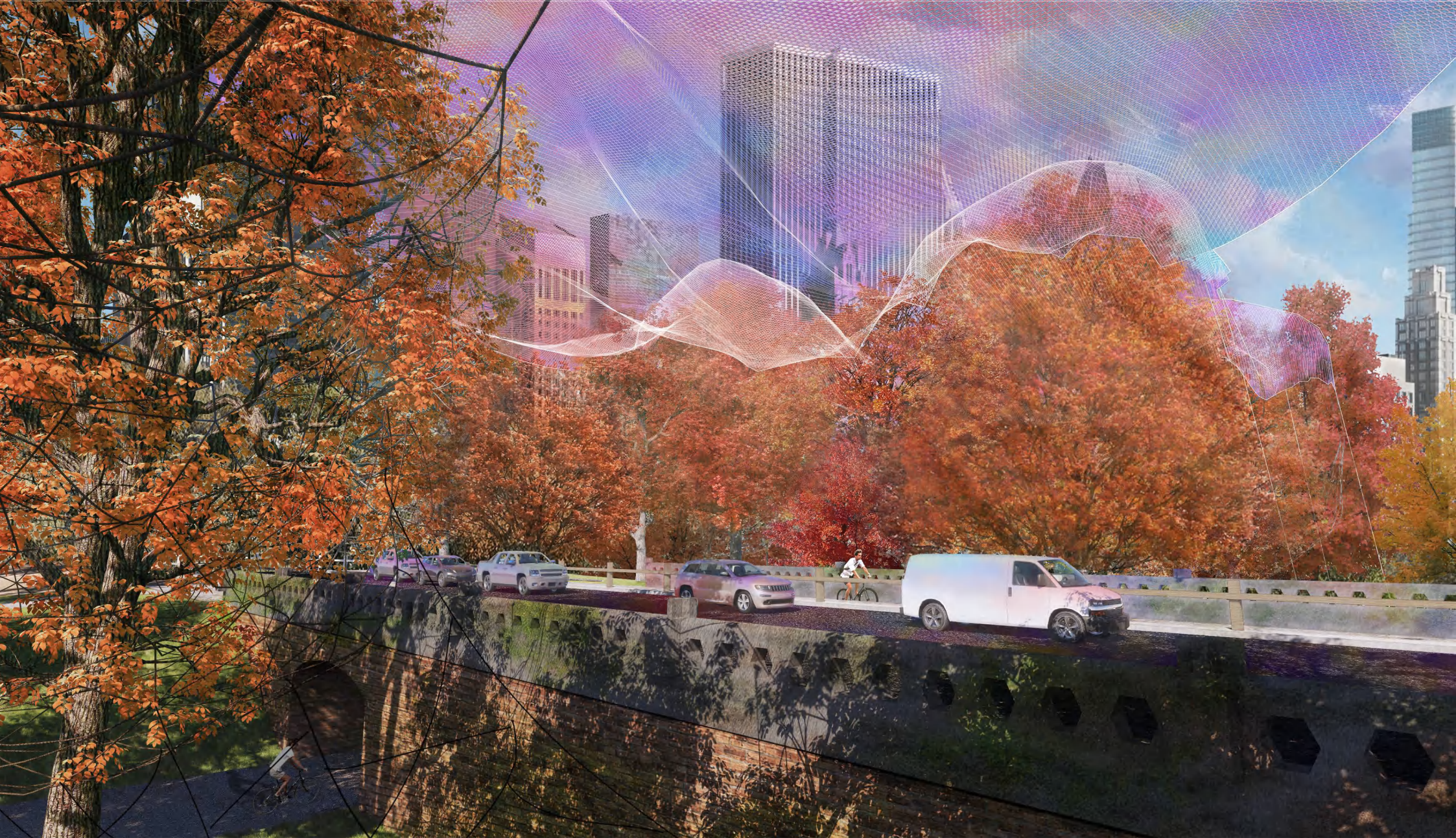


[Remodel]

Portfolio of **Chengxi Liu**
Selected works from **GSAPP**



Chengxi Liu
cl4278@columbia.edu
MS. AAD



01 Nurturing Ecosystem

Good or Bad Nature

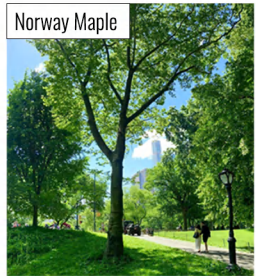
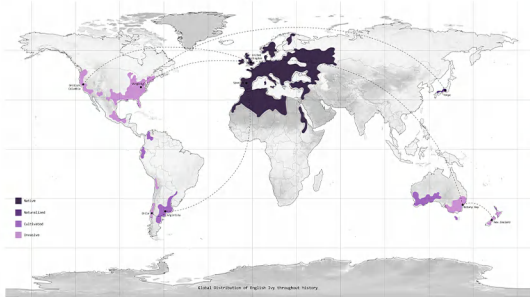
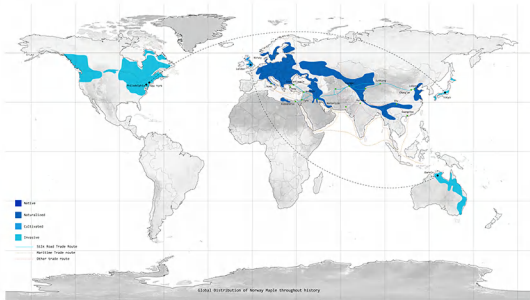
Group Work
Instructor: Nerea Calvillo
Partner: Justin Wan, Mars Zhang
Site: Central Park, New York
Summer 2022 Studio

This project, "Nature's Trojan Horse: Nurturing an ecosystem for nature within the embellishment of human perception," aims to allow Norway Maple and English Ivy to re-engage nature through their so-called "invasive properties." This is an intervention that functions just like a trojan horse, using its appearance as camouflage to achieve the plant's own goals of absorbing the central park's invisible air pollutant and nourishing an ecosystem friendly to many other species.

It expands as Chipmunks, the resident of the system, germinate the maples and Ivy through its excrement in Central Park. The central drive that penetrates the central park also acts as another factor in distributing the mesh that reveals pollution from the cars immediately below. Thus, the "Nature's Trojan Horse" that is "Invading" the central park uses the plant's embellishments as camouflage to pursue their needs to absorb pollutants and revitalize the ecosystem.



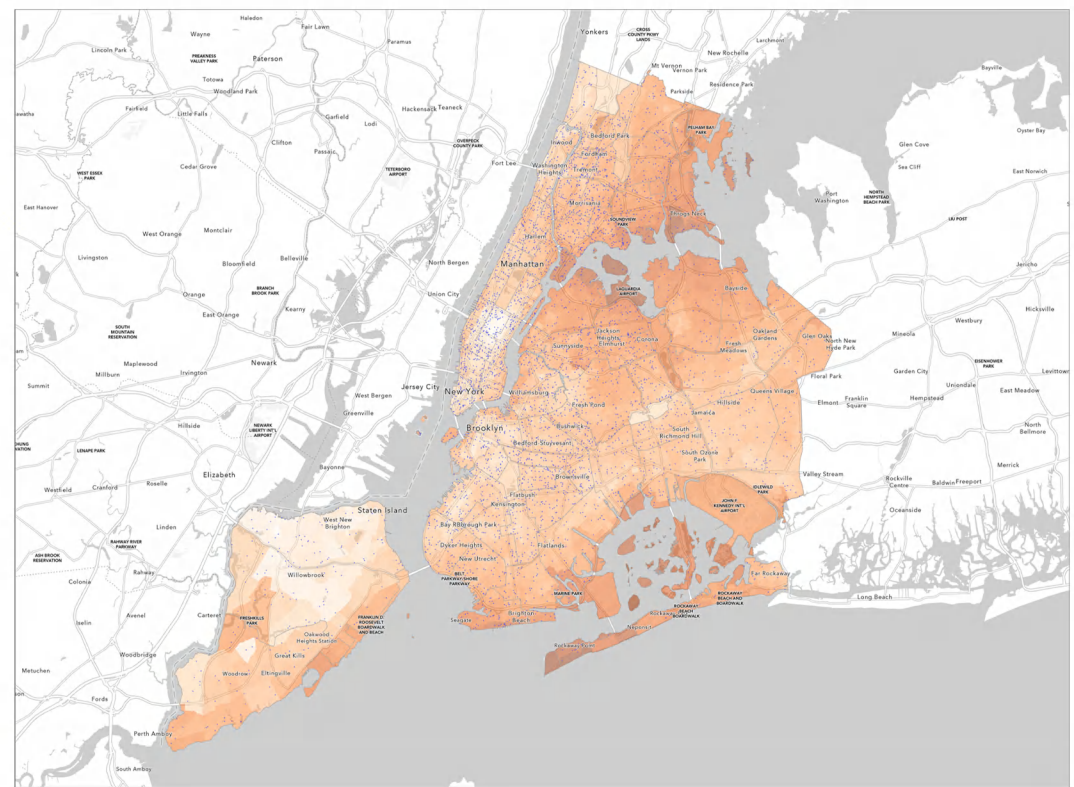
Mapping & Background of Norway Maple & English Ivy



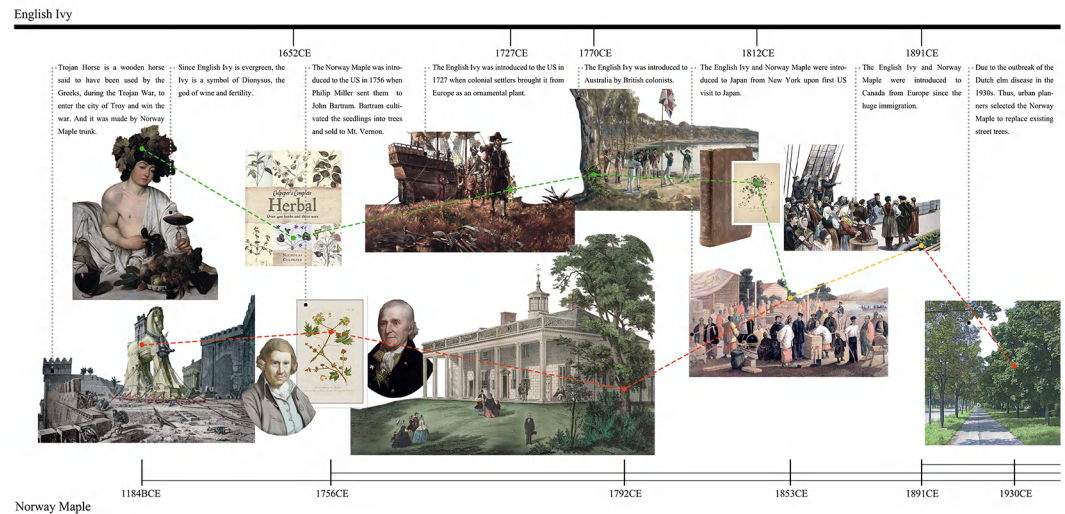
Line Drawing of Site



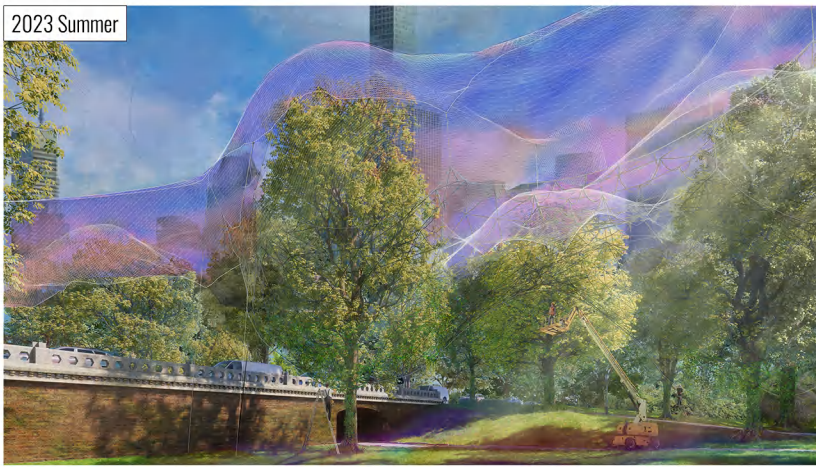
Air Pollution of New York City



Timeline of Norway Maple & English Ivy

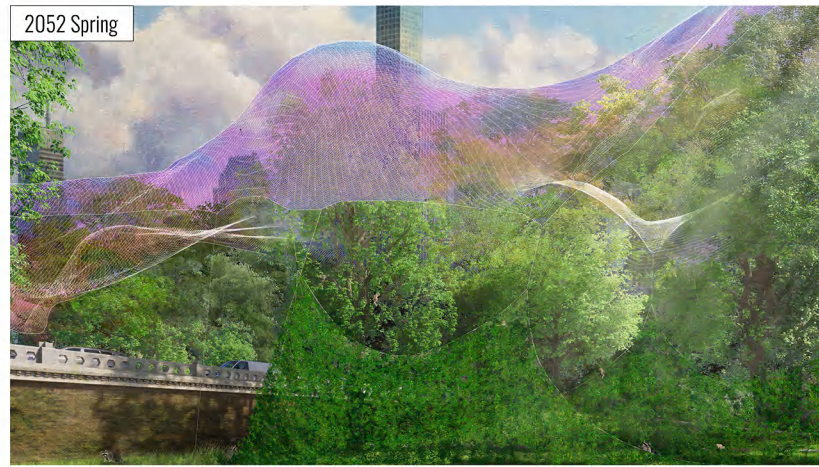


2023 Summer



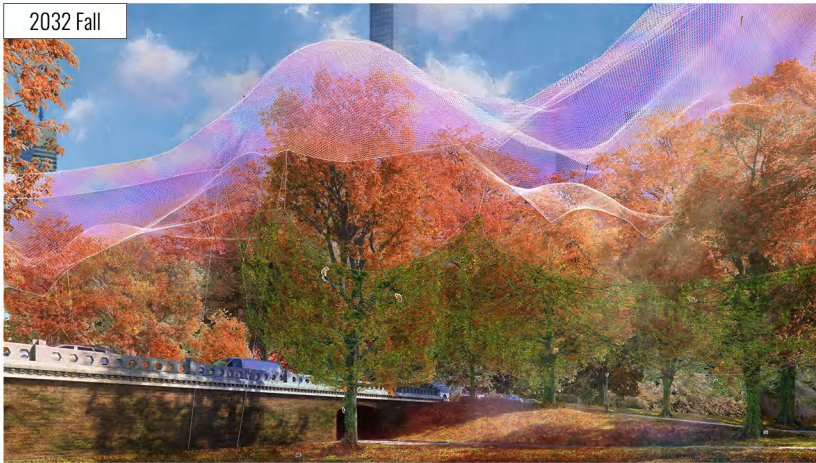
The project also morphs with the seasonal pollutant concentration differentiations. The fabric displays a color map with a blue tone during the Spring as the composition of the pollutants is, in general, more alkaline.

2052 Spring



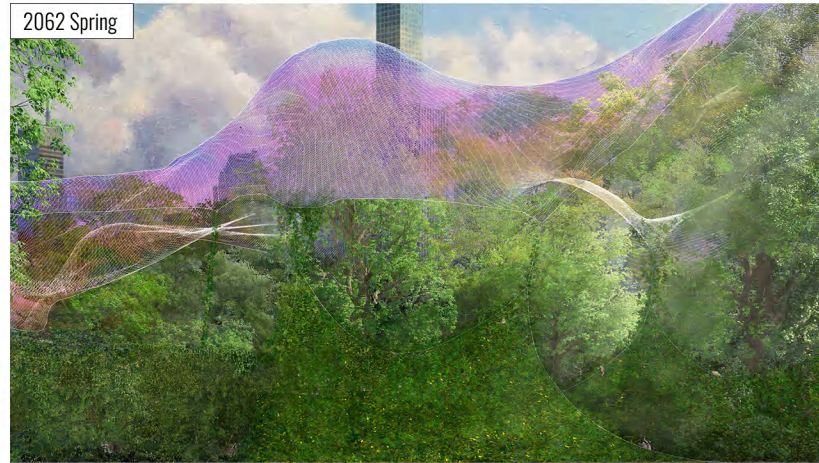
At the project's 30 years milestone, a substantial amount of the connections between the fabric and lattice will have broken off and transformed the existing landscape into shelter spaces for animals that benefit from this new environment.

2032 Fall



Whereas during the Fall, the pollutants consist of more acidic elements, thus showing a color more akin to red. As time progresses, more animals such as chipmunks will be attracted to the system.

2062 Spring



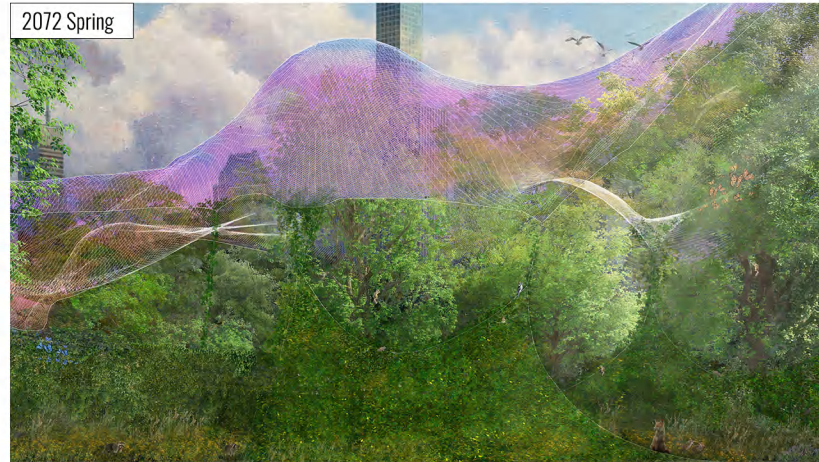
The shelter space, over time, attracts even more chipmunks, who would see the new protective landscape as a sanctuary. A place that provides both the food and protection they need.

2042 Winter



After 20 years, the English ivy will have flourished on the lattice and formed a VOCs filtering space. It creates a canopy of the ever-green English ivy that, even during the winter, would remain vibrant.

2072 Spring



The seeds from the Maple trees will provide food for the chipmunk, and the berries and flowers will provide food for Birds and chipmunks. The more animals invited to the system, the emergence of more of their corresponding predators, such as foxes and ferrets.

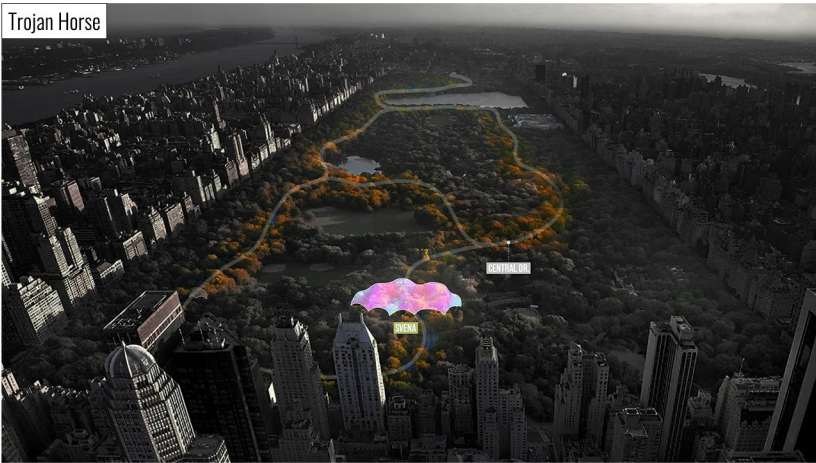


The "invasion" begins with the initial location.

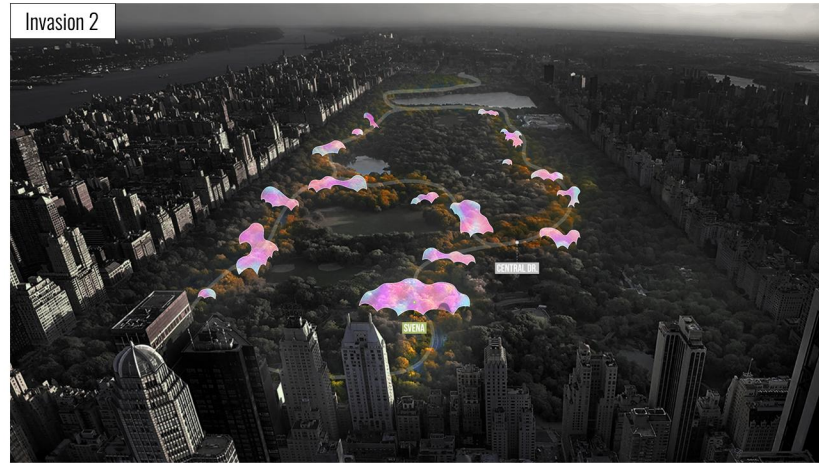
Nature's Trojan Horse

Nurturing an ecosystem for nature within the embellishment of human perception.

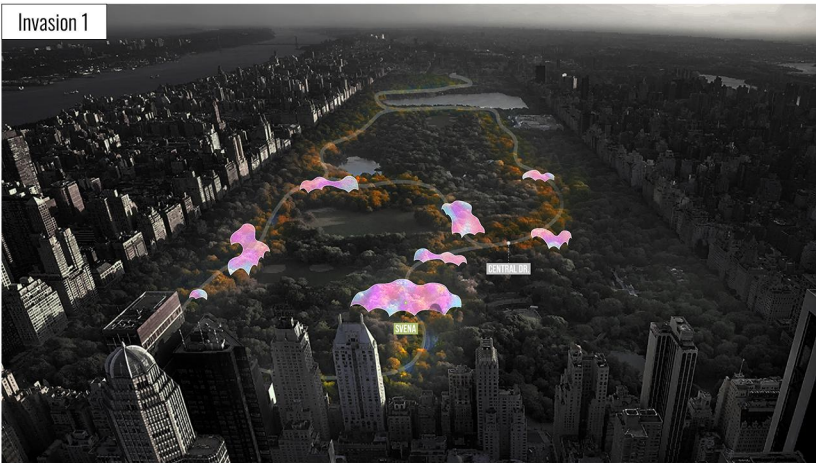
Invasion Process



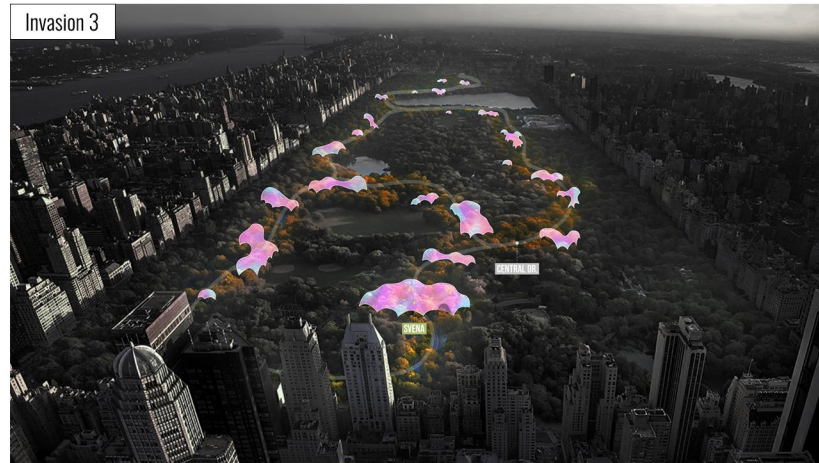
It expands as Chipmunks germinate the maples and Ivy through its excrement in Central Park. The central drive that penetrates the central park also acts as another factor to distribute the mesh that reveals pollution from the cars immediately.



the "Nature's Trojan Horse" "Invading" into the central park uses the plant's embellishments as camouflage to pursue their needs.



With the system's ability to absorb pollutants and form a new ecological landscape,



The need to absorb pollutants and revitalize the ecosystem.



02 Infla-ecture

Street as Cultural Space

Individual Work
Instructor: Jing Liu
The Street Studio
Site: Jackson Heights, New York
Fall 2022 Studio

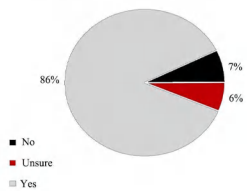
My project is Infla-ecture, street as cultural space. Now Streets are the Territory of cars and drivers. They are under utilized. But how could we make it better for cultural spaces? Through studying how existing open streets are transformative and addressing Jackson Heights residents' demands for cultural activities, the project uses inflatables as a new medium to activate spaces along the street. Thus, comparing to the gallery and theater, street could be more active if placing some objects for people using.

So, when I give artists frames or stages and create the vibe for them, people will be attracted by them and stop to watch their works. Inflatables are very light and easily to move them. And it could be placed on the street very quick for the temporary events. My concept is using the inflatables for different activities and place them on the street for creating a better cultural space. Based on these, Rope knotting and a design dictionary help local residents create their own urban spaces.

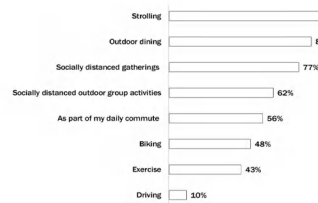


Survey Result about Jackson Heights Open Street

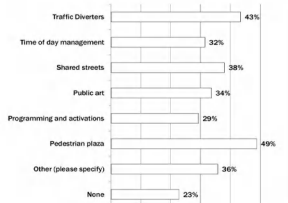
Would you like to see permanent changes to make prospect Heights Open Streets pedestrian and/or cycling priority corridors?



How do you want to use Prospect Heights Open Streets in future?



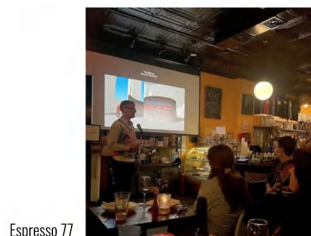
Which public space tool kit items would you like to see implemented?



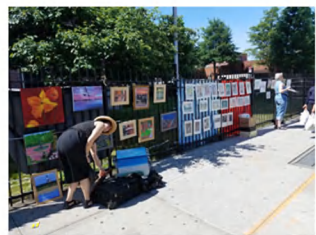
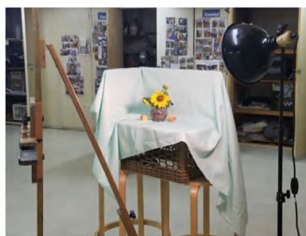
Activities in Jackson Heights



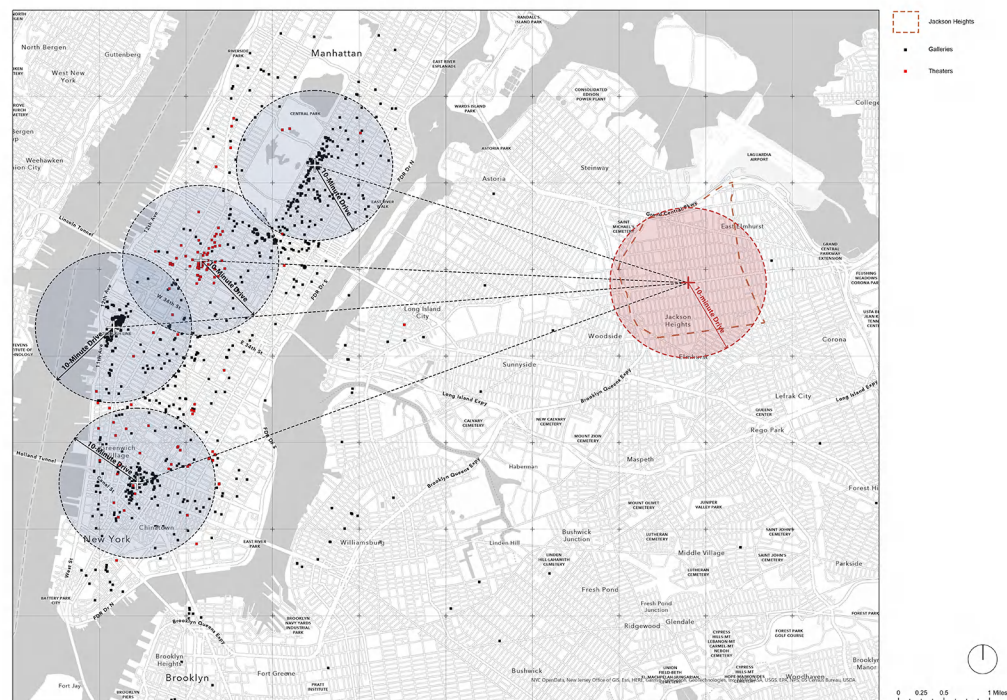
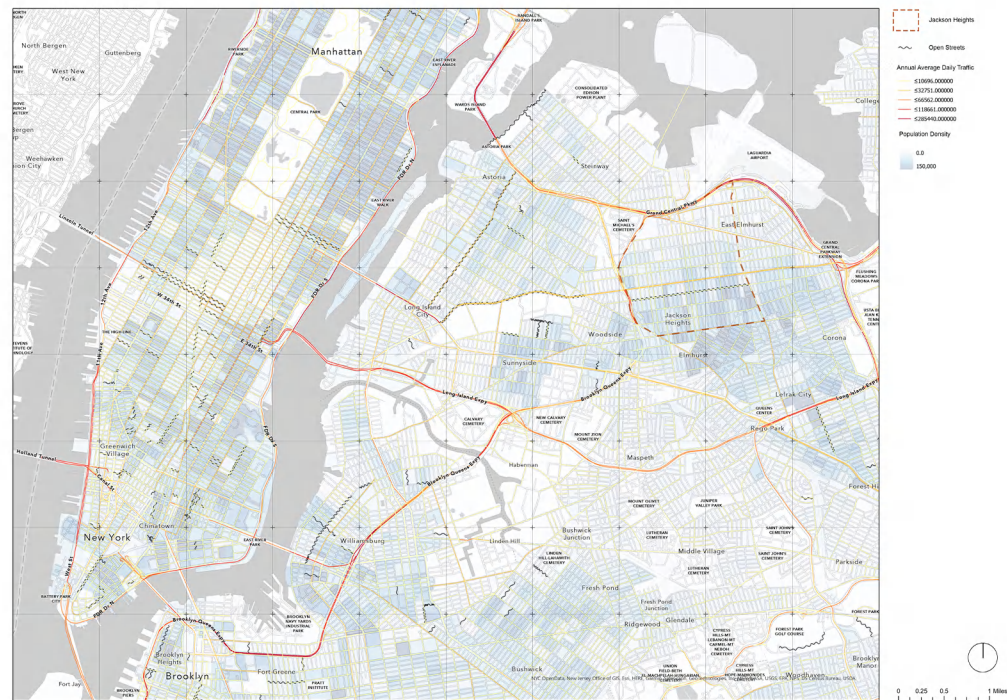
The Deficiency of Cultural Spaces



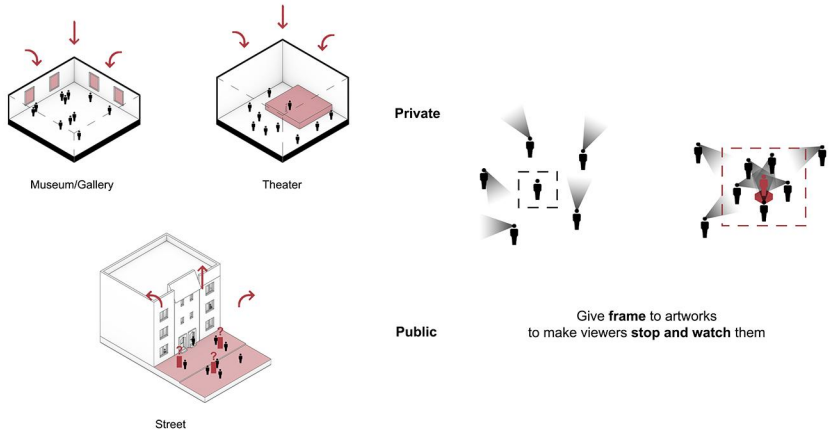
Espresso 77



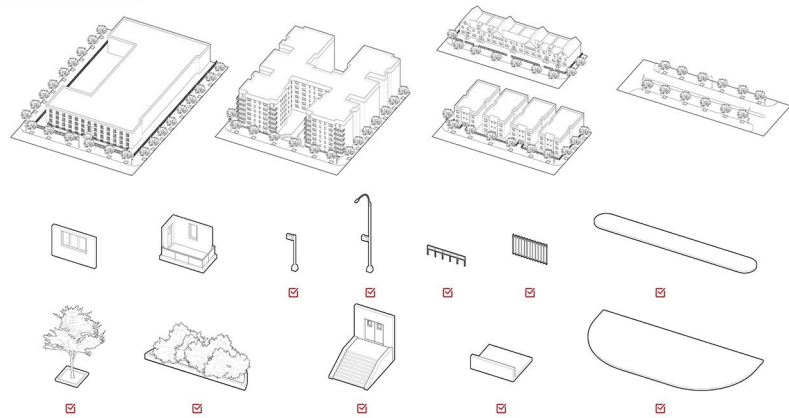
Efficiency & Distance, Potentials of Open Streets



De-Construct the Relation of Art & Viewers



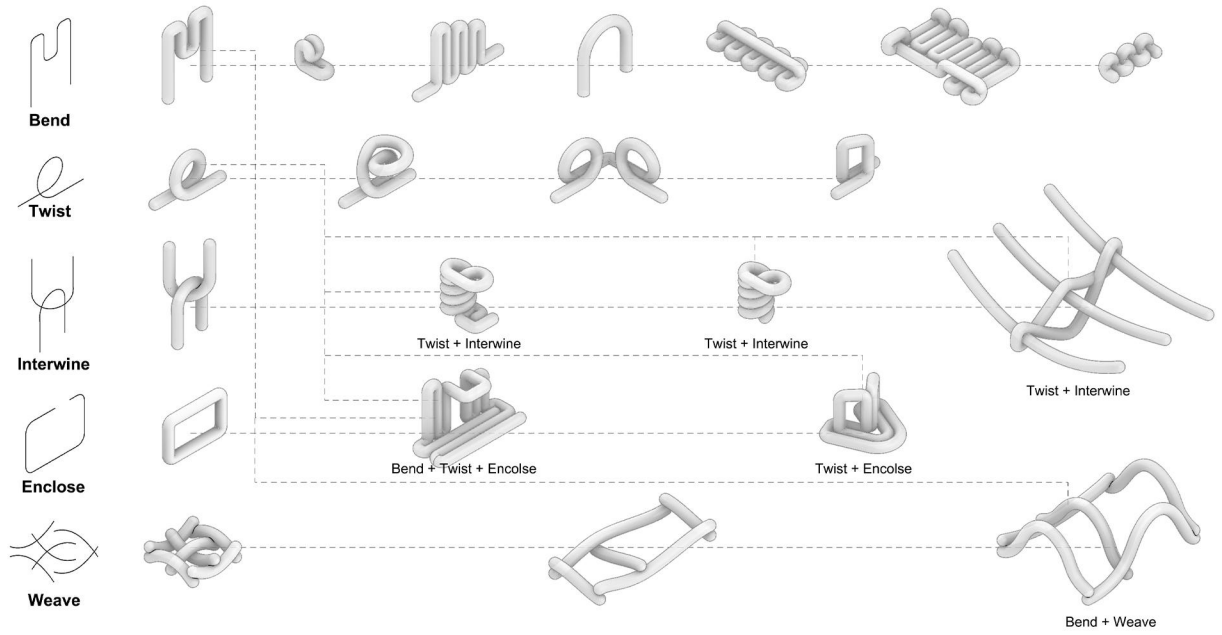
Street Typology



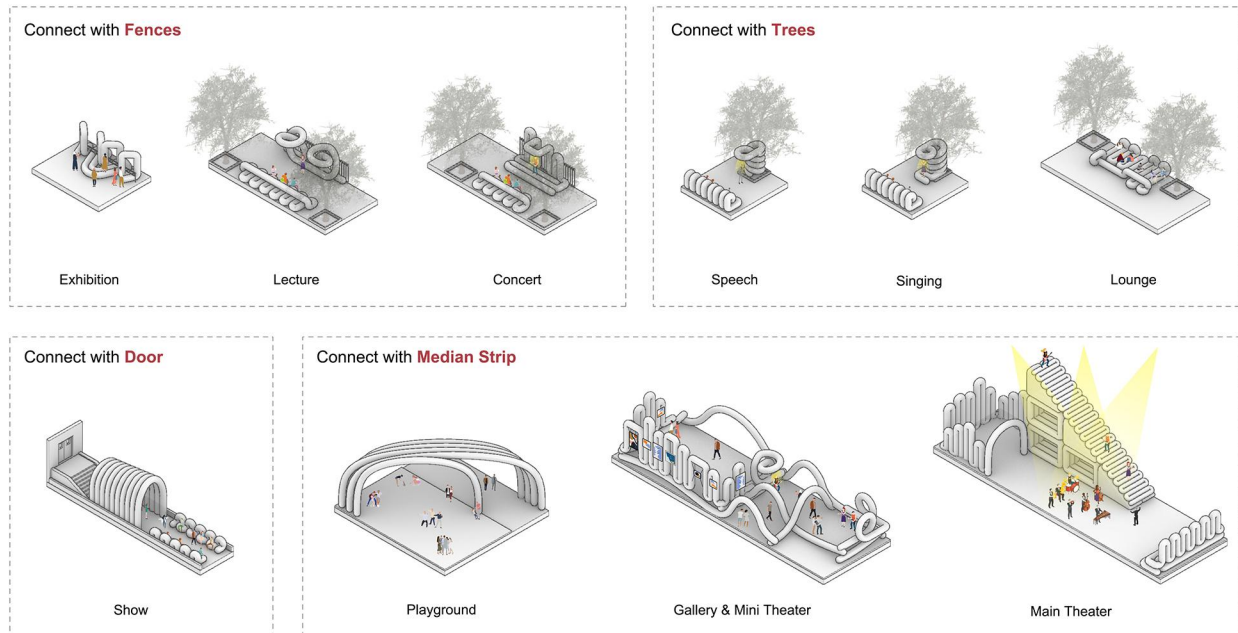
Concept & Activities Analysis



Dictionary — Line to Volume



Dictionary — Space Using



Street View



Enter the site from the west side of the street, the median strip will be broadened for the mini theater, gallery, playground and main theater. On the sidewalk, it will be some small exhibition, lecture space and so on in the dictionary connect with fences, trees.

Sidewalk



And on the sidewalk, many of inflatable will intertwine to the existing street objects and hold some small events.

Stage

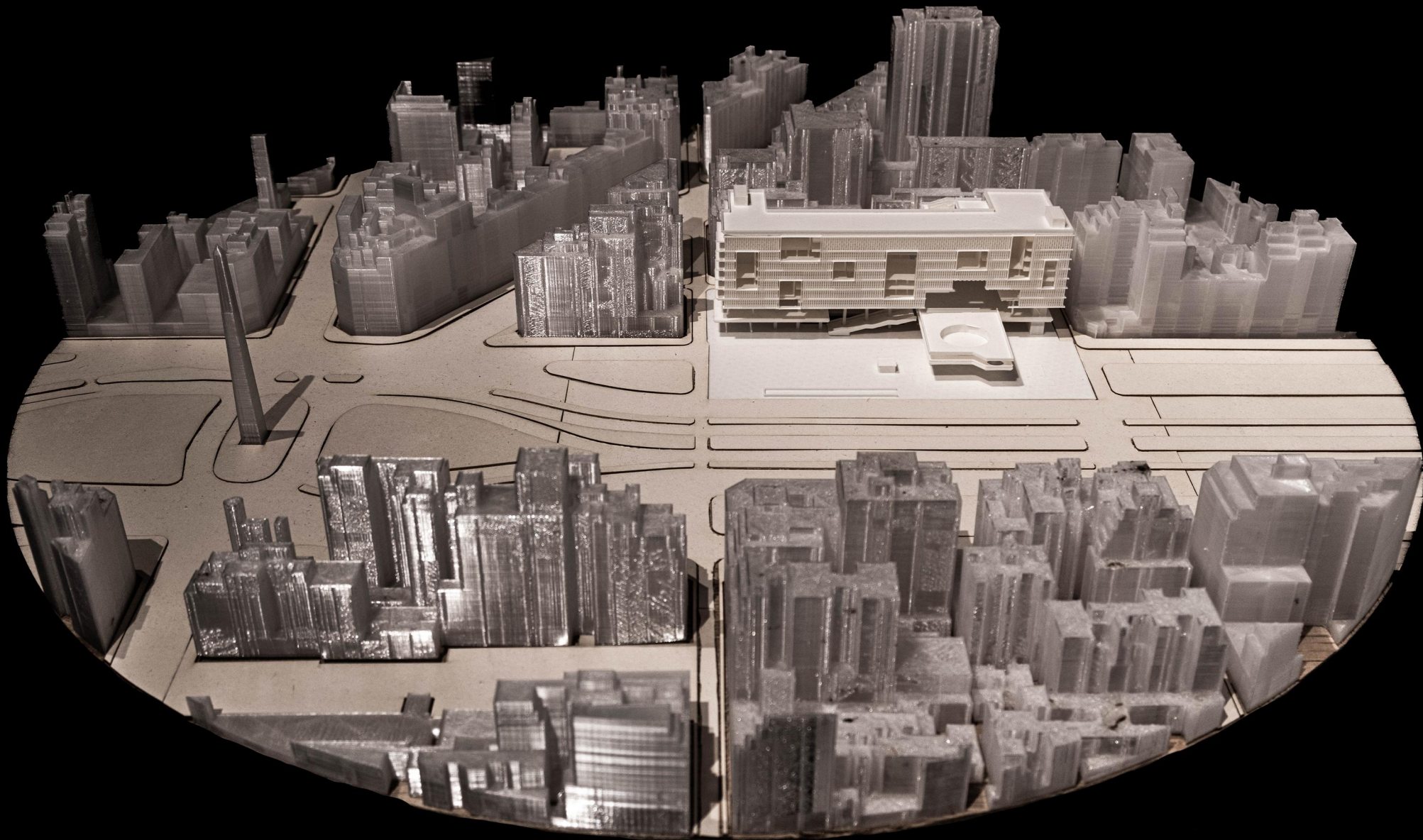


And this is the main stage, on the top is more like the theater ceiling to give this space a vibe for performers and audience.

Playground



This view is on the middle of the street. Under the apartment will hold a small fashion show for the young residents. And in the middle of the median strip will be a playground for students and residents.



03 Argentina Industrial Park

Industrial Upgrading-Oriented Complex

Group Work
Instructor: Galia Solomonoff
Partner: Zichuan Mu
Site: Jackson Heights, Buenos Aires
Spring 2023 Studio

At present, Argentina's agriculture and husbandry have a low using efficiency of the raw materials and a poor recycling system that cannot support the new technologies get involved. So our project system is like the diagram on the right side. After getting the raw materials from farm, they will head to the planting lab firstly to develop new technologies like precision agriculture, researchers gathering data of crop and soil conditions, and remote and optimize farms' planting and harvesting.

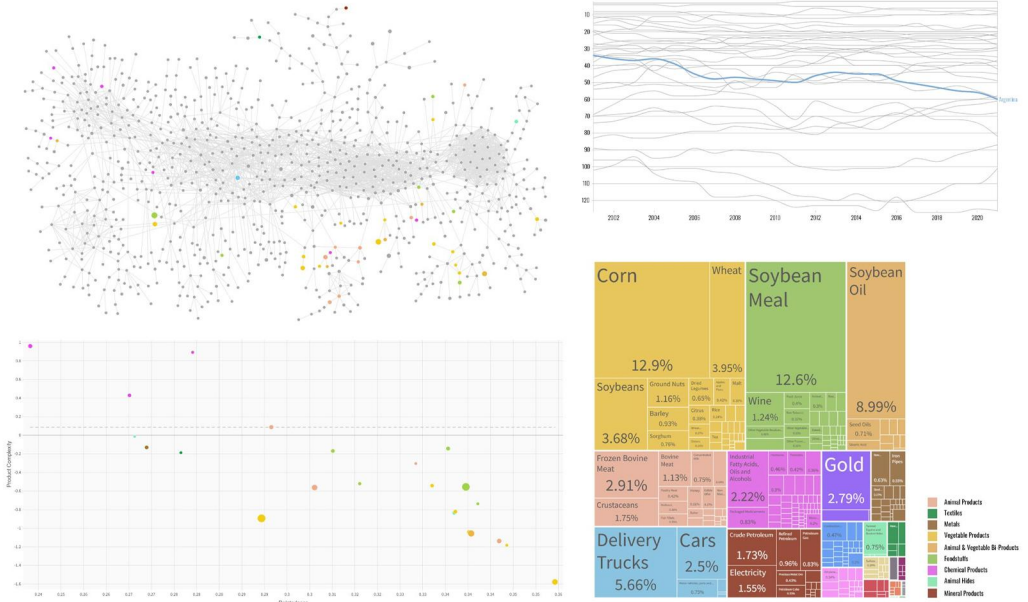
And then the raw materials also can be transport to material lab for studying how to use them to manufacture the bio-material for building elements, which could reform the building and produce the new facades. Besides, the residue of agriculture materials will made to fodder for husbandry, and the sustainable livestock management lab will focus on how to reduce waste and improve efficiency like how to feeding precisely and improve animal growth.



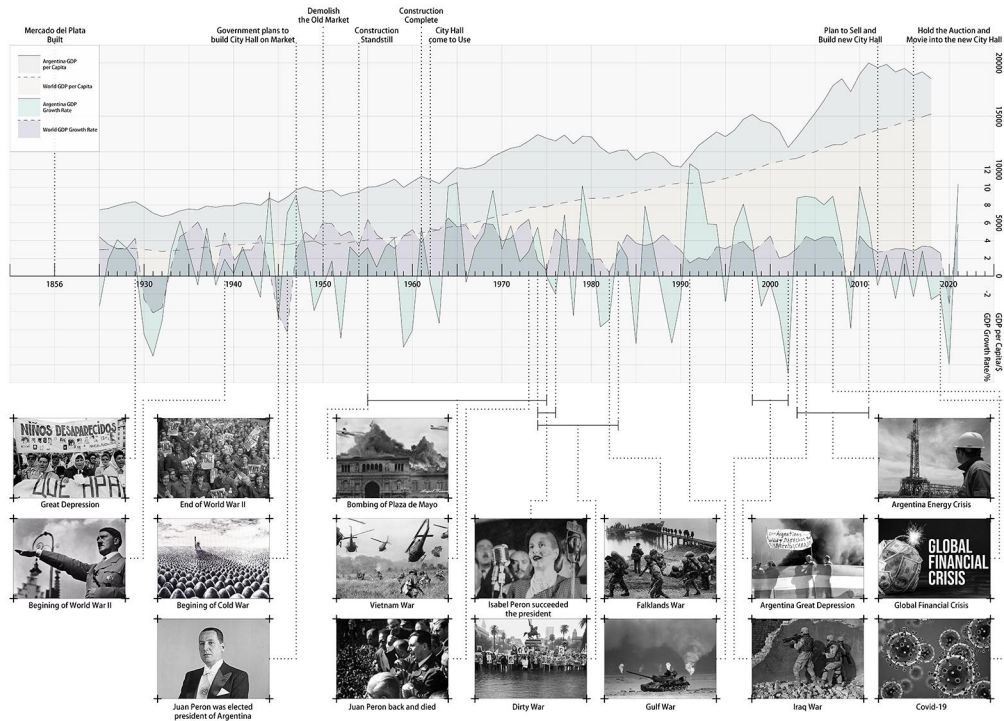
Argentina Economic Issue



Industrial Upgrading



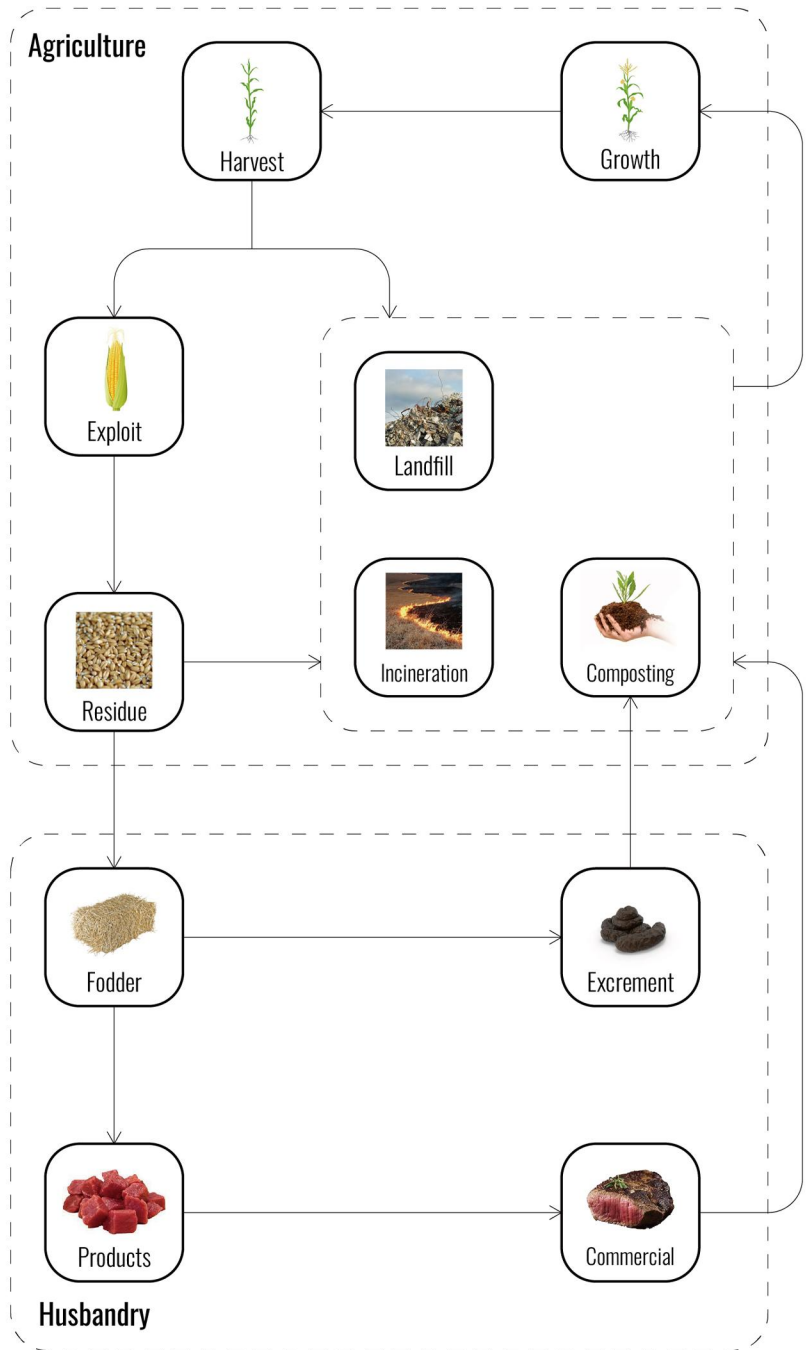
GDP & Building History & Economy, Politics



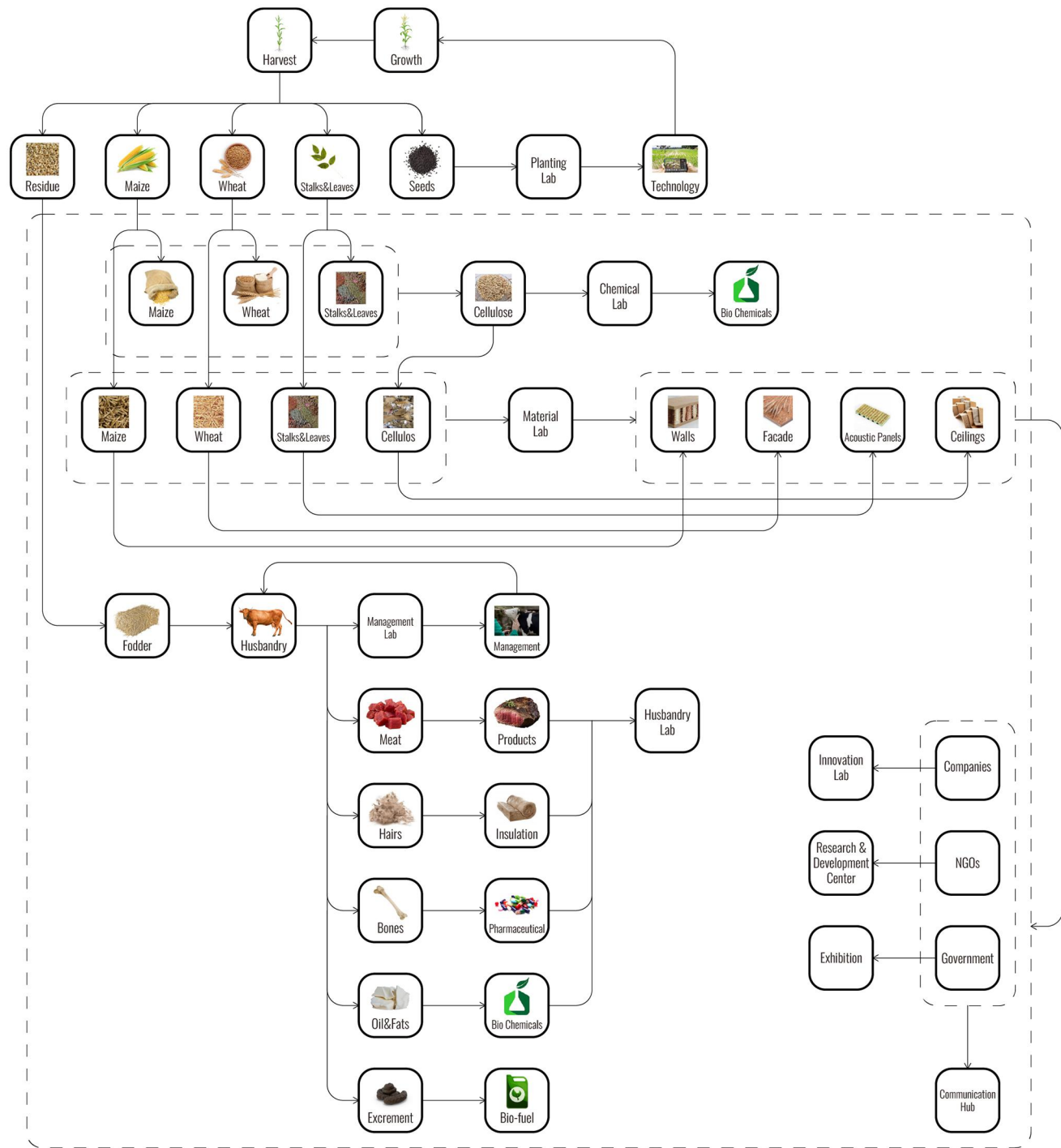
Location of Companies, NGOs, Governments, Farms and Transportations

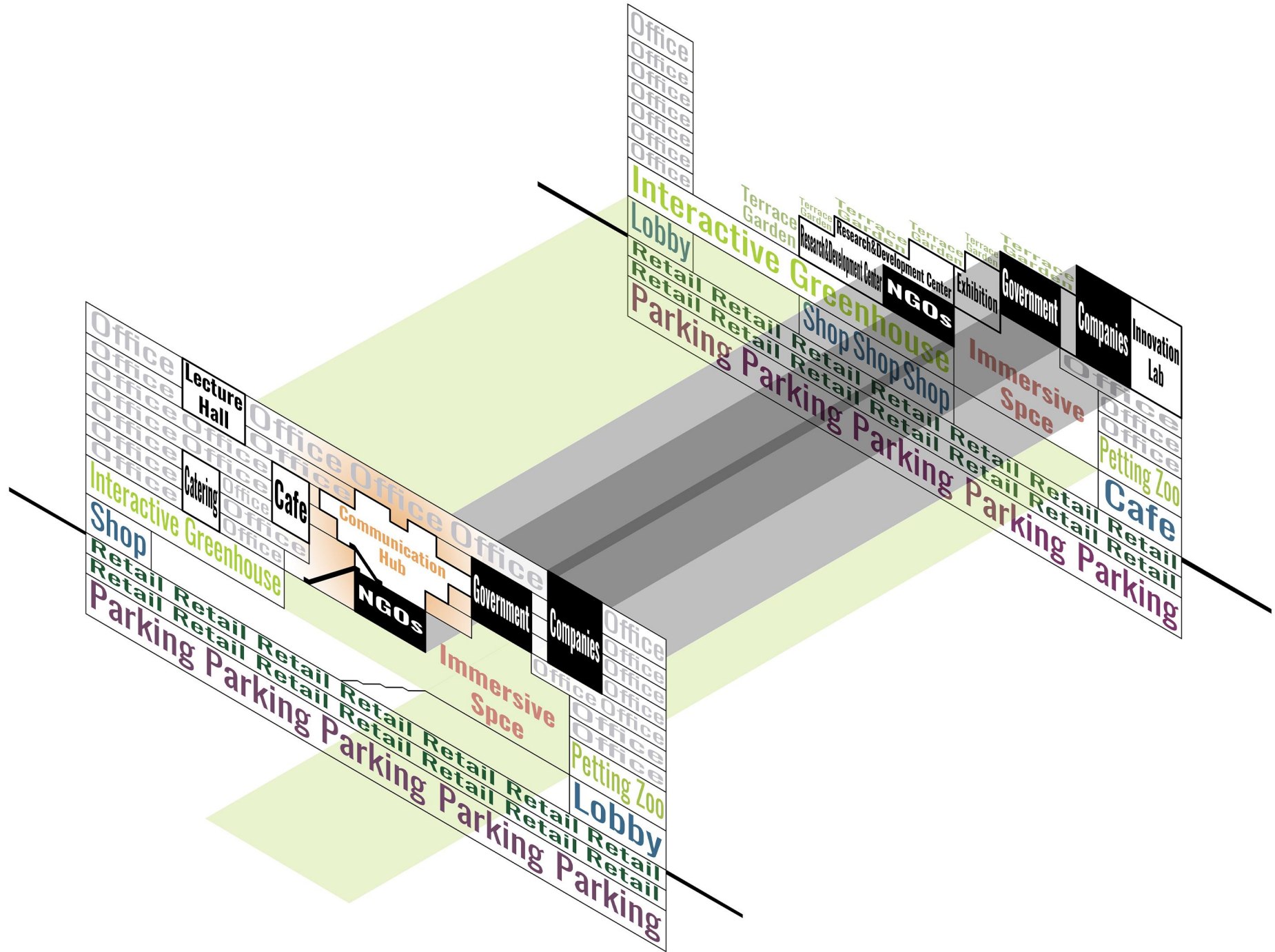


Current System

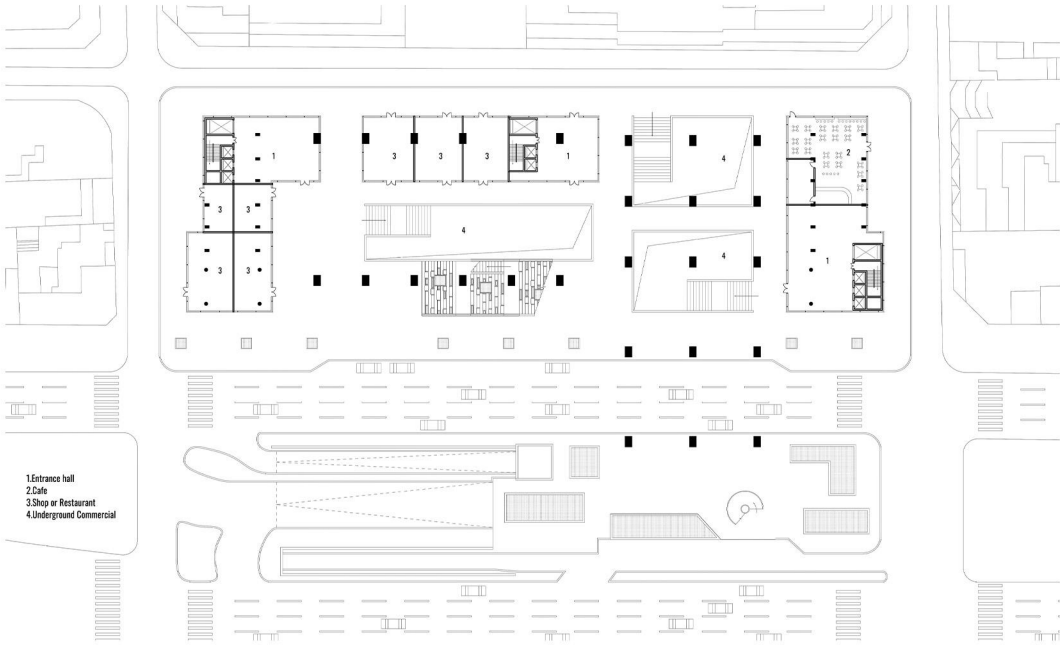


Project System

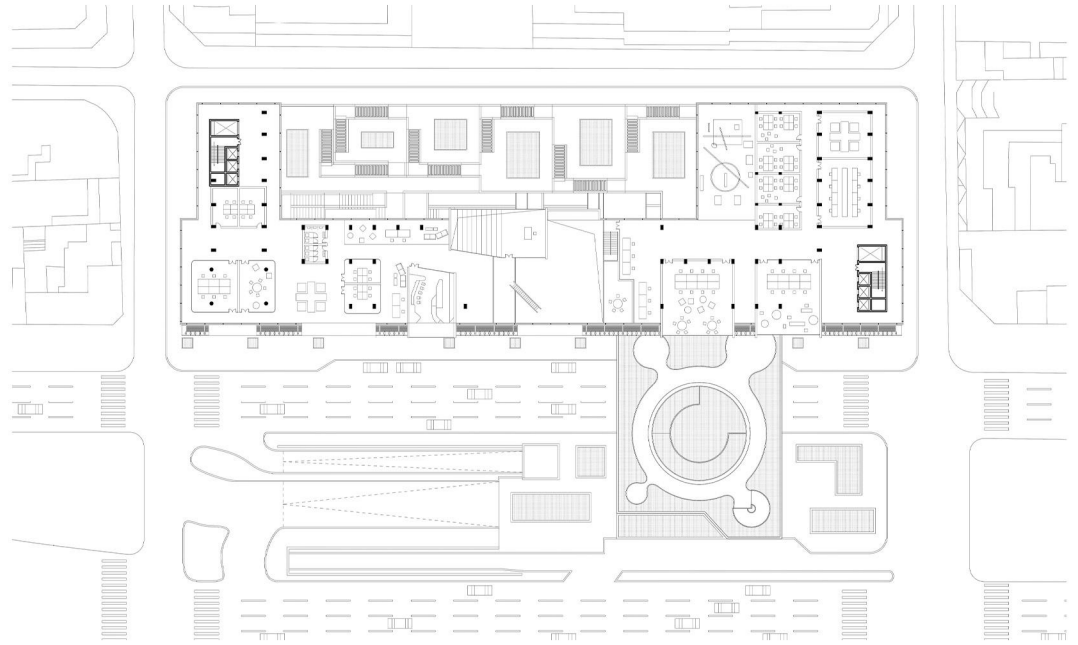




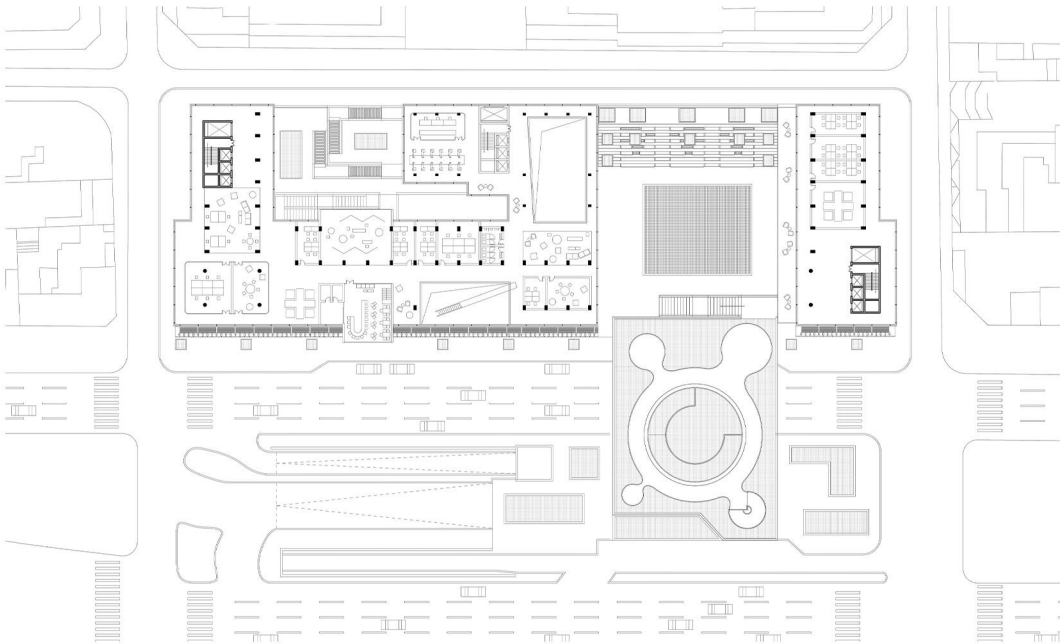
Groundfloor Plan



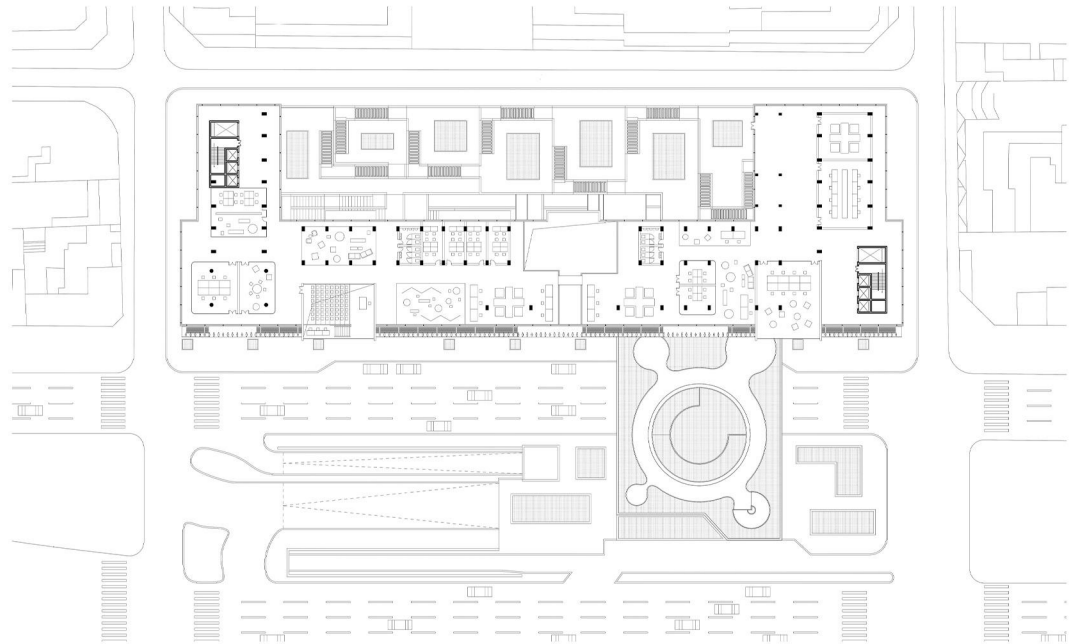
7F Plan



4F Plan



9F Plan





The project will mainly for 4 parts, office for government, NGOs and companies; park platform and terrace garden; public commercial space; and parking.



This is the upper part of the park, and has a beautiful view. You can see the obelisco stay there. People can interact with animals very well. There are many cute alpacas here.



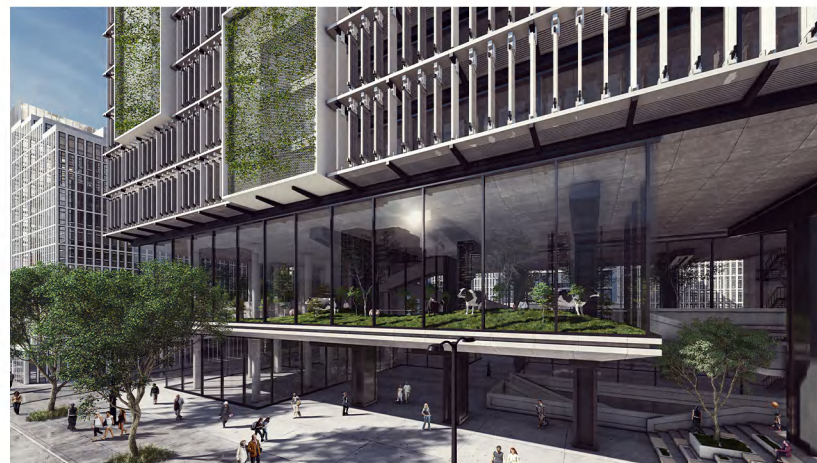
This is a large landscape step. Since the original columns were very dense, we removed several original columns to keep the space open and reinforced the retained columns.



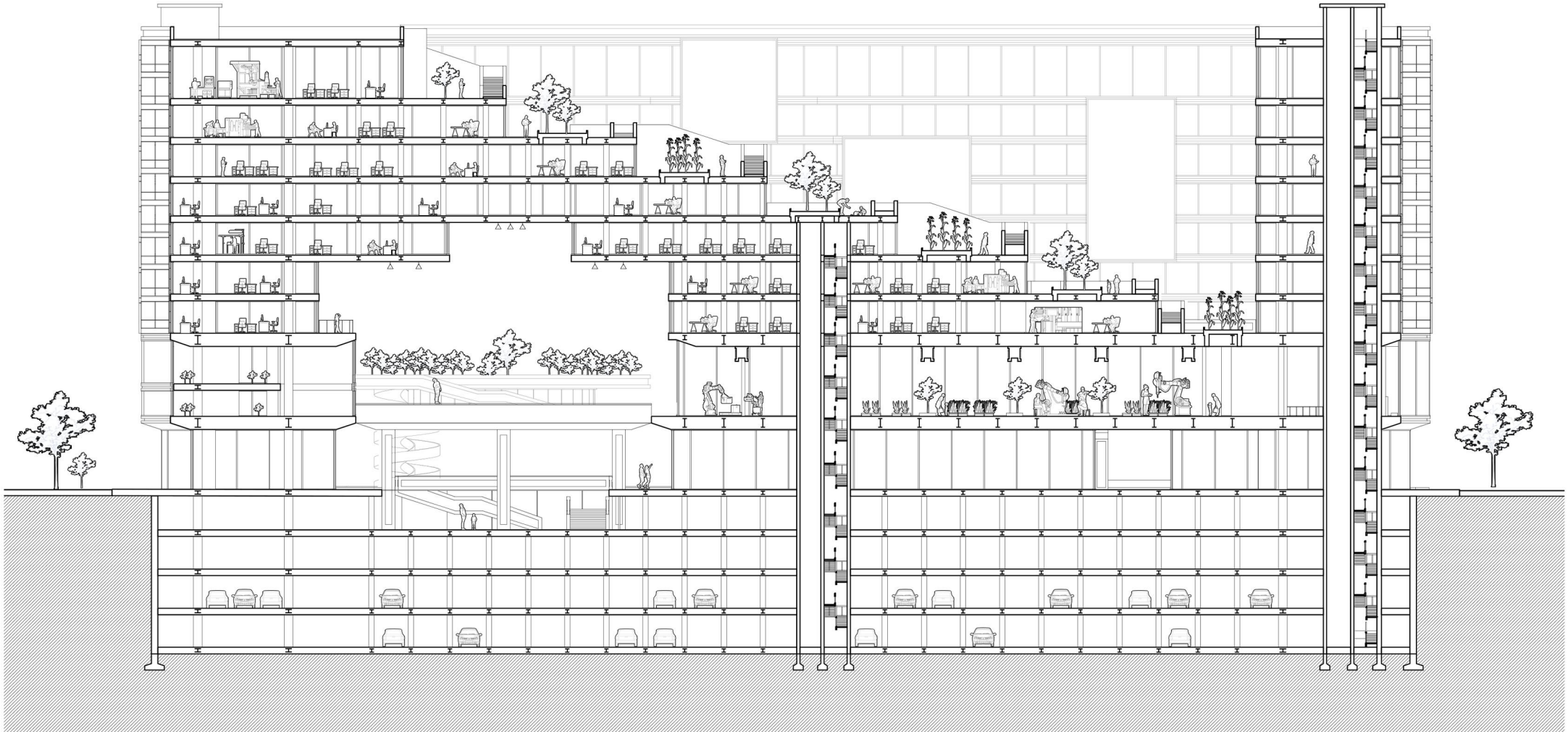
This is the valley on the second floor. The roof at this part is open for sunlight. At the left hand is the planting space, which is called precision agriculture. These robotic arms can quickly and accurately cultivate crops and promote agricultural automation. The crops produced can be used for study and research.



This is the upper part of the park, and has a beautiful view. You can see the obelisco stay there. People can interact with animals very well. There are many cute alpacas here.

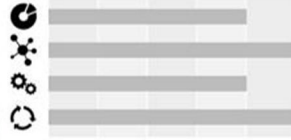


The planting space, which is called precision agriculture. These robotic arms can quickly and accurately cultivate crops and promote agricultural automation. The crops produced can be used for study and research.



Material Analysis

Cellulose



- Technical Properties**
- Flexible shape
 - High stiffness to weight ratio
 - Non-toxic



Application in construction
Internal use, wall panels and ceiling



Resource availability
From both urban and rural areas sources



Manufacturing process
Requires laboratory



Recyclability & remanufacturing potential
Recyclable, no additives

Maize



- Technical Properties**
- High strength
 - Good insulation
 - Low cost



Application in construction
Internal use, lightweight walls, furniture, doors



Resource availability
Despite being a global resource corn grows only in summer



Manufacturing process
Some hand operations required

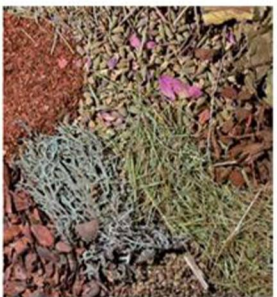


Recyclability & remanufacturing potential
Biodegradable, but hard to divide the core from the bec

Seeds, Stalks & Leaves



- Technical Properties**
- Low flammability
 - Flexible system with stiff surface
 - Largely available with low cost



Application in construction
Decorative finishes for walls and furniture and flexible acoustic panels.



Resource availability
Leafs, seeds and stalks of any plants

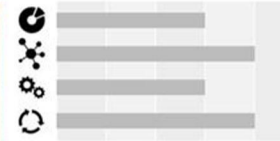


Manufacturing process
Industrial press moulds



Recyclability & remanufacturing potential
Use of eco-friendly binders

Wheat



- Technical Properties**
- High stiffness
 - Flexible dimensions
 - Resistant to water



Application in construction
Envelope and internal walls, acoustic insulation



Resource availability
Largely available on the Earth North Hemisphere

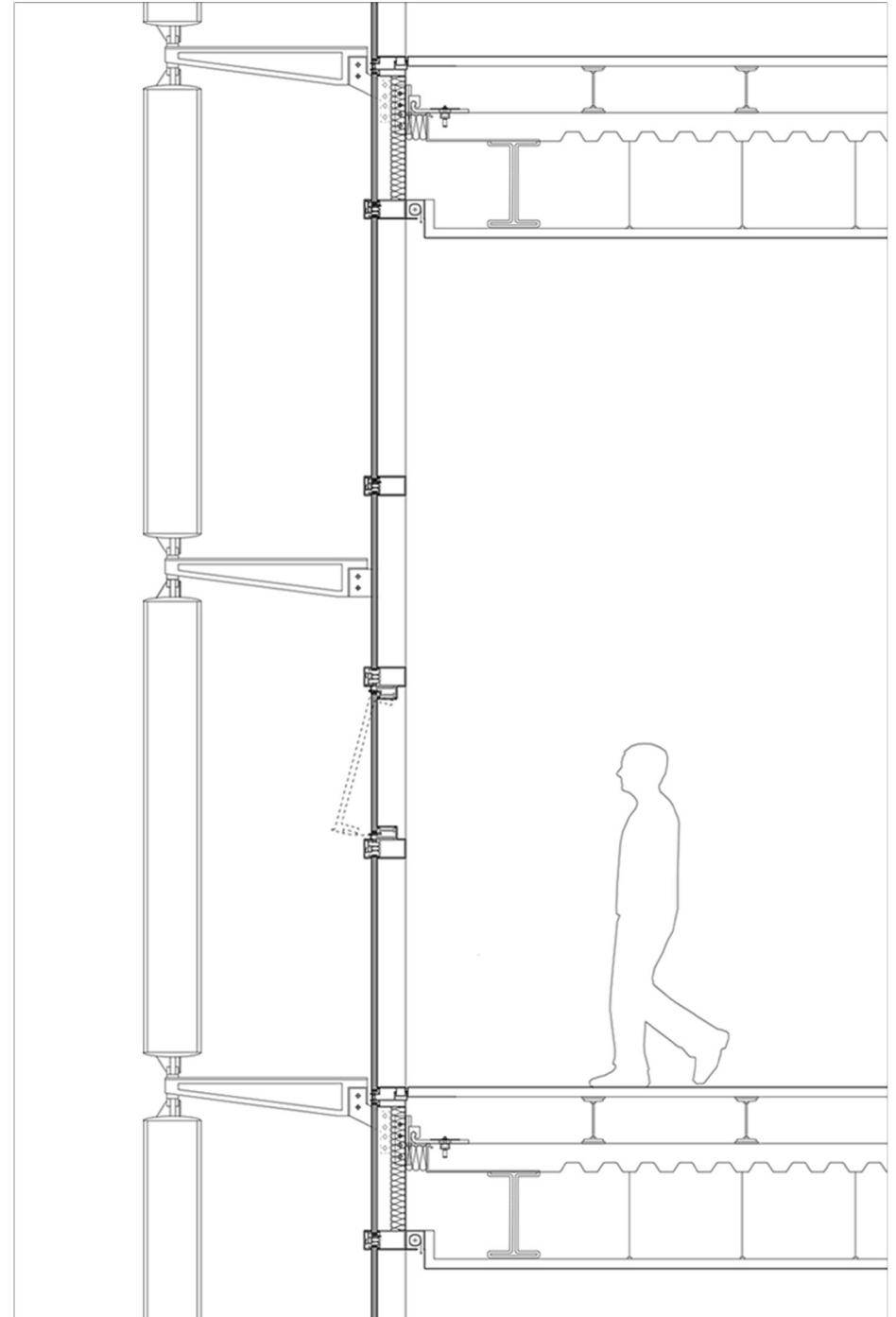


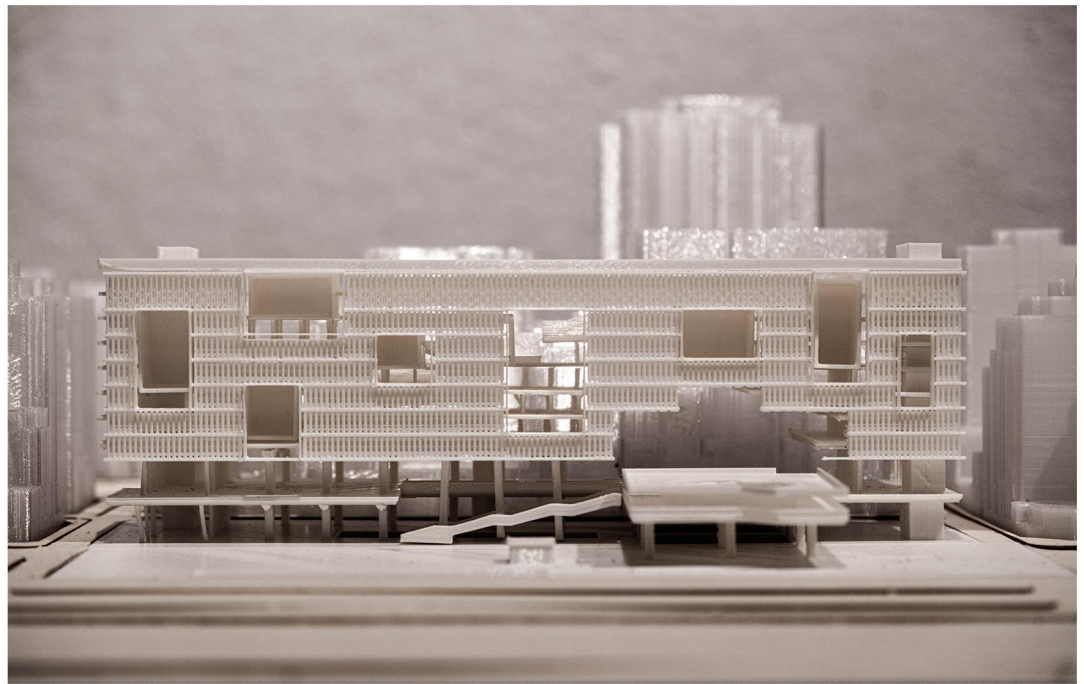
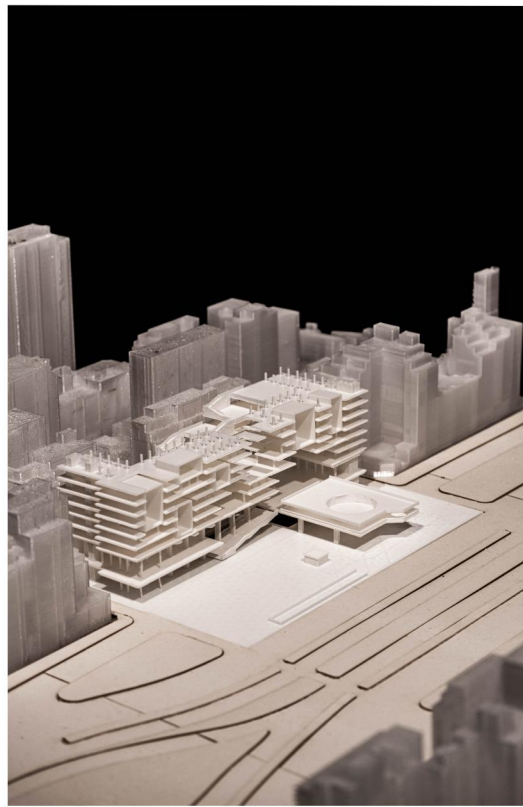
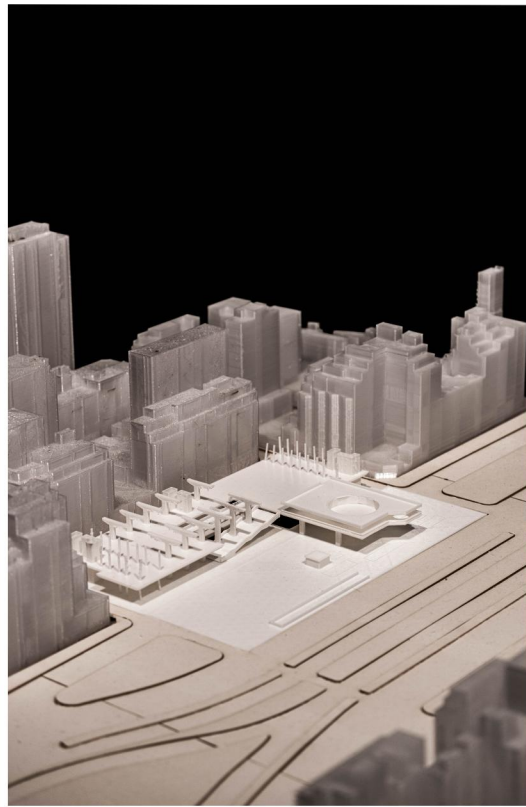
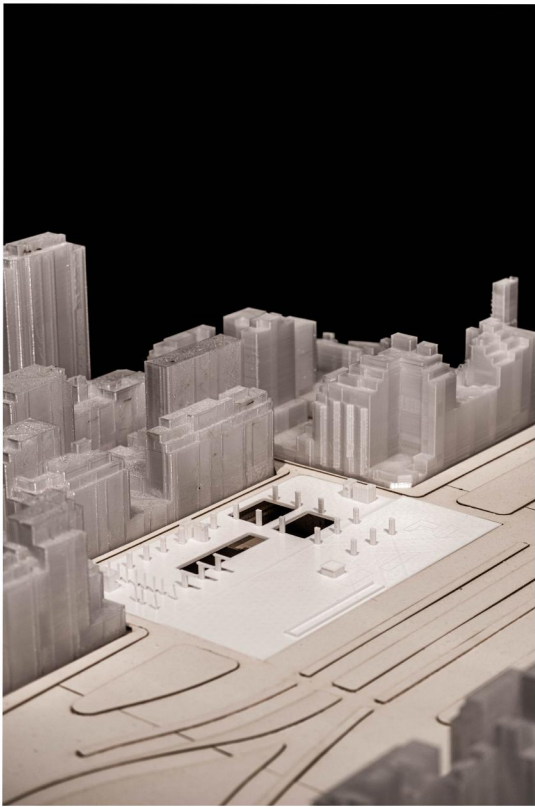
Manufacturing process
Continuously extruded



Recyclability & remanufacturing potential
Biodegradable, fertilizer

Façade Detail

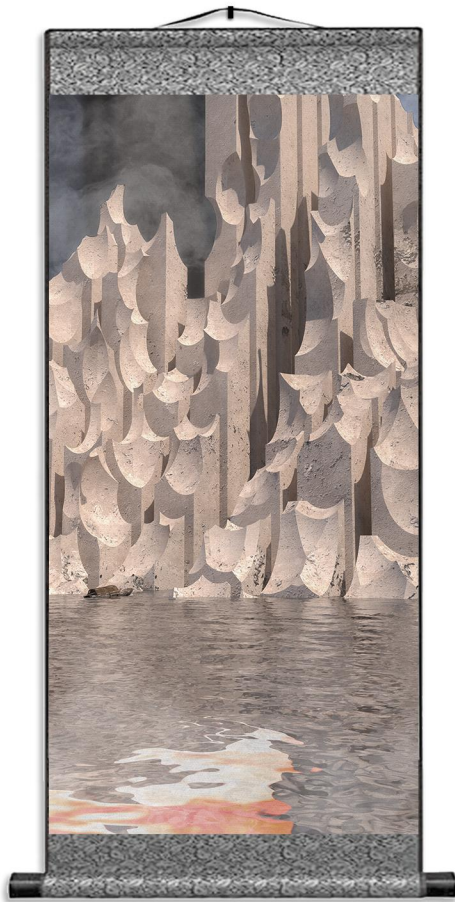
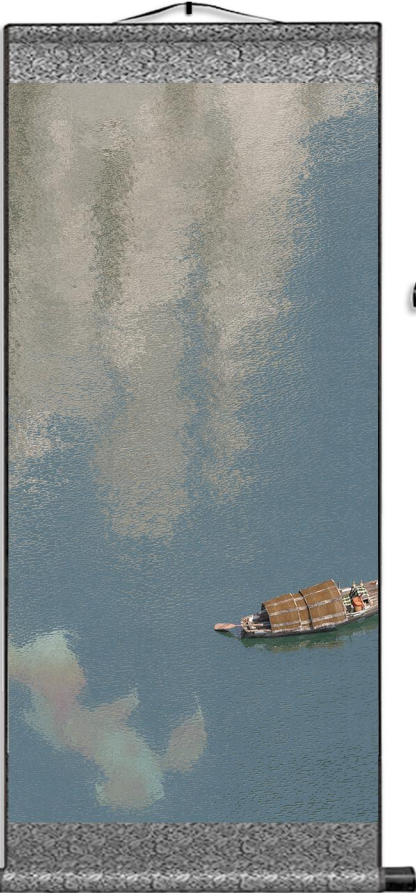




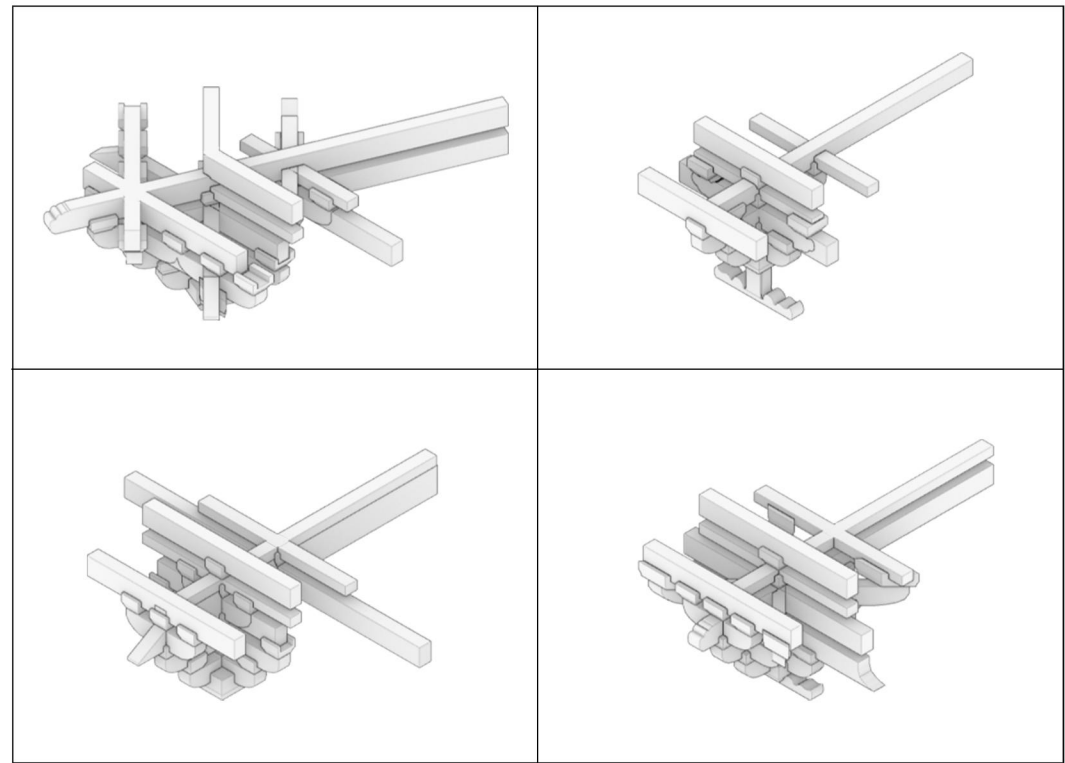
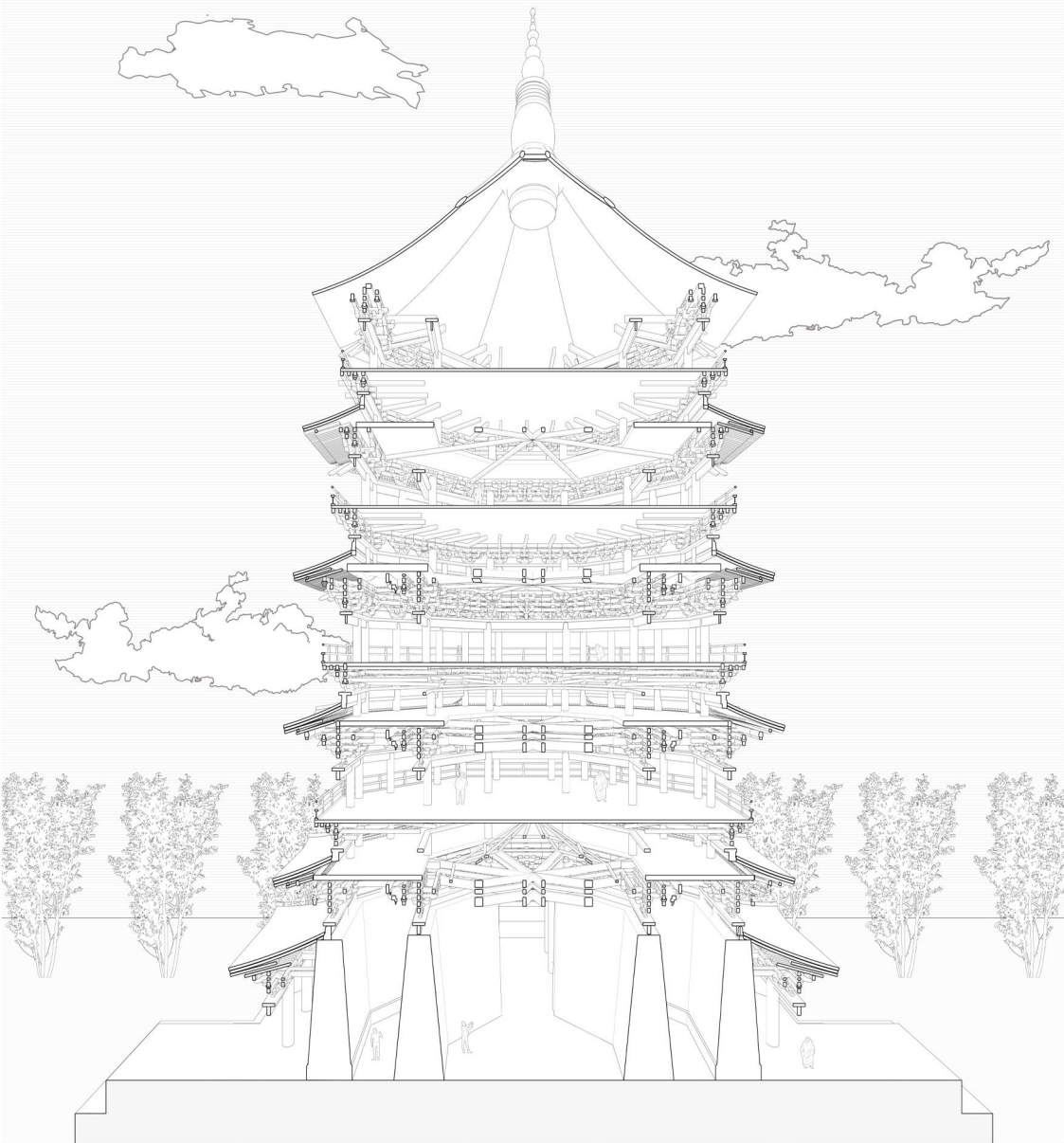


05 Chinese Zen Virtual Space Design

Group Work
Instructor: Phillip Crupi
Partner: Runxin Fu, Weiheng Zhao, Chaoqun Zhang
Fall 2022 Techniques of Ultrareal



Through the study of traditional Chinese painting and ancient Chinese philosophy, we hope to achieve the "small see big" in this project, that is, in a part of an object can get the clues of the whole. We illustrate this idea by constructing a potted plant in a traditional Chinese garden. Through the zoom perspective step by step, originally thought it was a boat drifting in the rockery, finally found that this is just a small potted garden.



06 Pagoda of Fogong Temple Traditional Chinese Structure Research

Individual Work
Instructor: Marc Tsurumaki
Spatial Research
Spring 2023 Seminar of Section

My project the Pagoda of Fogong Temple. And I choose the middle part to cut the building, cause in the middle part it can show the most structure in the drawing, and the most interesting part of the tower is the structure. After getting some technical drawings I made the 3d model on the left. And for these 3 plans, the first one is between the 2 floors and their mainly function is hold the roof and connect the next structure layer, between the column and the upper structure, this tower have double layer of structure to hold the building. And for the second plan, they support the upper floor slab, above the first part.