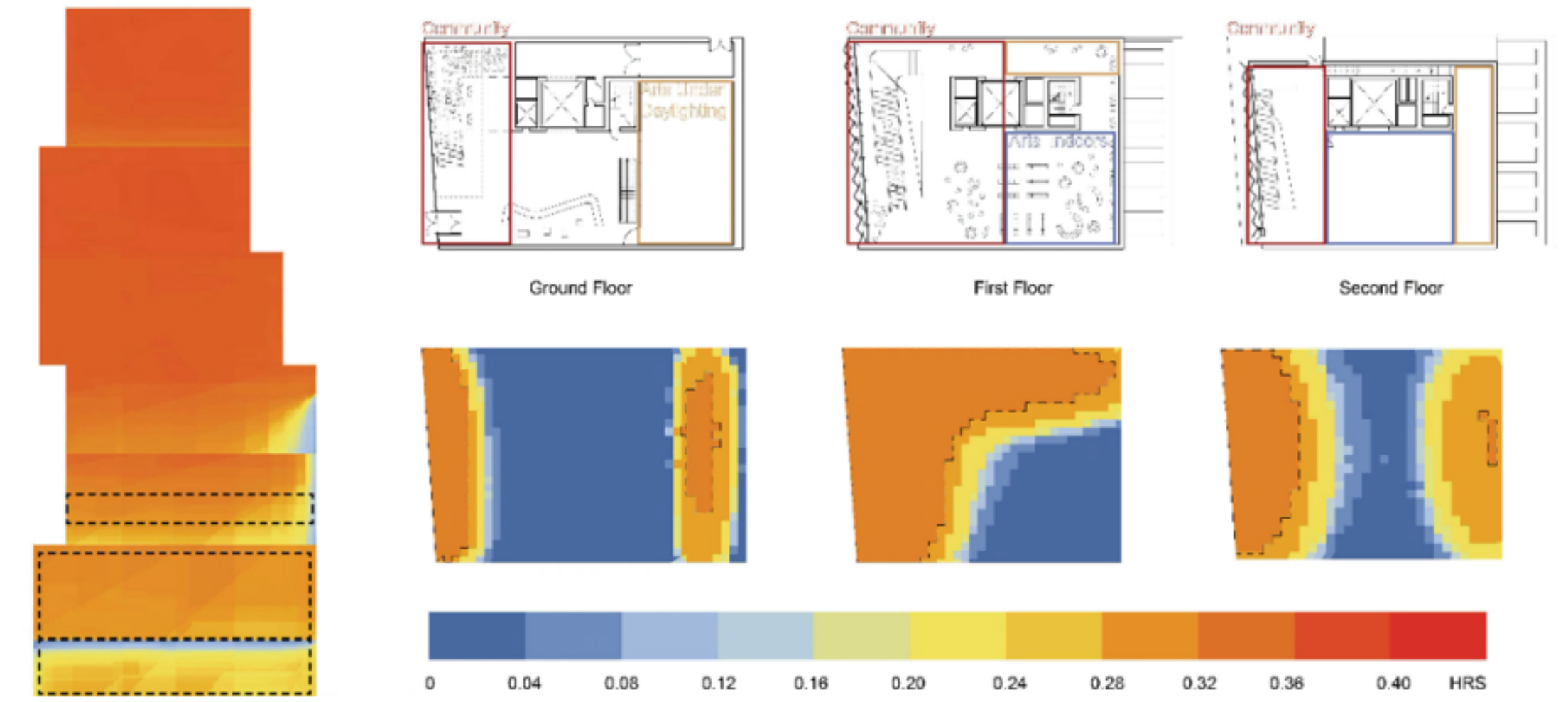
Original



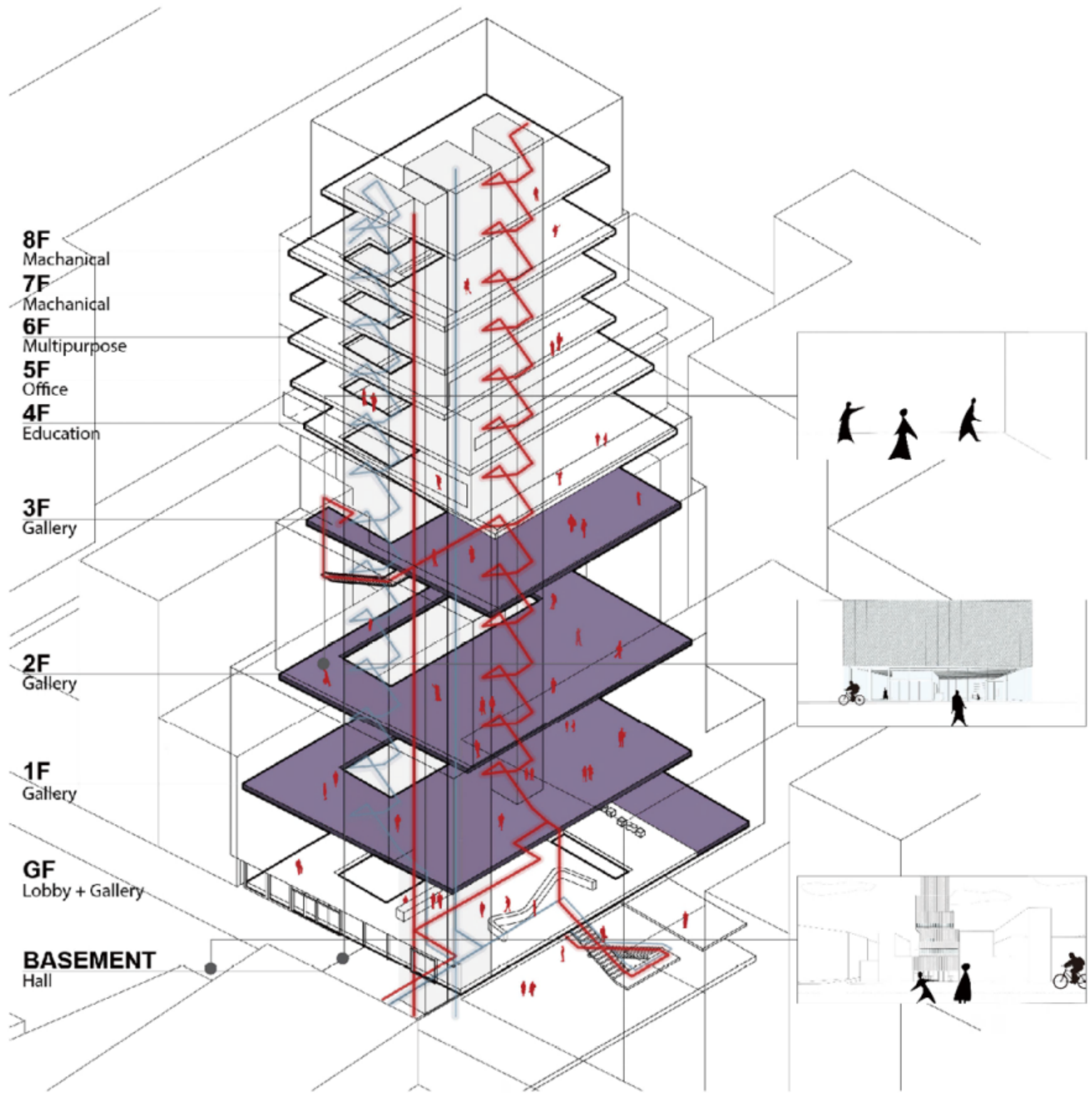
Revision



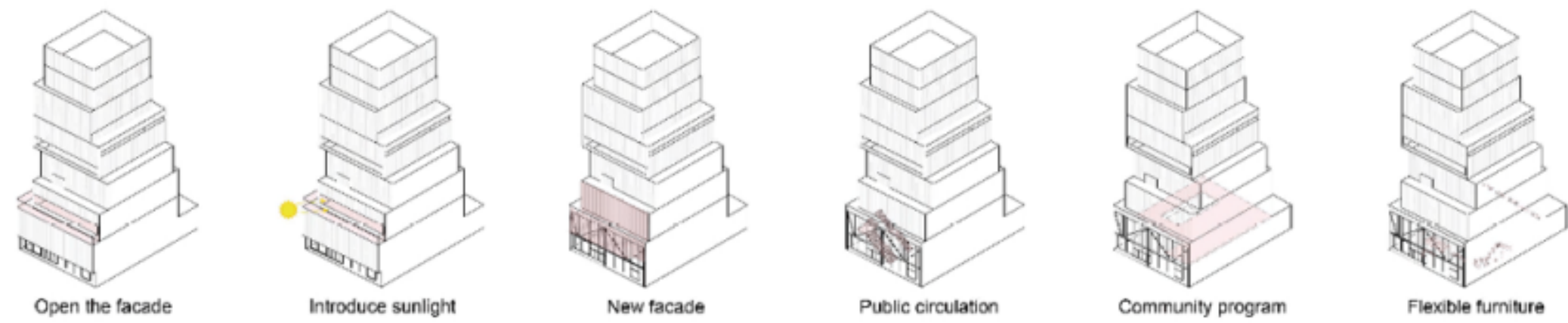
LIGHTING PERFORMANCE



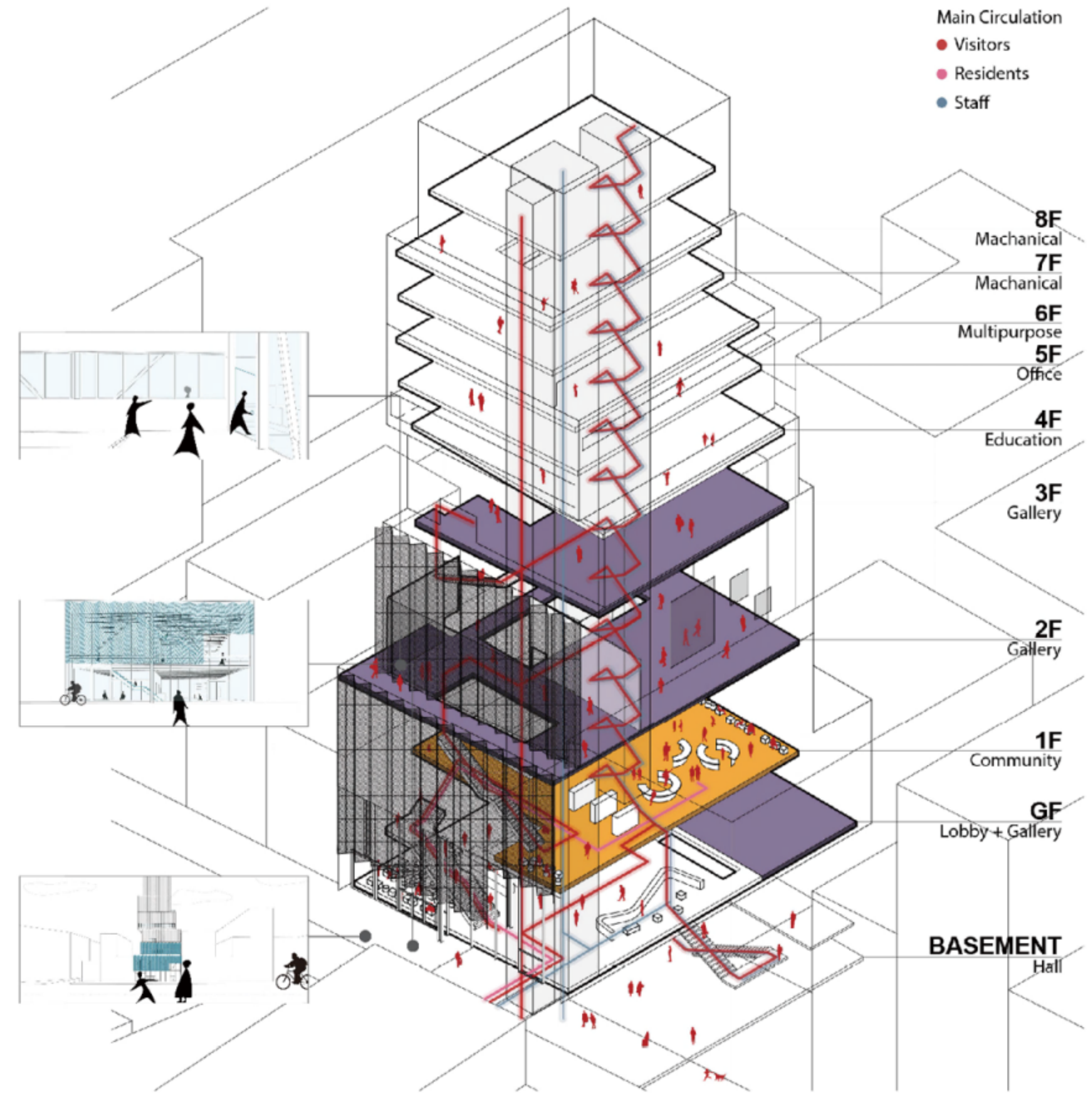
ORIGINAL AXO VIEW



Design Process

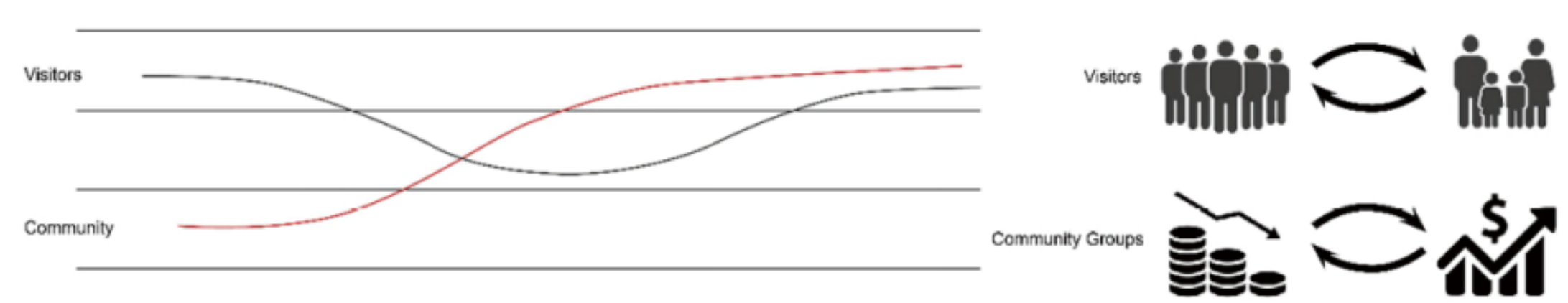


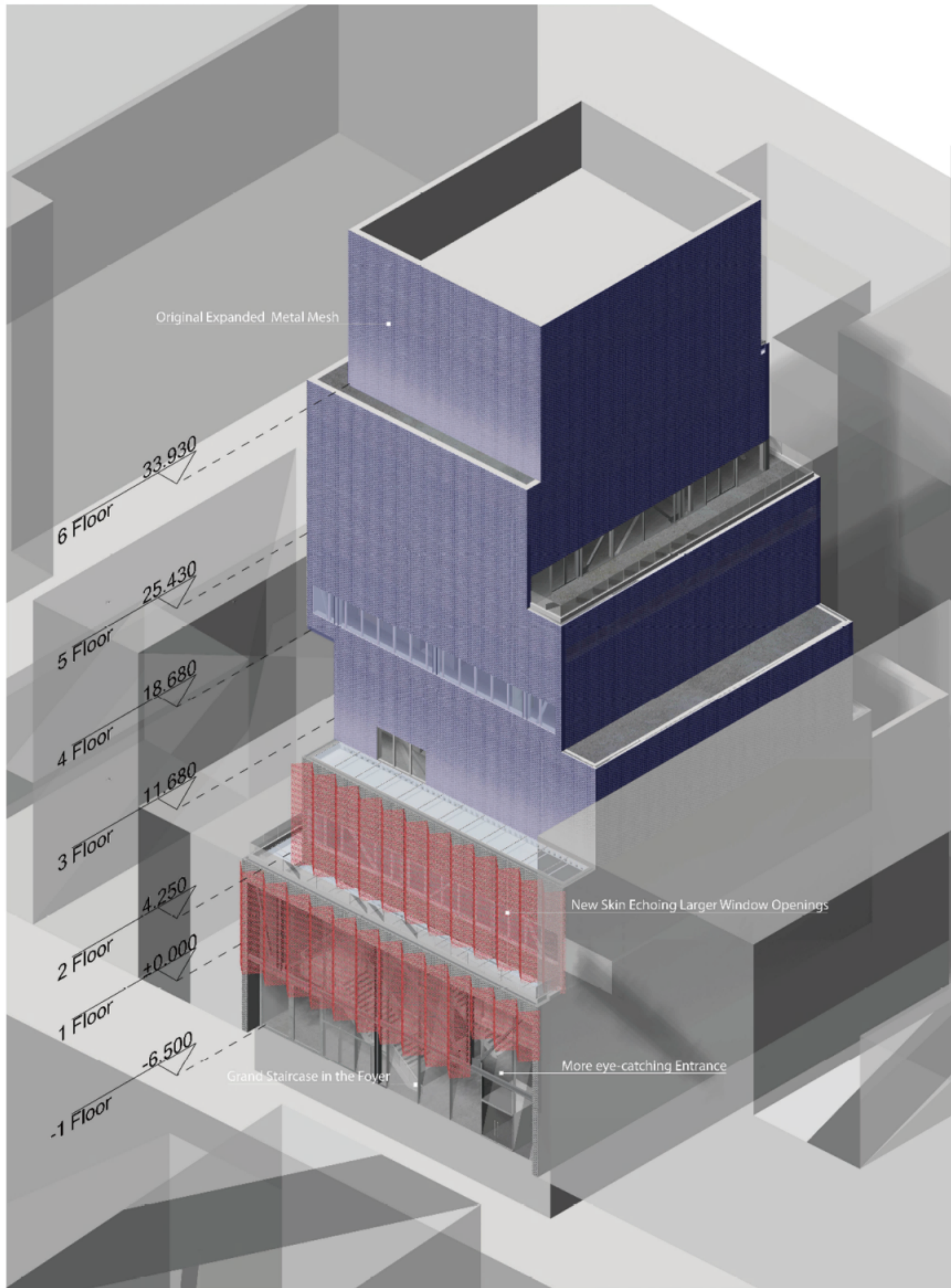
REVISED AXO VIEW



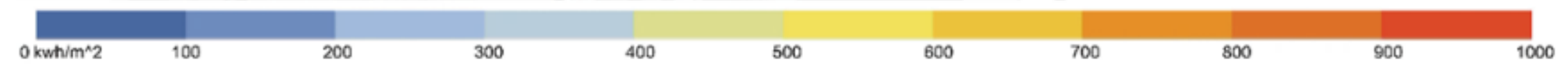
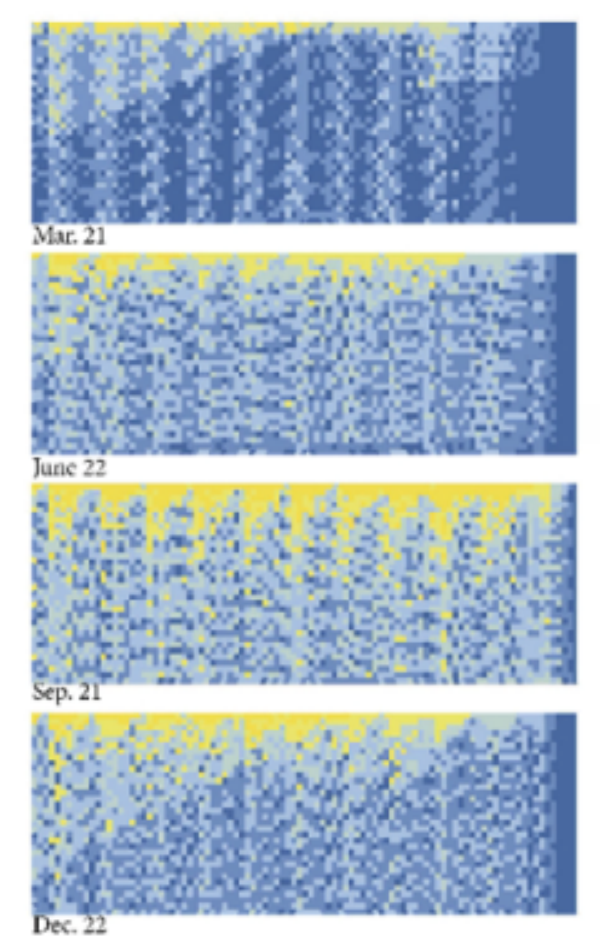
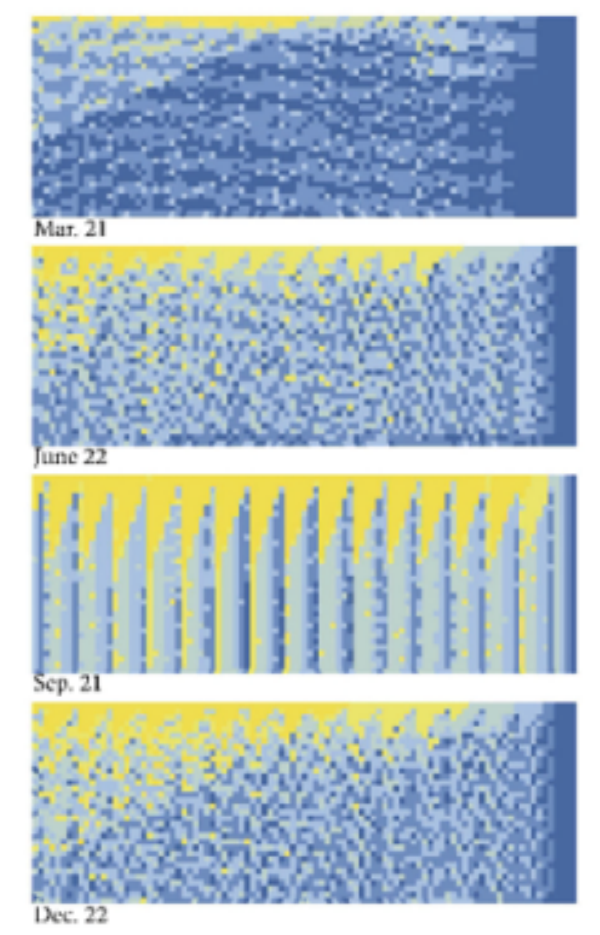
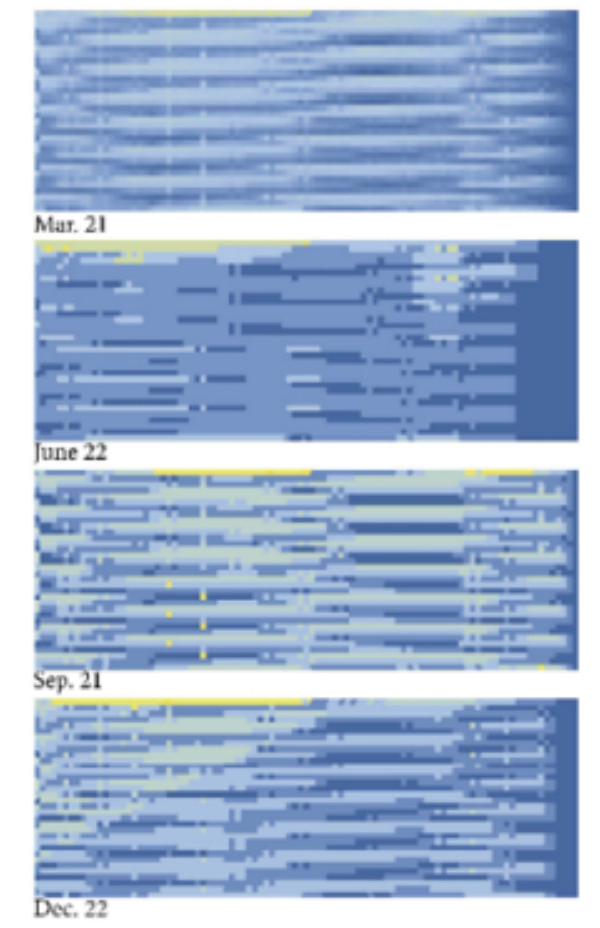
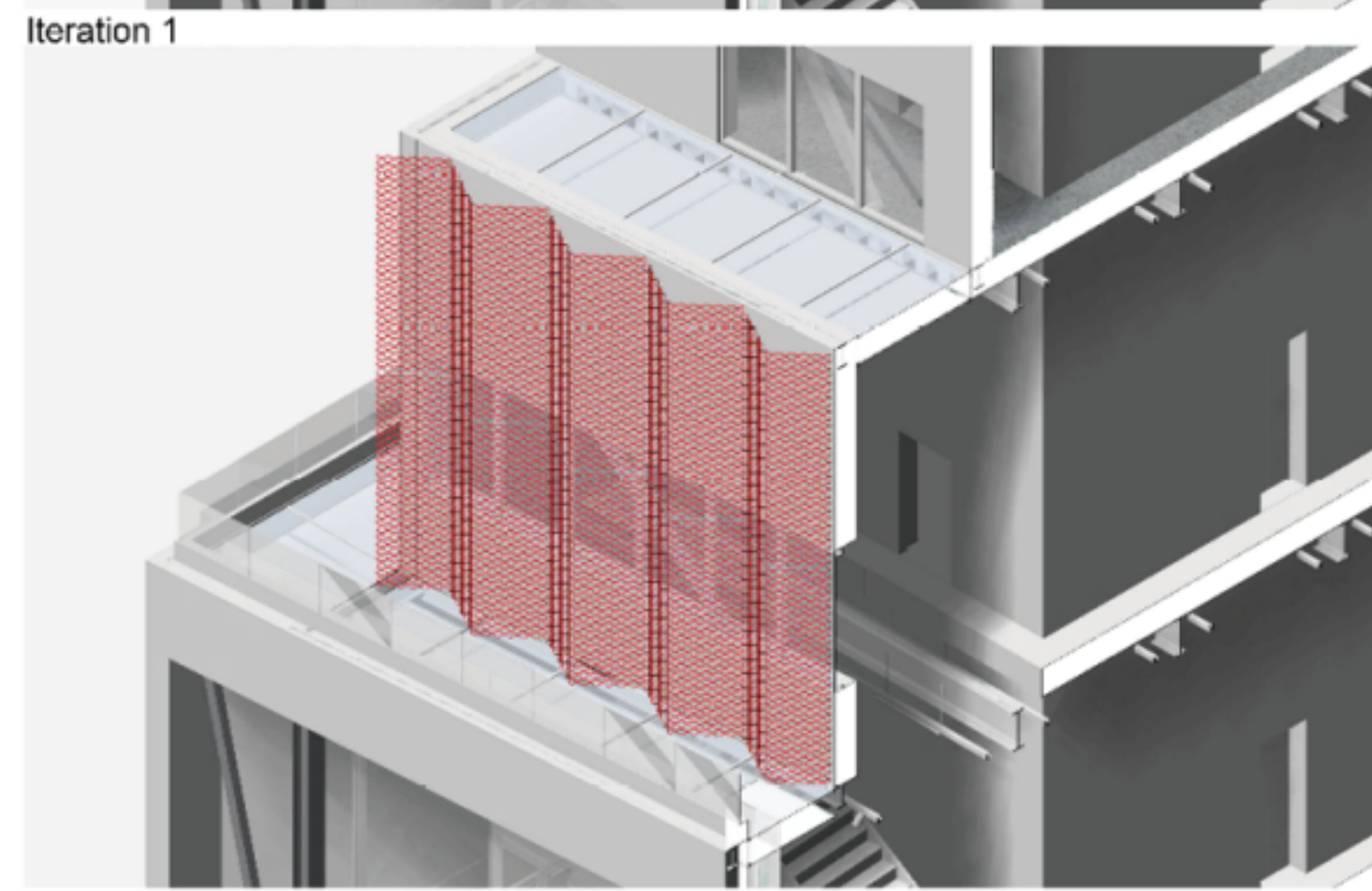
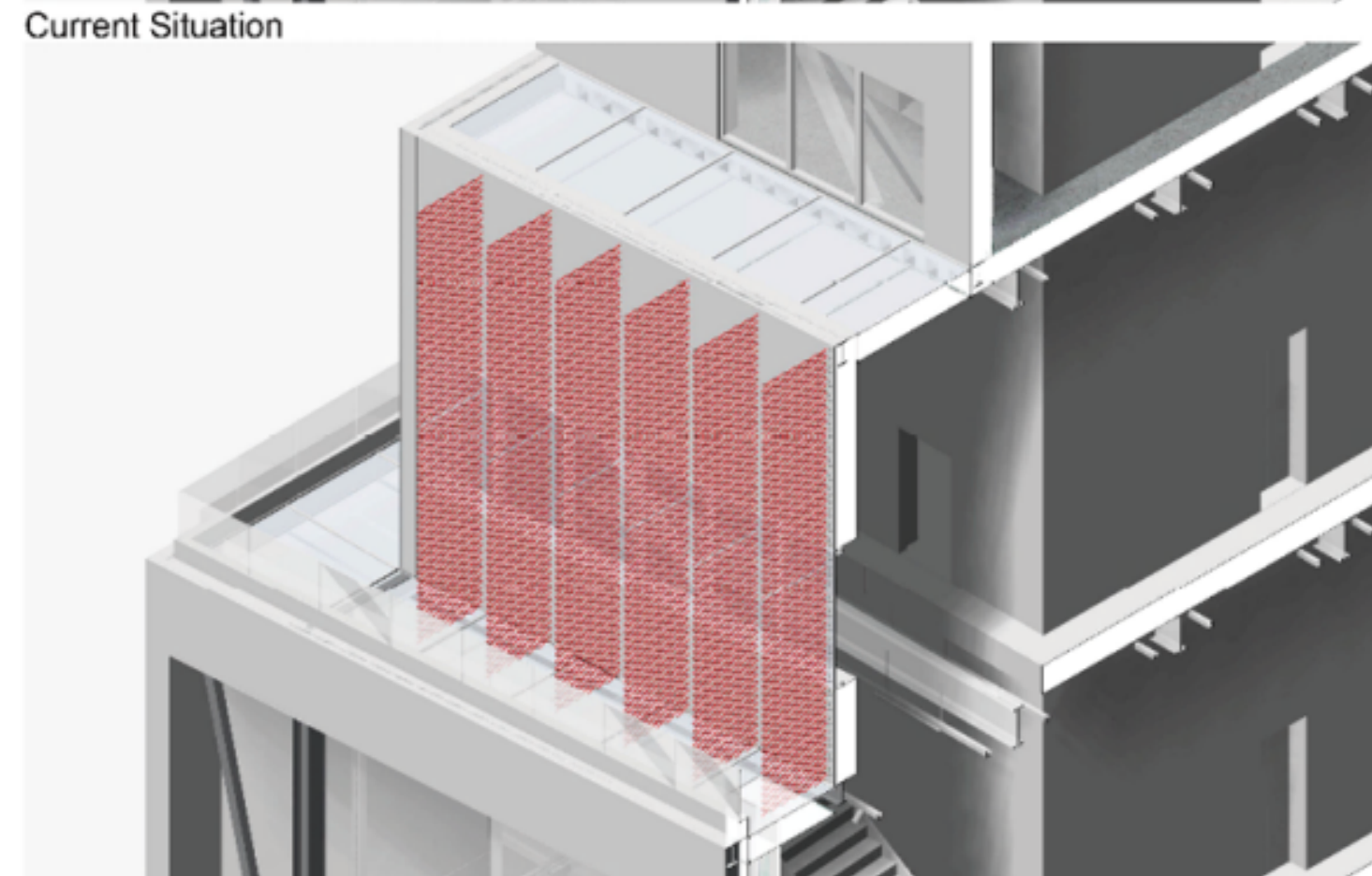
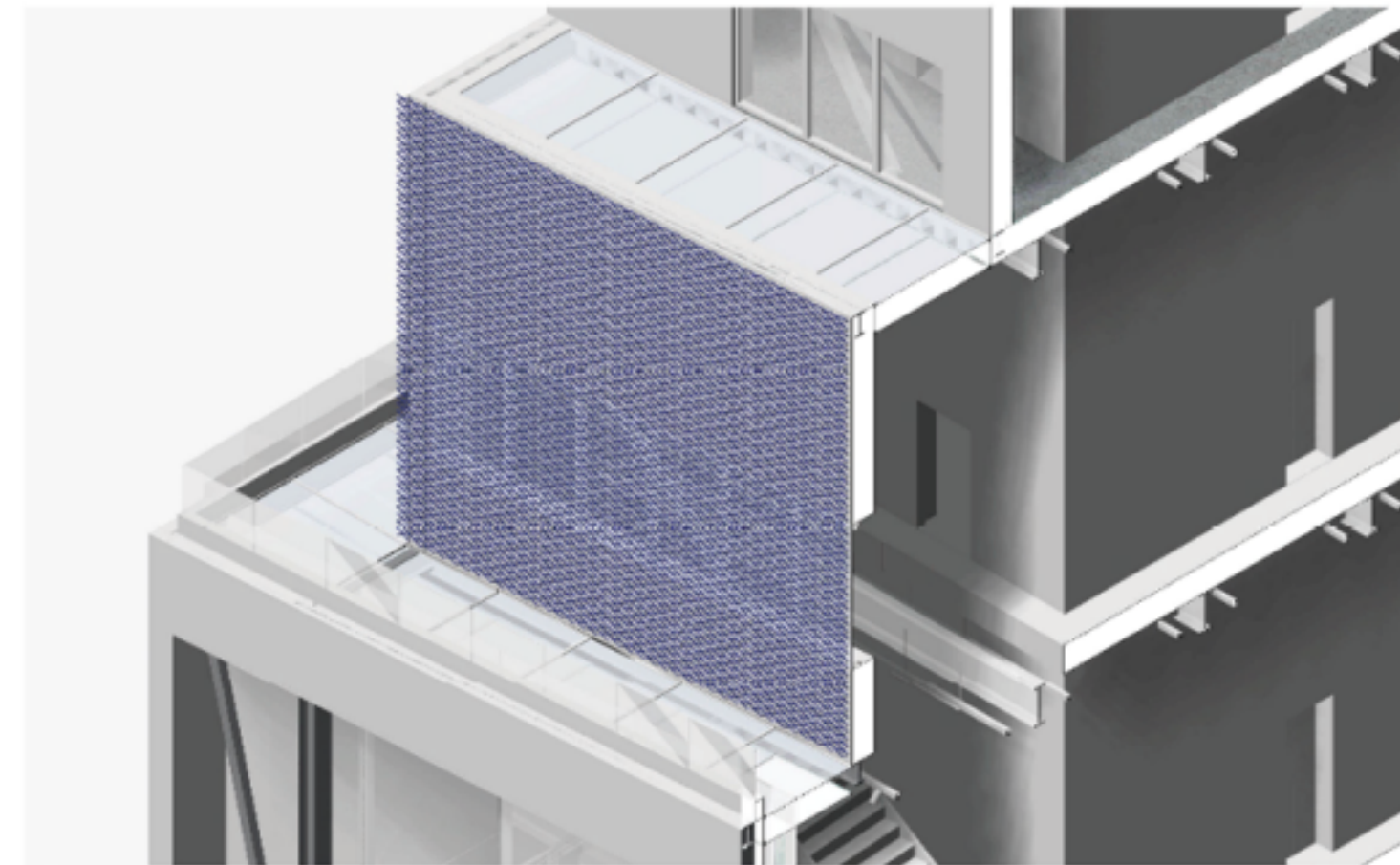
- Main Circulation
- Visitors
- Residents
- Staff

Trends based on Program Changes





THERMAL PERFORMANCE





YANG FEI

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2022-2023

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