

# Portfolio

GSAPP MSAUD '22  
Changbin Kim

# Content

01 Belize Water Rangers	6–25
02 Atlanta University DeCenter	26–39
03 Upcycled City	40–49
04 Hyperloop in Urban Fabric	50–61
05 The Eunma Apartment Complex Renewal	62–69
06 Metabolism Architecture for Japanese Turmoils	70–77
07 Displayced	78–87

## 01 Belize Water Rangers

Ridge / Reef / Roof watershed management in Seine Bight



Water Rangers in Seine Bight, Belize

GSAPP MSAUD 2022 Urban Design Studio III

**Instructor:** Kate Orff, Geeta Mehta, Adriana Chavez,  
Thad Pawlowski, and Lorena Bello Gomez

**Type:** Urban Design

**Location:** Seine Bight, Belize

**Group Work** with Minsung Kim, Howie Jiang, and Shirley Chen

This project started with the Mesoamerica scale, we looked at key issues of mangroves and coral reefs loss. Pollution, as an example, has reduced the coral coverage from 60% in areas to 10%. We then zoomed into the Belize and its 33 watersheds, especially mango creek, where our site resides, and focusing deeper on the end of the watershed as it is the location with the most human, industrial, and tourist activities.

Belize is known its natural bio-riches. But natural resources are being exploited and rapidly deteriorating. Currently, ICZM's mission is to empower communities to avoid future conflicts from development.

CZMAI's current coastal development strategy can be further supported with the watershed management – the added layer of a development strategy in the context of the watershed rather than current district boundaries. The new mission transforms to Integrated Watershed / Coastal Zone Management.

Our overall design strategies are to monitor and filter the current watershed and to mitigate for future threats of our site. The Water Ranger is a resident-based program developed to facilitate, manage and operate how their community develop in the watershed. Made up by experts the residents within the watershed and Belize



## Seine Bight Collages

there are three distinctive sectors on our site. Ridge, corresponding to farming activities inland. Roof, indicating the Seine Bight community on the Placencia Paninsula, and Reef, relating to tourism activities which greatly impact environmental health.



**Farming**  
80% Domestic Exports

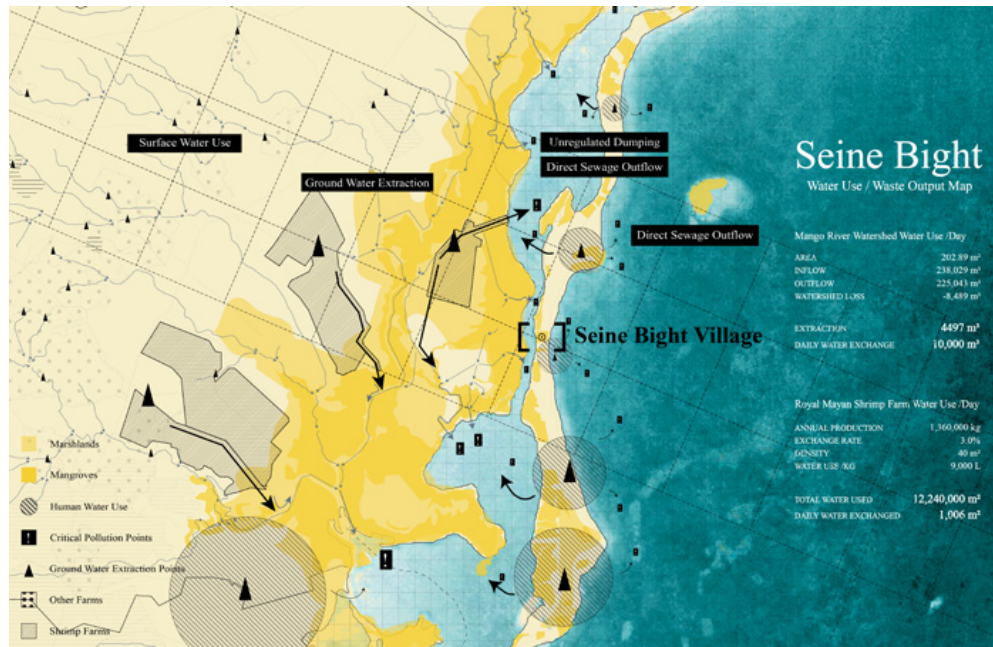
**Garifuna**  
17,000 Garinagu

**Tourism**  
34% Employment



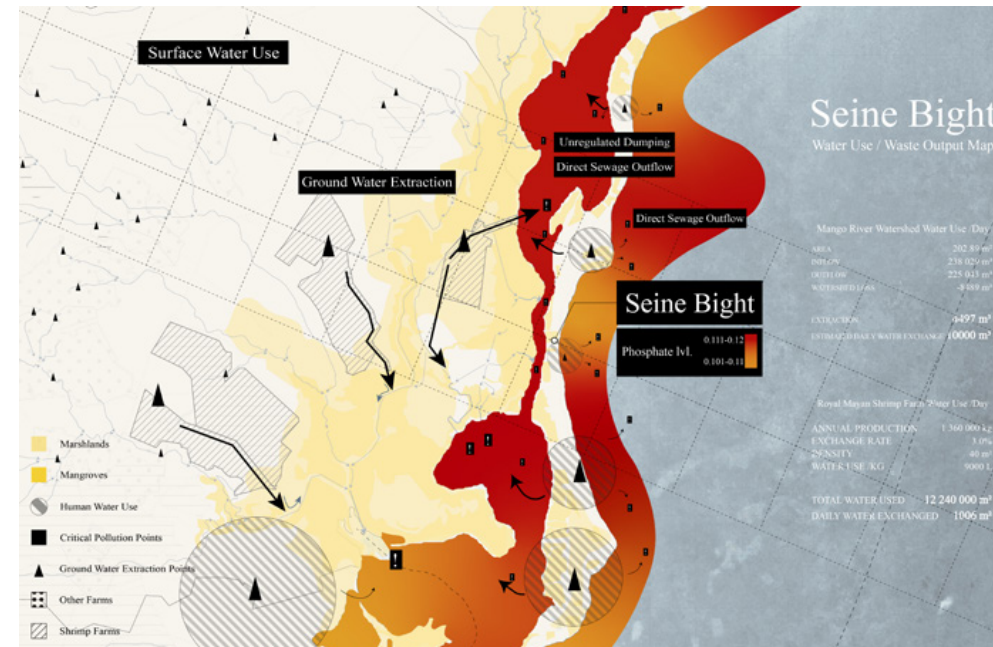
## Impact of Water

Shrimp farms inland of Seine Bight corrupt water through the watershed. Collected water flows through the river and to the lagoon. This affects the water ecology in Seine Bight.



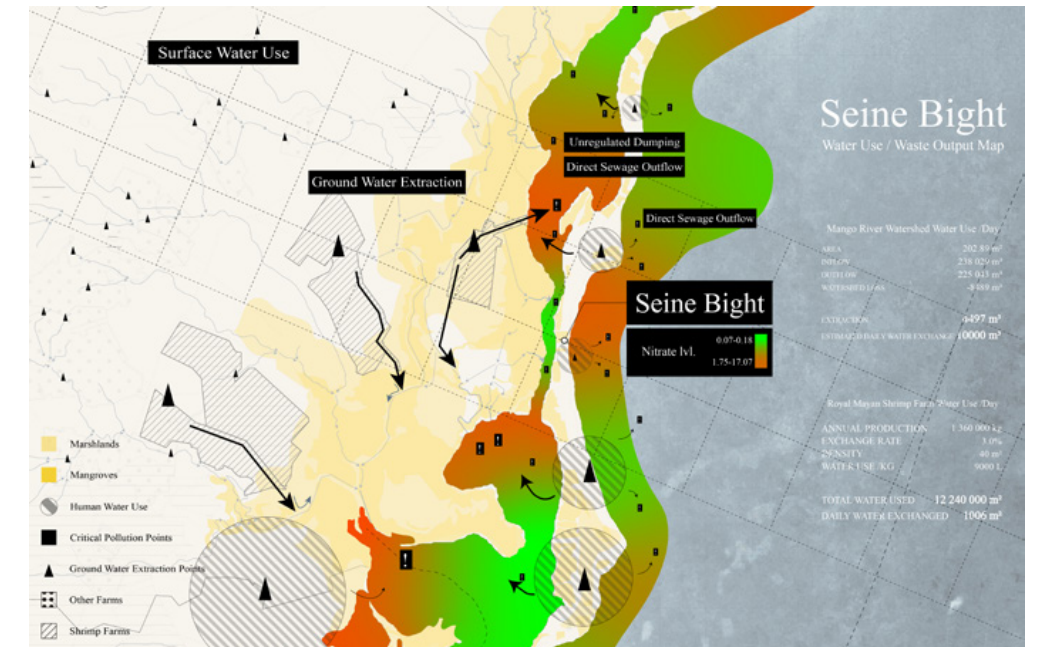
**Water use and waste output map**

This map shows the water waste by shrimp farms, human waste and development wastes directly polluting the lagoon.



**Phosphate output map**

Phosphate come mostly from human waste and organic waste. Together with Nitrate, they speed up eutrophication, depletes water oxygen, and changes animal compositions.



**Nitrate output map**

Nitrate is a byproduct from nearby farms from discarded carcasses and nutrients, released directly into the watershed.

## Water Ragners in Belize

The Water Ranger Program aims to foster a team made of local citizens, corporate representative, volunteers, and local industry students to monitor pollution, develop plans for future watershed growth, and enforce existing water protection policies.



**Jose (Pepe) Garcia**  
Water Ranger – Leader

“The major source of waste to the lagoon is human waste.”

“Shrimp farm filtration system exist, but the head of the shrimp and the filters, where do they go?”



**Kalene Eck**  
Water Ranger – Mitigation Officer  
Resilience Officer

[Belize]  
Belize Coastal Zone Management Authority & Institute (CZMAI)



**John**  
Water Ranger – Volunteer Surveyor

[Seine Bight]  
Belize University  
Bachelor of Marine Biology



**Josue Ake**  
Water Ranger – Quality Control

[Belize]  
Science Department,  
Faculty of Science & Technology,  
University of Belize, Natural Resource Management Program

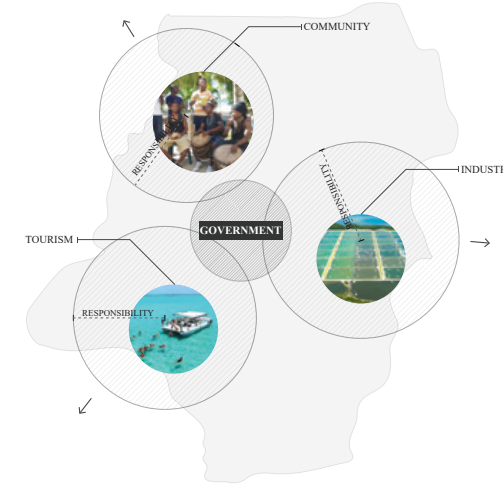


**Theresa**  
Water Ranger – Compliance Officer

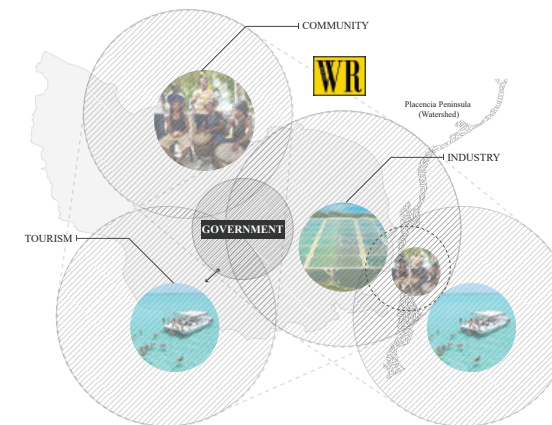
[Belmopan]  
King Mayan Shrimp Farm  
Director

## Water Ranger development diagram

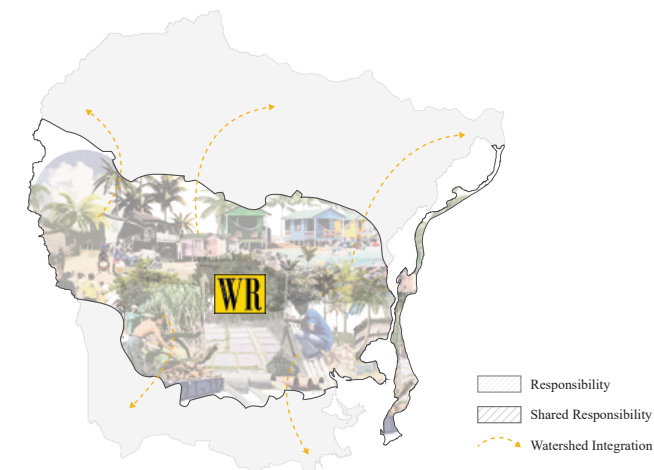
Currently, each sector interacts with the government policies independently with little effort in developing congruently. Water Ranger program developed alongside ICWZM provides a model for unifying the sectors with a coalition.



Currently, each sector interacts with the government policies independently with little effort in developing congruently.



Water Ranger program developed alongside ICWZM provides a model for unifying the sectors with a coalition.



The Stann creek district boundary is slowly transforming into the watershed boundary as the root of solutions.



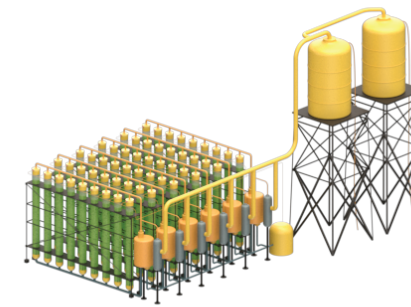


### Water Rangers implementations on Seine Bight

Currently, each sector interacts with the government policies independently with little effort in developing congruently. Water Ranger program developed alongside ICWZM provides a model for unifying the sectors with a coalition.



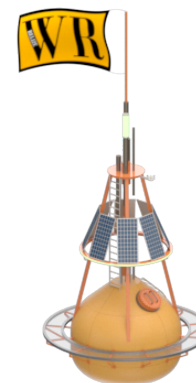
**Monitoring Tower (Land)**  
Collects water samples from the watersheds



**Algae Farm**  
Vertical algae farms absorb salinity of the water



**Tetrapod**  
Made from



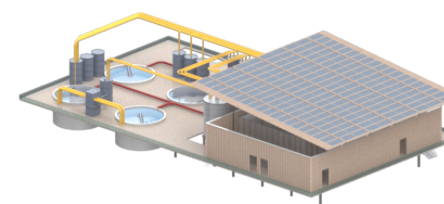
**Monitoring Tower (Water)**  
Monitor water quality of waterbodies



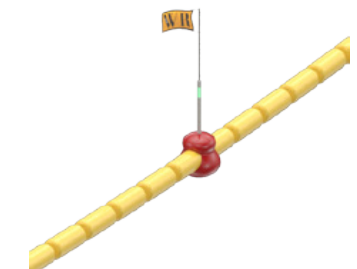
**Biofuel, Education and Monitoring Center**  
Utilize algae and human waste to generate economic capital



**Rectrapod**  
Provides shelving for corals



**Treatment Center and Community Center**  
Built along the new community center where people gather

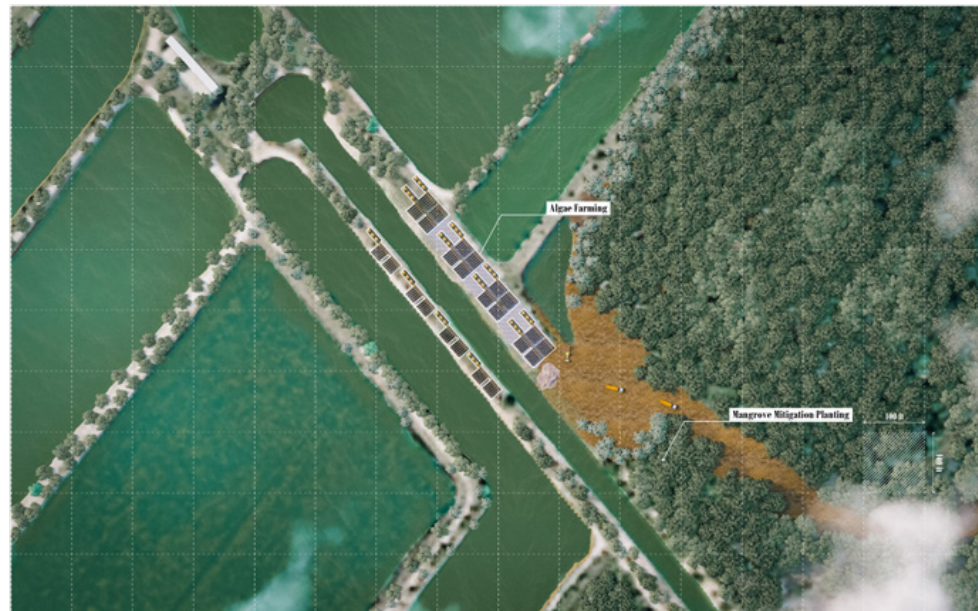


**Coral Shield**  
Stops from the sargassums approaching shorelines



## Seine Bight Collages

there are three distinctive sectors on our site. Ridge, corresponding to farming activities inland. Roof, indicating the Seine Bight community on the Placencia Peninsula, and Reef, relating to tourism activities which greatly impact environmental health.



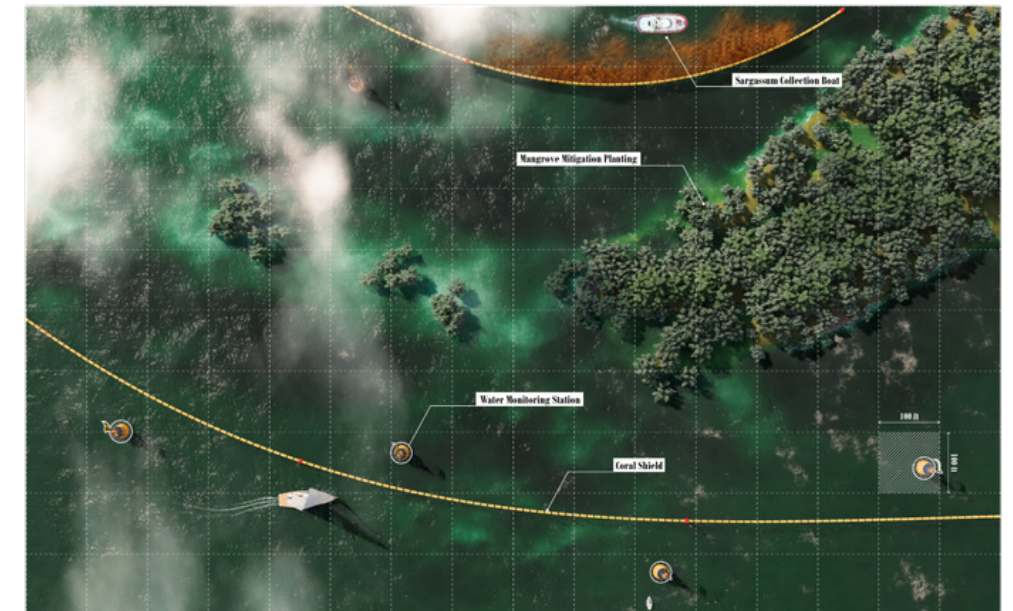
### Algae Farm (Ridge)

We plan on introducing an algae farm that filtrates nitrate and salinity issues created by fertilizer. Algae collected on-site will be transported to Seine Bight for bio-fuel. This creates job opportunities in construction, management, transportation, and future monitoring. Monitoring towers will also be located at the inlet and outlet of the farm.



### Bio Refinery and Community Center (Roof)

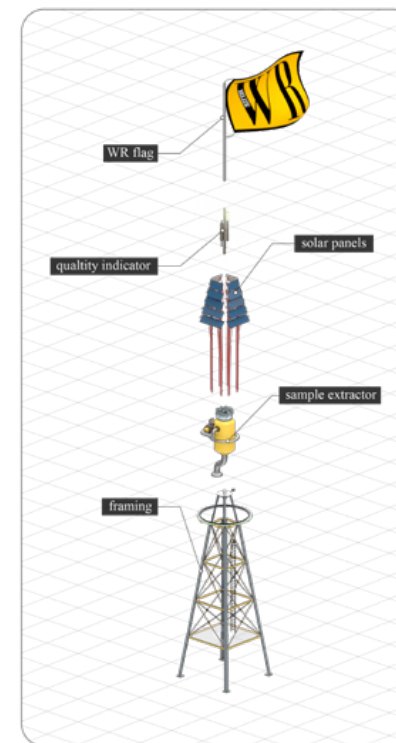
Seine Bight can become pioneers in the waste industry. The design intends to build biofuel facilities alongside continuous education for residents. Locally, septic tanks are built connecting to biomass refinery among existing mangrove cuts. Education and water purification facilities will be on the empty lot beside the main road. Lastly, the community and cultural center are built along the treatment plant.



### Monitoring Tower (Reef)

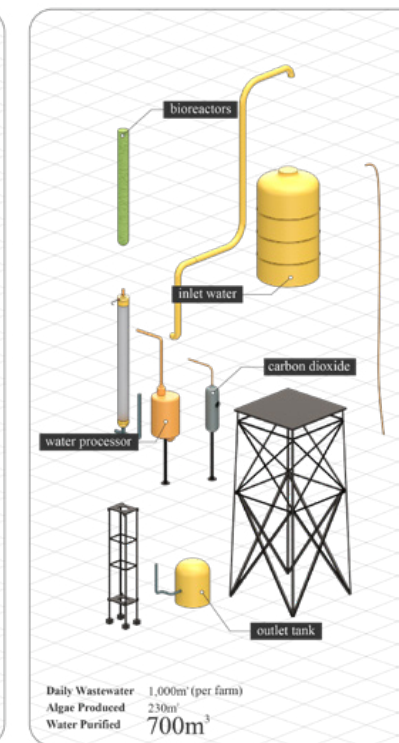
This animation shows our intervention on the reef site. The coral shield are installed to prevent sargassum from covering the coral reef and to facilitate tourism activities. As a site for mitigation. Floating water monitoring stations indicate water contamination and alerts rangers.





**Monitoring Tower (land)**

The monitoring tower inland collects water samples from the watersheds. Then the collected data will be sent to the quantity indicator to reflect the quality of water.



**Algae Farm**

Vertical algae farms absorb salinity of the water from the shrimp farms. Nutrients will be removed from the water as well.

Daily Wastewater 1,000m<sup>3</sup> (per farm)  
 Algae Produced 230m<sup>3</sup>  
 Water Purified 700m<sup>3</sup>



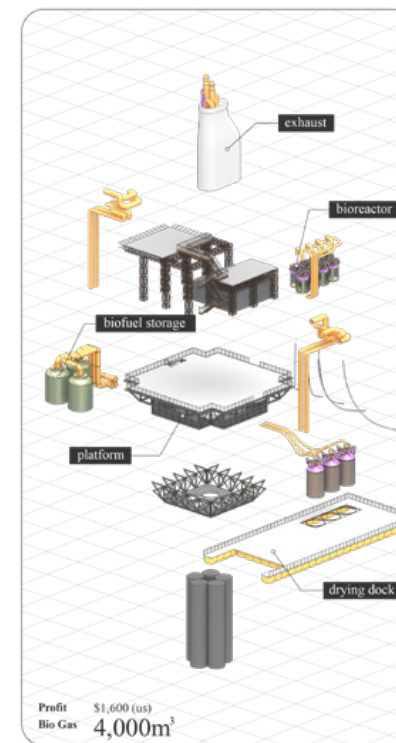
**Mangrove Planting**

Each mangrove tree will protect against soil erosion and absorb carbon. This will reduce the impact of storms and floods.

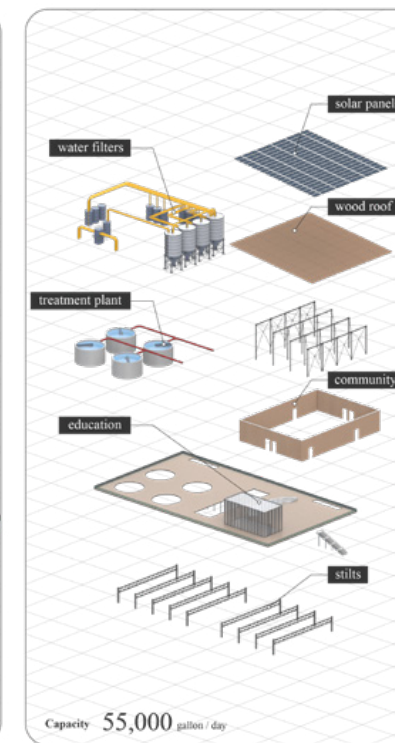
### Ridge / Monitoring Tower + Algae Farm + Mangrove Planting

Land monitoring towers track the quality of water from upstream. While the monitoring tower collects water samples, the tower light shows current water quality. Vertical algae farming helps to improve the quality of water from shrimp farms. Salinity and nutrients will be absorbed, and 700m<sup>3</sup> of water per day could be purified, which is 70% of overall effluent.

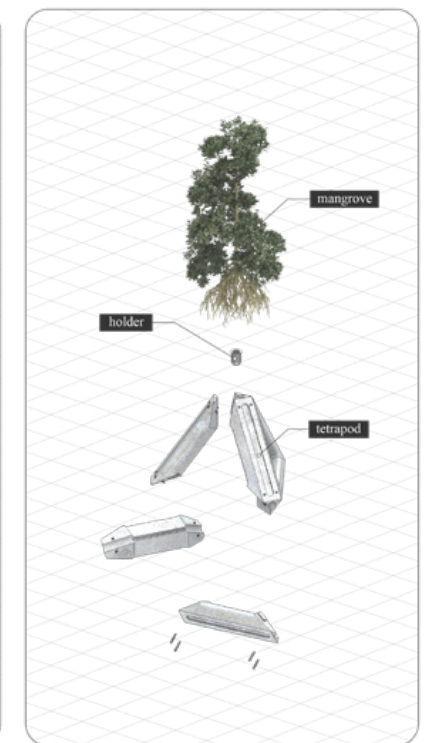




**Biorefinery**  
 The Biorefinery utilizes algae, sargassum and human waste to generate economic capital and jobs for the Seine Bight village.



**Water Filtration Center**  
 The water filtration plant is built along the new community center where people gather classes and job training are conducted in this location as well.

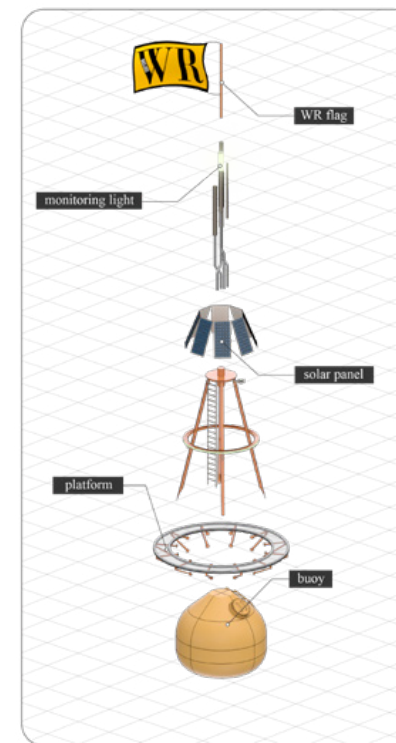
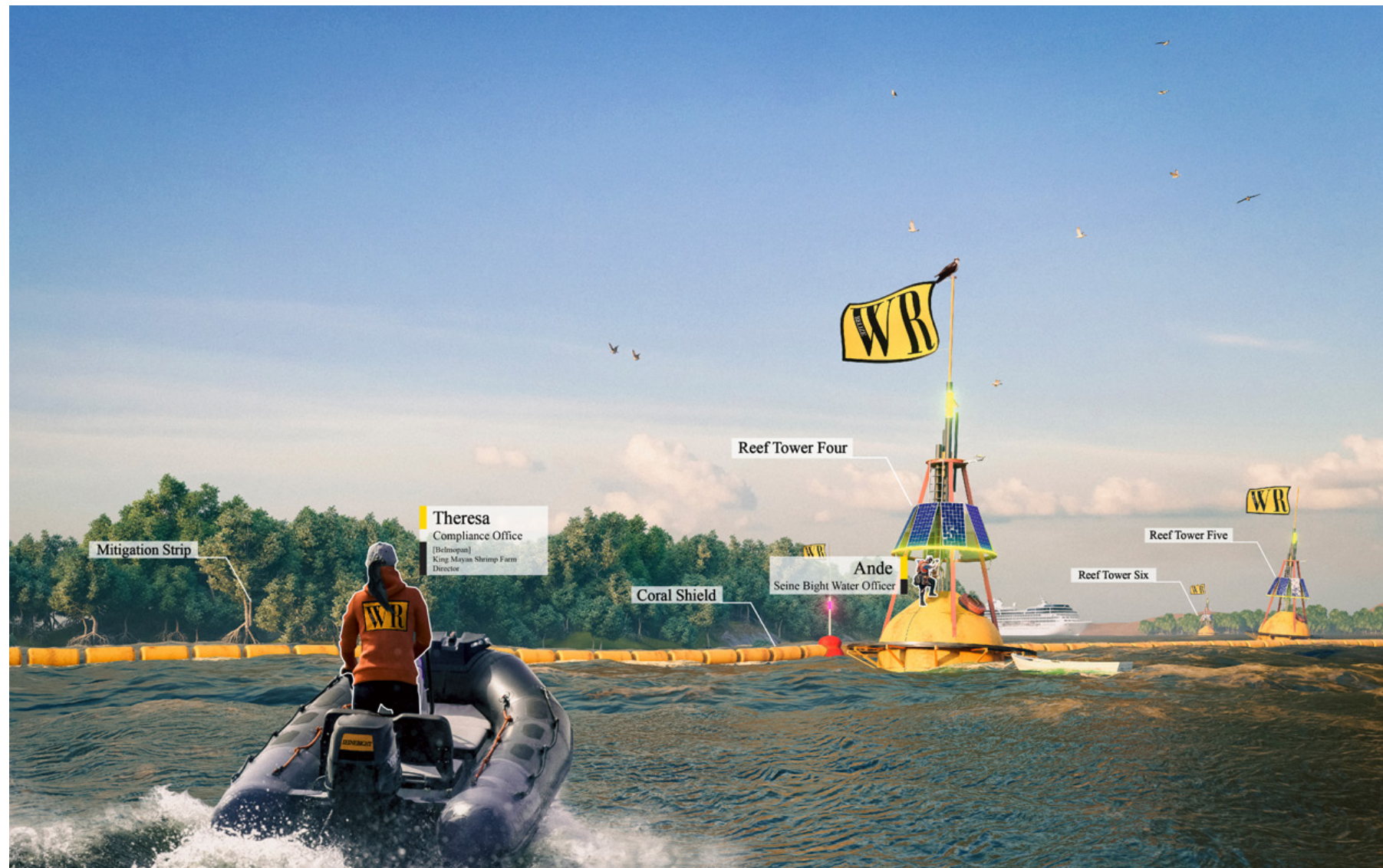


**Mangrove Tetrapod**  
 The tetrapod is a mangrove frame made from sargassum, it will reinforce the roots of the mangroves, soil integrity, and provide shelter for aqua-life.

**Roof / Biorefinery + Water Filtration Center + Mangrove Tetrapod**

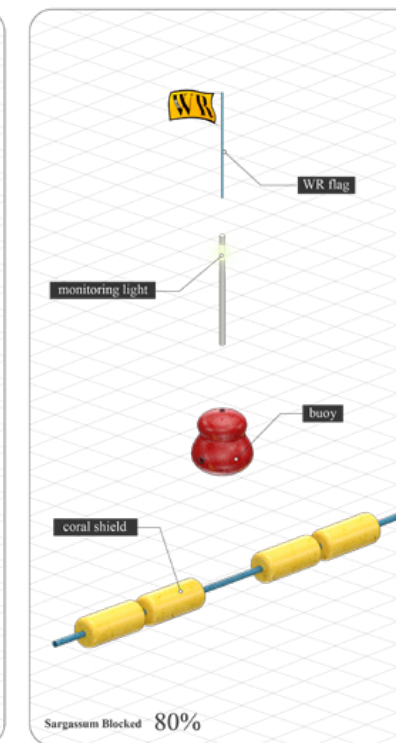
The Bio-refinery can produce around 4,000 cubic meter of bio gas per day. And the water treatment center filters 55,000 gallons of water per day. Both facilities can be moved from pre-fabricated construction. Mangrove Tetrapod is made from Sargacreto, a mixture of sargassum and concrete, which does not pollute the environment, and it will help with building mitigation strip and strengthening the coastline.





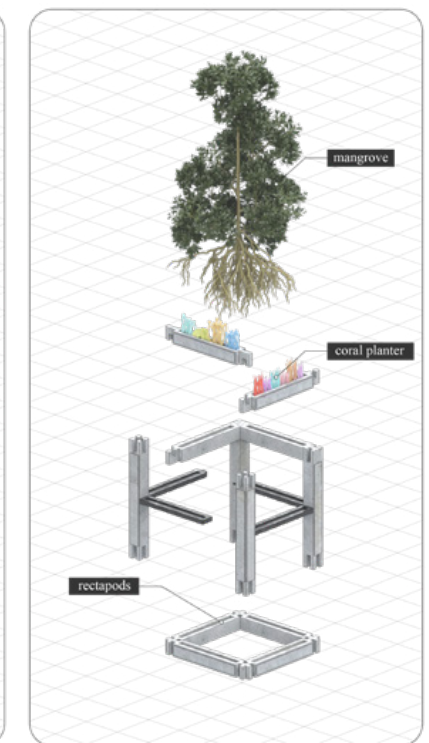
**Monitoring Tower (Water)**

The monitoring tower monitor water quality of waterbodies. Then the collected data will be sent to the quantity indicator to reflect the quality of water.



**Coral Shield**

The coral shield is a water surface buoy chain that marks the zone for protected reef areas and it also stops from the sargassums approaching shorelines.



**Mangrove Rectapod**

The rectapod is a variation of the tetrapod, in addition, it provides shelving for corals to expand and provide nutrients as it dissolves.

**Reef / Monitoring Tower + Coral Shield + Mangrove Rectrapod**

The sargassum barrier can block 80% of sargassum. Mangrove rectapod can act as support systems for corals. Sargacreto is used again for the mangrove ractapods.



## Seine Bight, 2080

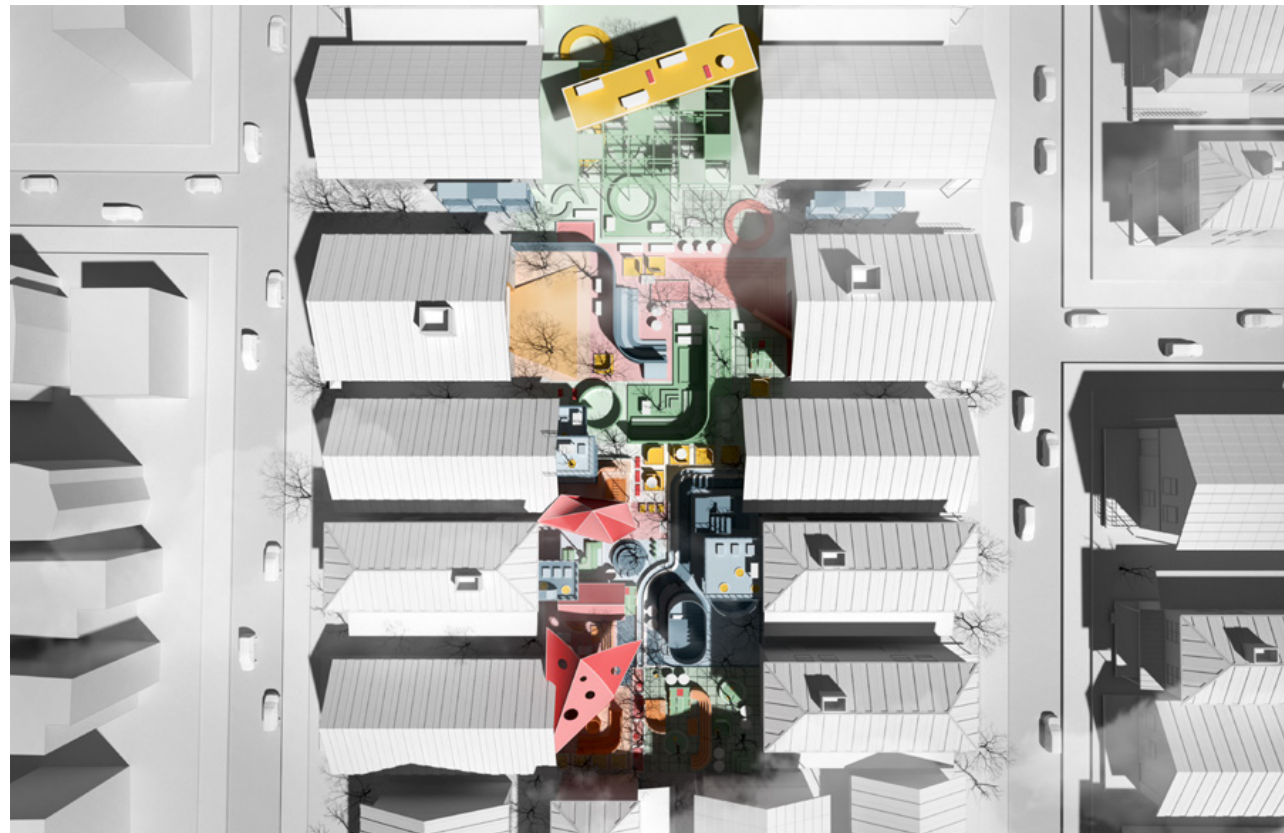
The rendering shows a much more responsible, sustainable way to connect sectors and develop as a congruent community.





## 02 Atlanta University DeCenter

Learning after property in Atlanta University



Education facilities in the backyard

GSAPP MSAUD 2021 Urban Design Studio II  
**Instructor:** Emanuel Admassu, Nina Cooke John,  
Chat Travieso, and Alexa Tsien-Shiang

**Type:** Urban Design

**Location:** Atlanta, United States

**Group Work** with Govardan Rajasekaran, Jisoo Kim, and Lamisa Haque

How can we disentangle urban design and architecture from property? How can we use this moment of environmental and institutional reckoning to disassemble the exploitative regimes of speculation and displacement that anchor the built environment?

In other words, where do we go from here? This studio aims to identify temporal slippages and spatial practices that carve out moments of liberation from the limits of property.

Studio participants will develop a collective intelligence, by gathering samples from various cultural and political geographies, to experiment with ways of seeing beyond the privatized enclosure in the Metropolitan

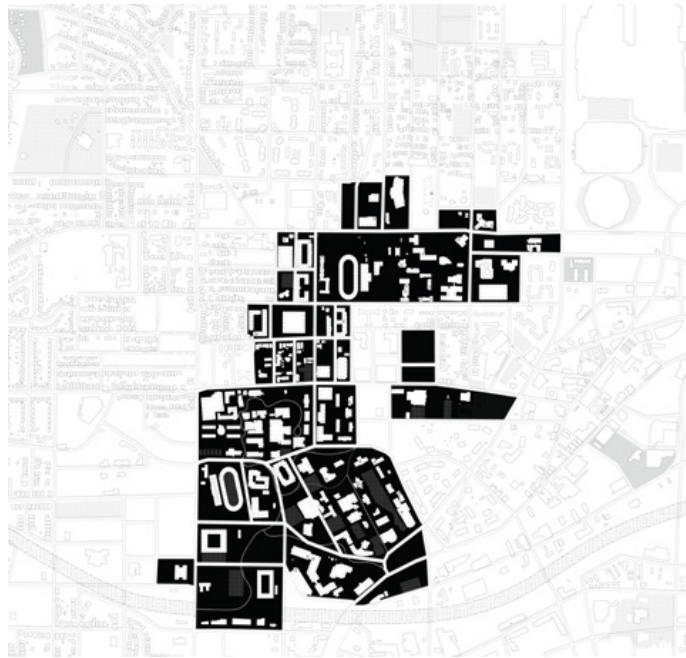
Atlanta regionthe city and its sprawling suburbs. The aim is to design a region that is not tethered to individual ownership, but instead, predicated on collective stewardship and care.

Learning After Property reappropriates knowledge from structures of power and redefines education's role in society. The Atlanta University Center has continually been troubled by lack of endowment, which can be traced back to the discrimination of the educational system and the history of disinvestment in the surrounding neighborhoods. The federal government has decided to address these inequities within the education system by injecting resources as reparations by disseminating education to the neighborhoods and the AUC.



### Development phases of the dispersing university

The University of Atlanta will cross existing school boundaries and spread to residential areas and communities. To this end, it aims to blur the hard school boundaries and improve accessibility so that local residents can easily use educational facilities.



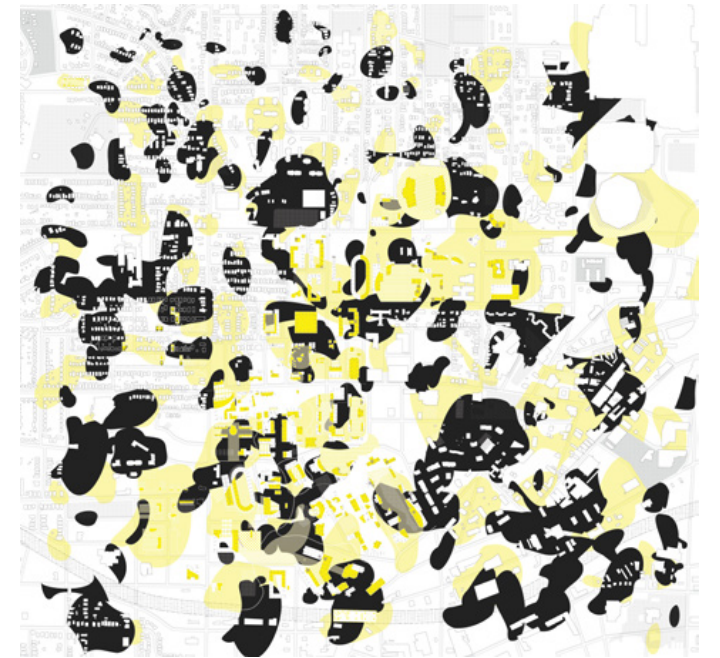
1. Existing university



2. Neighborhood scale expansion



3. Local scale expansion



4. Fully dispersed University





Dissemination of knowledge

Learning through business

Learning through making

Learning through storytelling

Learning through nutrition

Learning through mental wellness

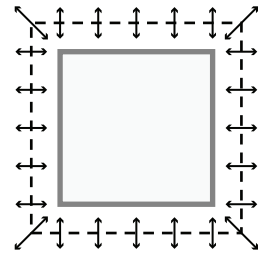
**Learning after property in Atlanta University center**

Learning After Property re-appropriates knowledge from structures of power and redefines education's role in society. Consequently redefining the relationship between the city and university promotes vibrant possibilities of learning.

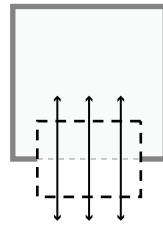


## Atlanta University Center educational intervention typologies

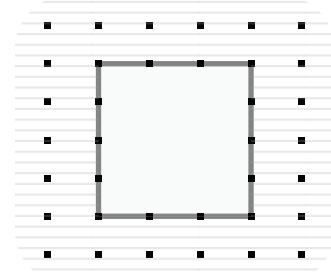
A series of spatial strategies that could transform the existing infrastructure of the campus and city to facilitate educational programs. These interventions will spread all around Atlanta.



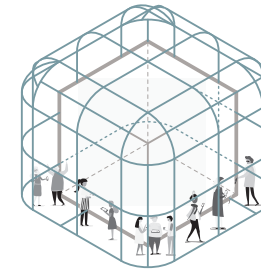
expansion



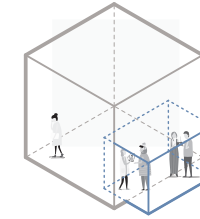
need based



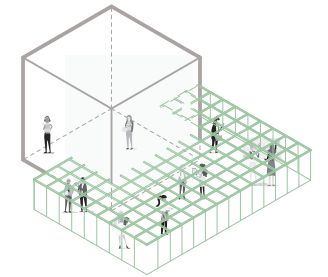
events



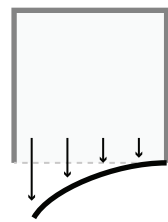
expansion



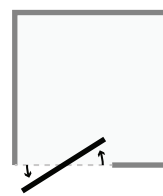
need based



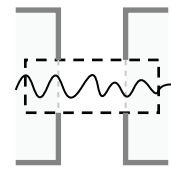
events



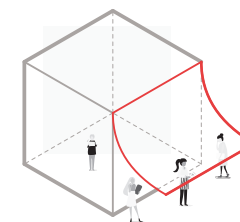
exposure



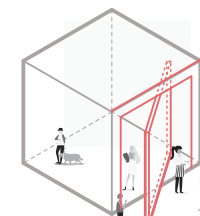
interpersonal



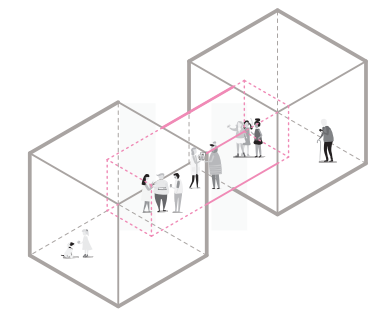
connection



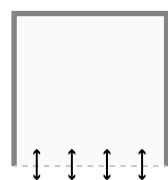
exposure



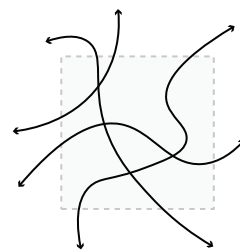
interpersonal



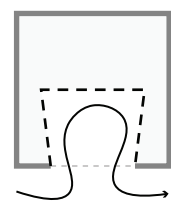
connection



observation



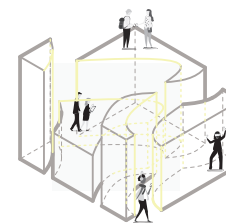
gathering



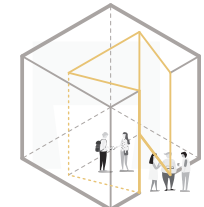
contemplation



observation



gathering

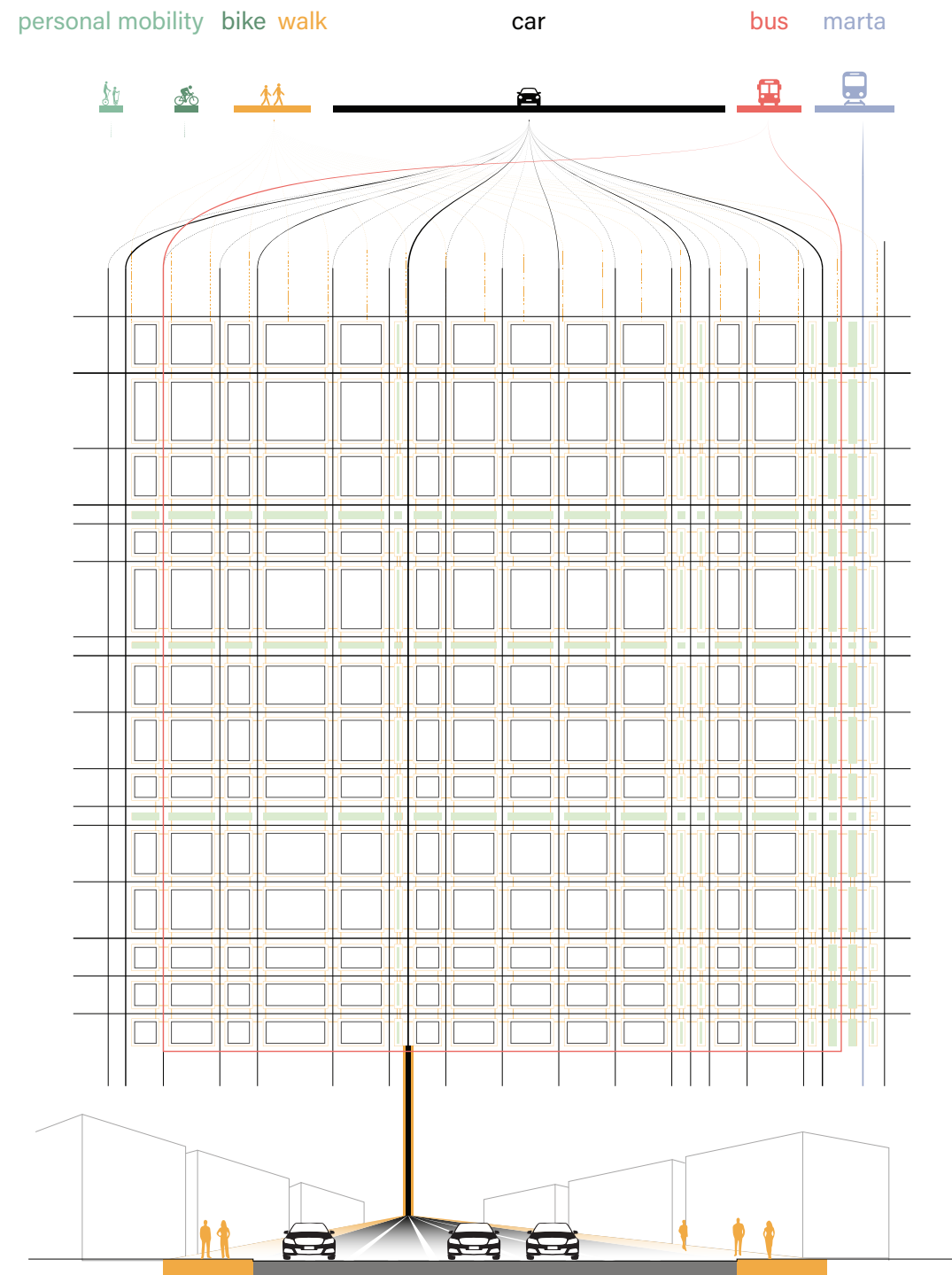


contemplation

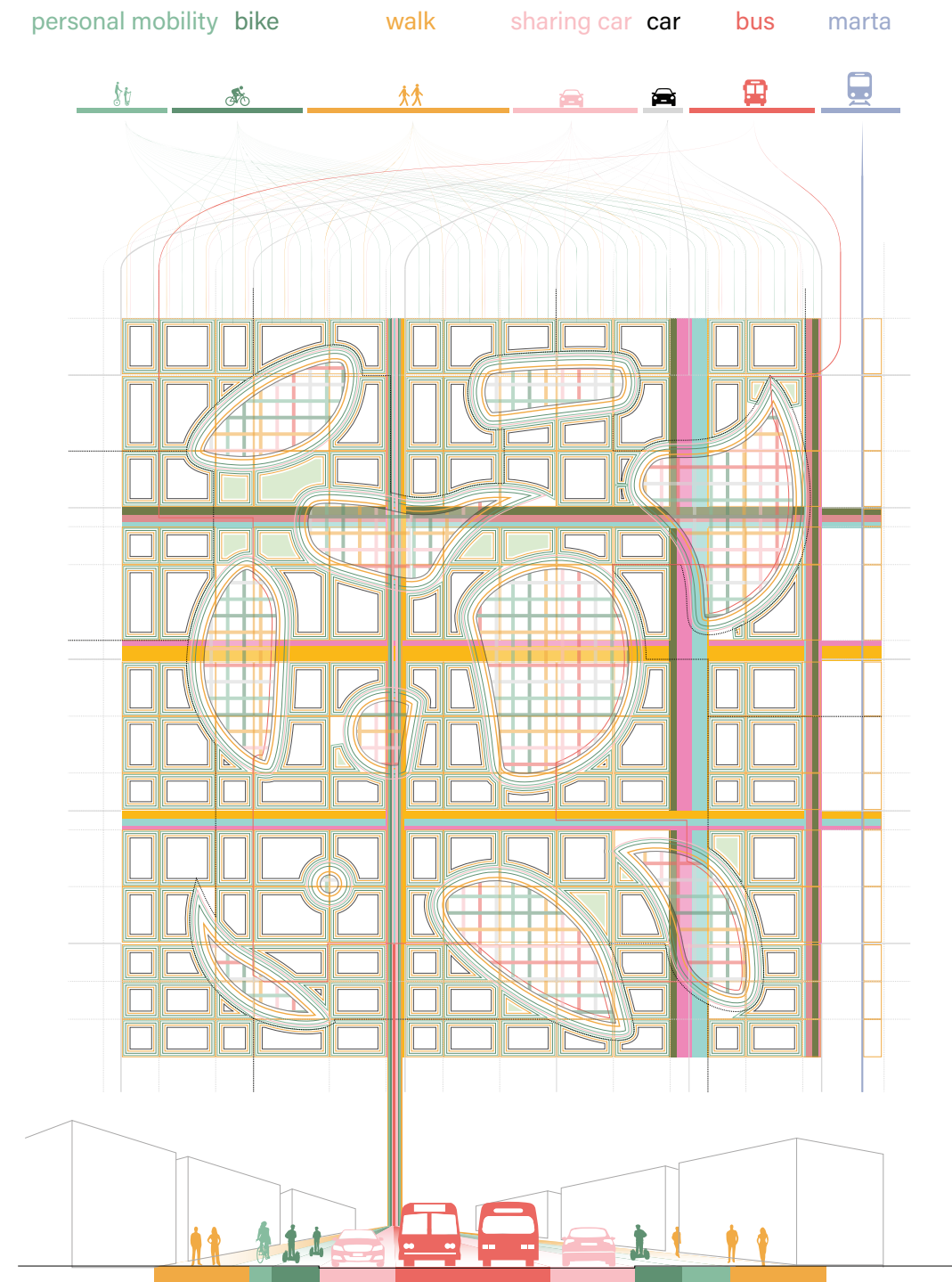


## New transportation system in Atlanta University Center

To connect our constellations of learning, the urban fabric is forced to change through an embedded multi-modal transportation network that transforms the existing grid infrastructure.



The existing University of Atlanta Center shows a transportation network centered on cars.



The newly changed University of Atlanta Center wants to connect and improve accessibility throughout the region by adding a variety of transportation, including bicycles, sidewalks, shared cars and marts, not just cars.

### Interventions near the university

Existing campus spaces are articulated through new interventions and extends to neighborhood. Also, shared backyards and porches potentially transformed into learning spaces which assimilate local knowledge.

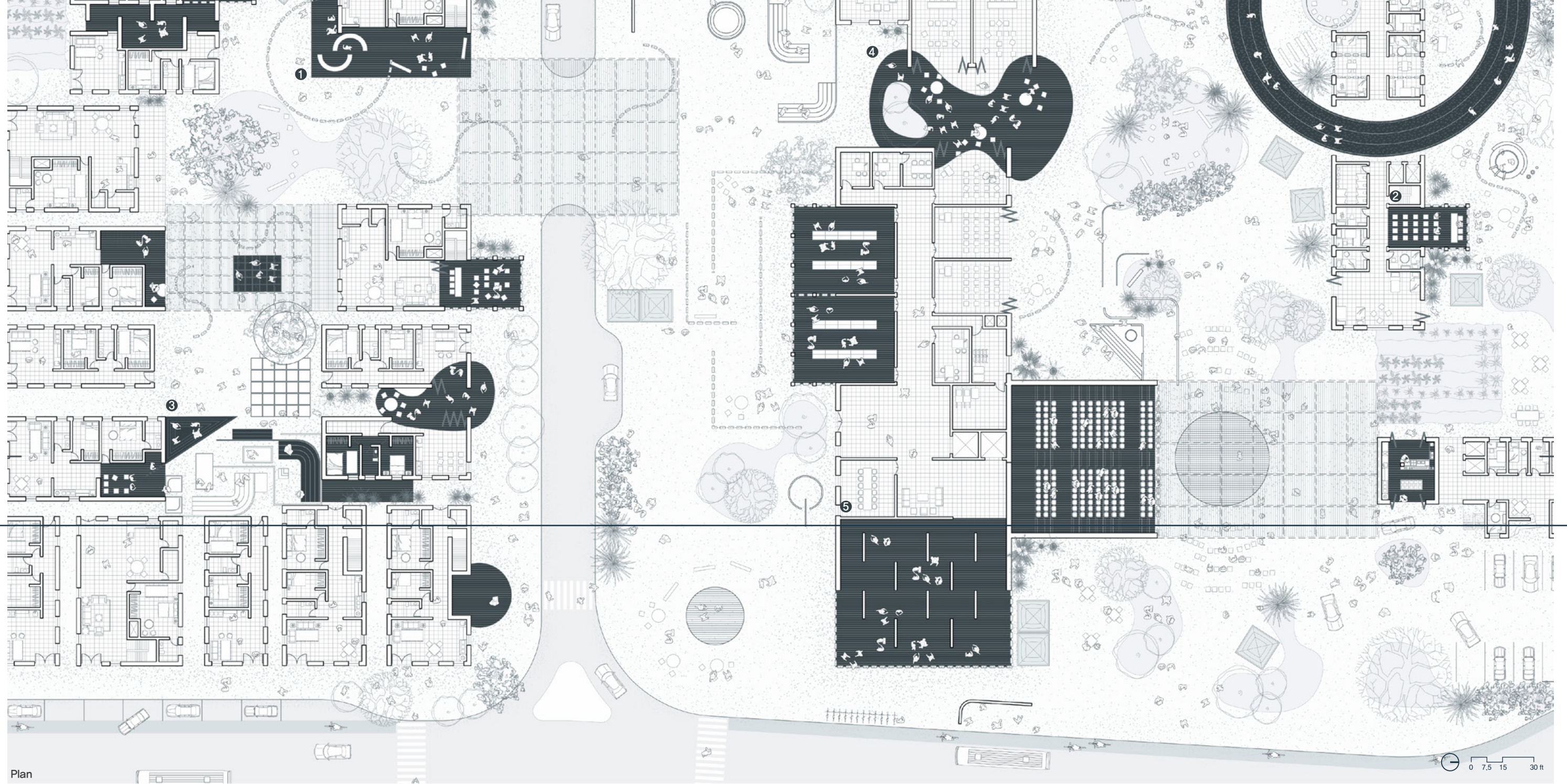


Atlanta University campus interventions



Highway interventions





Plan



Section AA'

**New interventions applied on campus**

Spatial boundaries are deconstructed to create more equitable spaces of learning. These interventions mediate the dispersion of education throughout the city and expand the definition of knowing by absorbing and validating forms of learning which have been actively excluded from the institutional structure.



### 03 Upcycled City

Revitalize the city through recycling



Upcycled City in Newark

GSAPP MSAUD 2021 Urban Design Studio I

**Instructor:** Nans Voron, Sagi Golan, Jae Shin, Austin Sakong, Sean Gallagher, Galen Pardee, Tami Banh, and Candelaria Mas Pohmajevic

**Type:** Urban Design

**Location:** New Jersey, United States

**Group Work** with Bryand Bianca, Lamisa Haque, and Cesar Delgado

Newark is a historical industrial hub that has failed to prioritize the health of its inhabitants. We are reclaiming industry as an agent of change for social and environmental justice.

Through creating a new district the relationships between the interrelated systems of industry, waste and urbanism can be reimagined by implementing new synergetic strategies, where public engagement, economic growth and healthier neighborhoods become a vibrant possibility.

Time and time again, industries in New Jersey failed to deliver the economic benefits they promised while simultaneously destroying Newark's environment and therefore Newarkers' quality of life. Our goal was to flip this

narrative and mandate that industry shall not prioritize capitalistic gain over the community's health. Instead, community benefit must drive all industrial development.

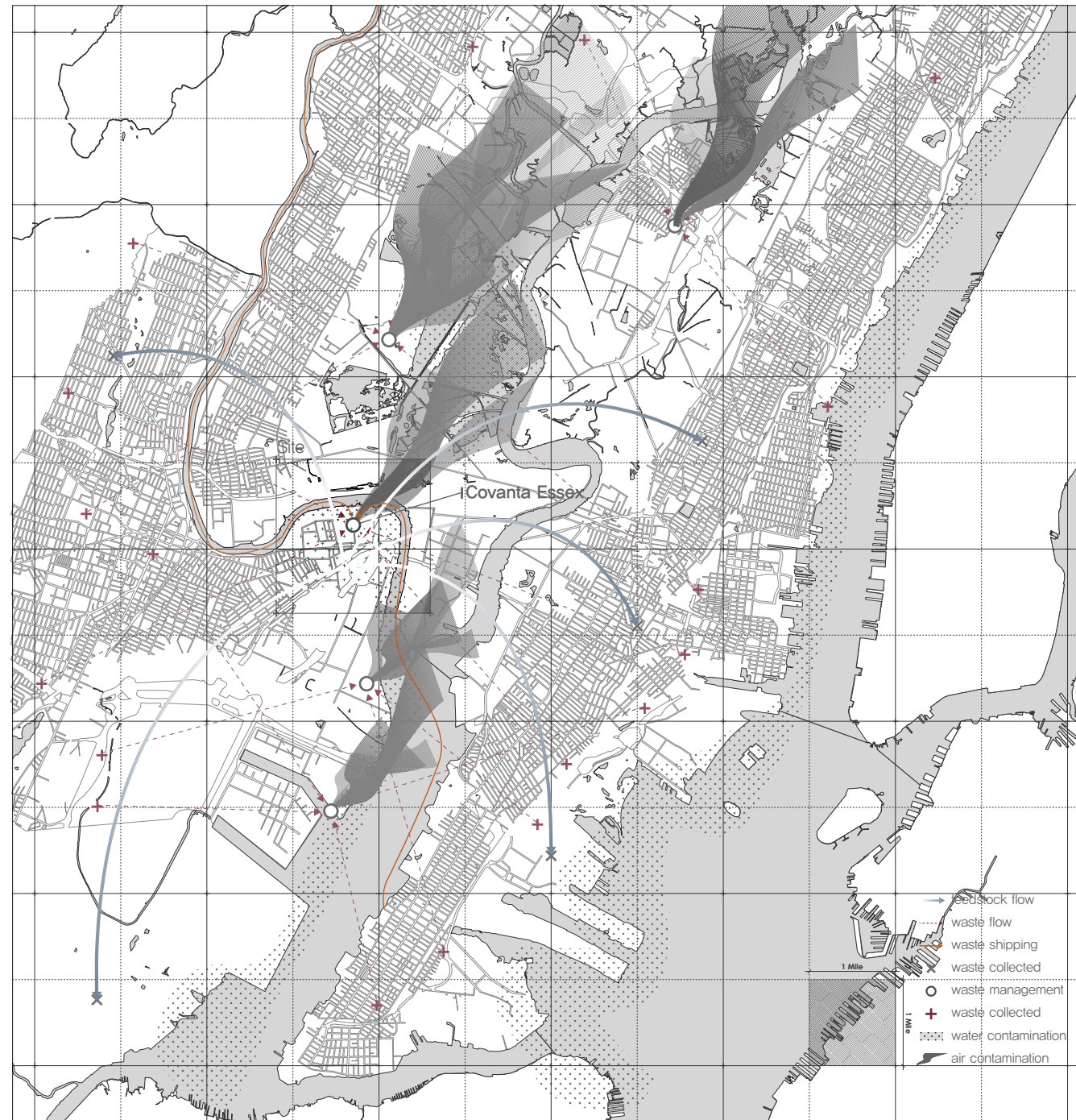
Newark's primary waste management system at the time was Covanta Essex, a waste to energy incinerator. Even more importantly, Covanta became the root cause of many health issues that plagued our community due its emission of air pollutants. As a result, Covanta became an infamous figure in Newark, and most if not all of us living in this city continuously battled for its removal.

Thus, this project reclaimed industry as an agent of change for social and environmental justice.



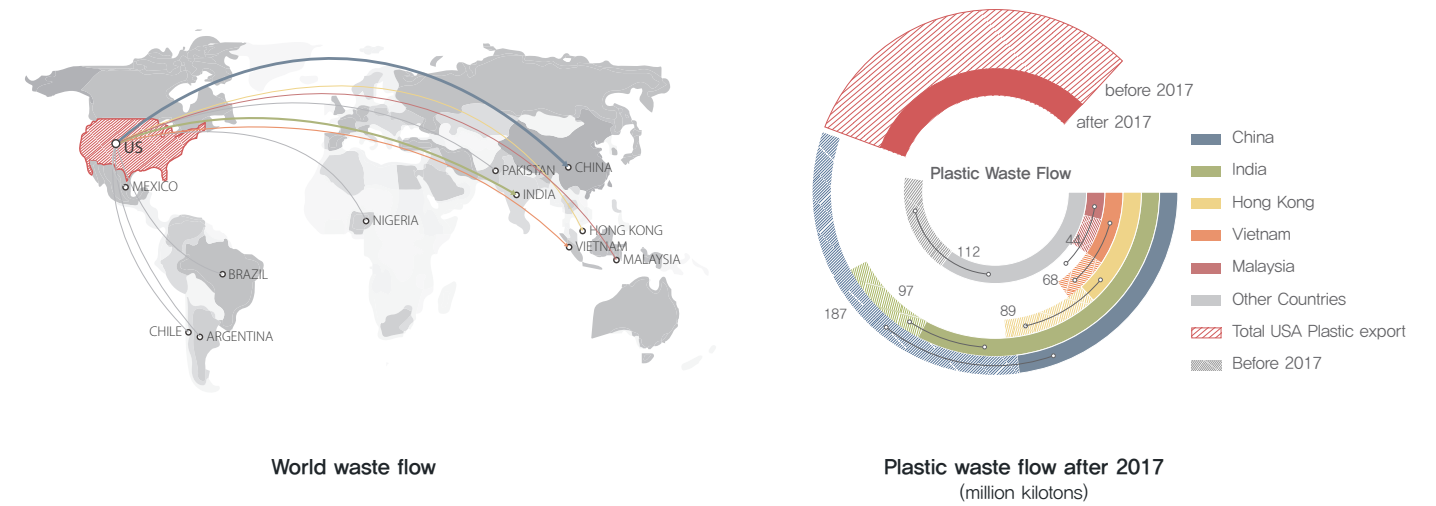
### The waste management practices in Newark

One of the main industrial forces in 2021 was Newark's waste management system. Since 1906, Newark has been a hub for waste collection and treatment for the New York Metro Region and other counties in New Jersey.



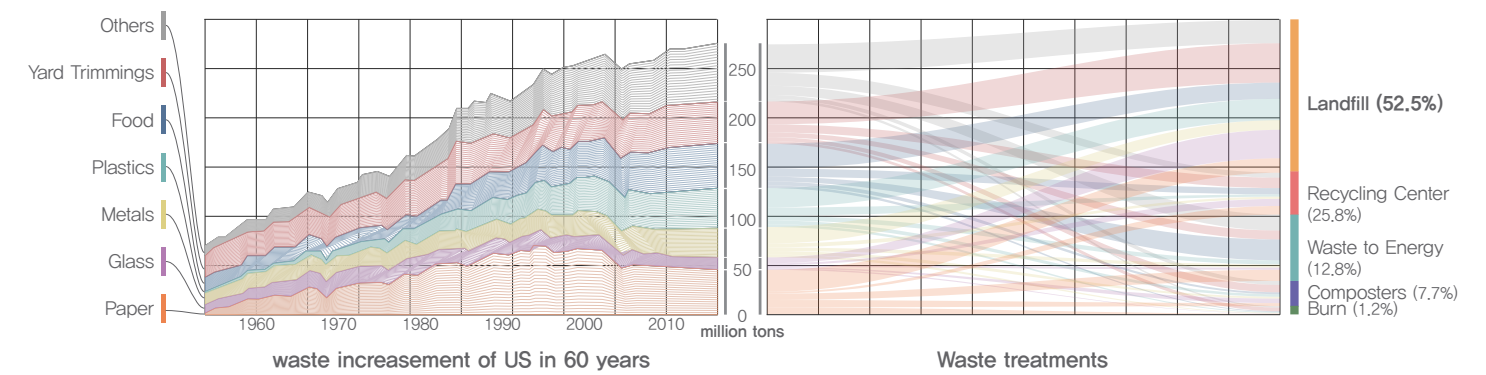
### Waste exportation from the U.S. to other nations

After 2017, the Chinese government had reduced waste importation from the U.S. government. Now the U.S. needs to handle the waste issue domestically.



### Half of the waste from the U.S. are landfilled

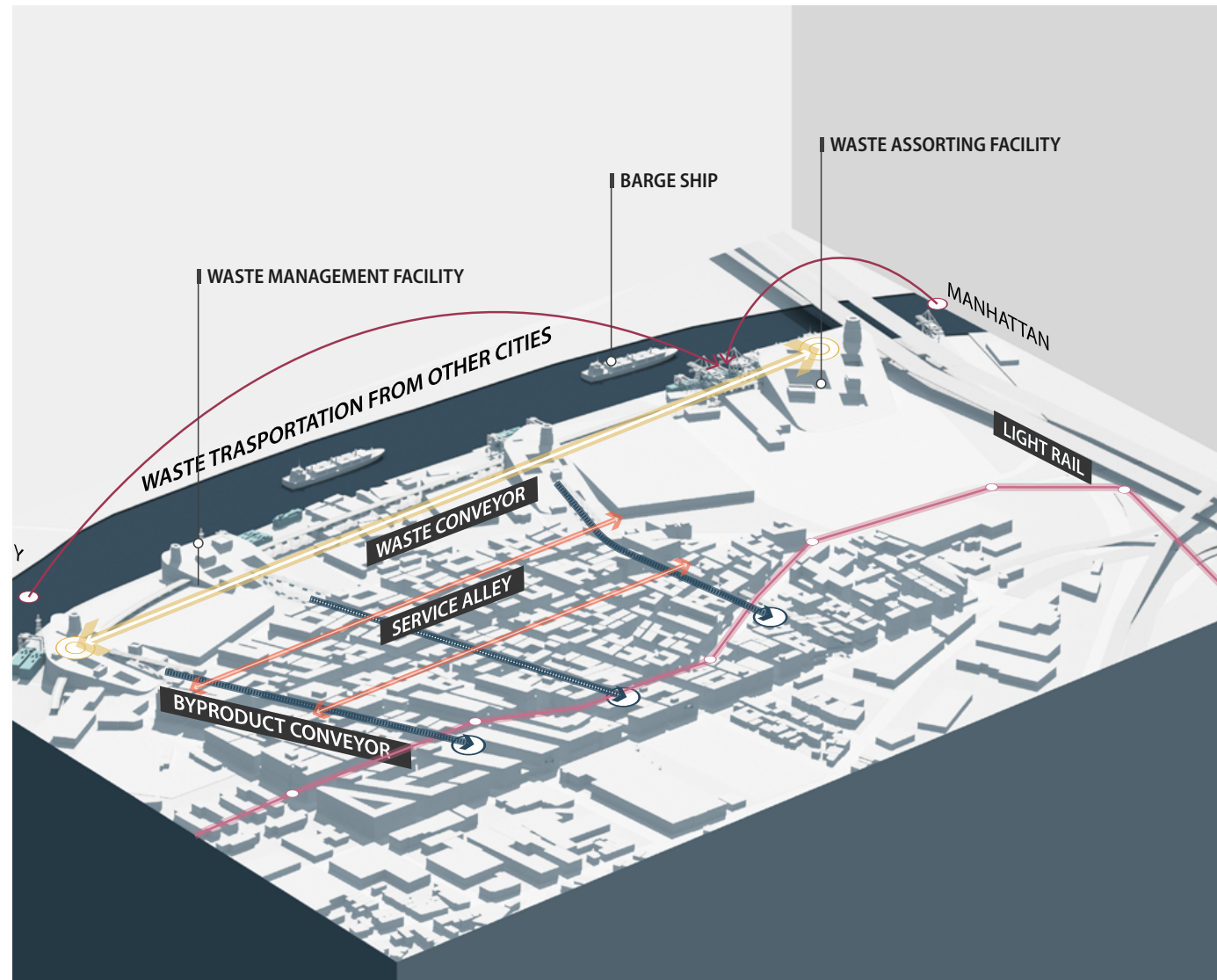
Increment of the waste from the U.S. and lack of its treatment is a problematic issue.





## Material flow of waste and feestock

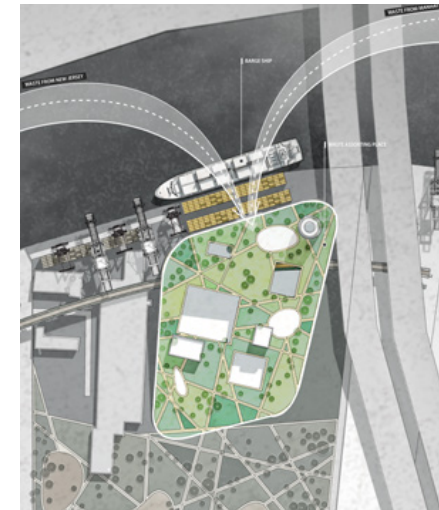
Containers arrive on barges through the Passaic River. Containers of sorted waste move through a conveyor and converted in new feedstock. A series of service alleys open the way for forklifts to pick up and deliever material and final products, that can also end up being distributed regionally.



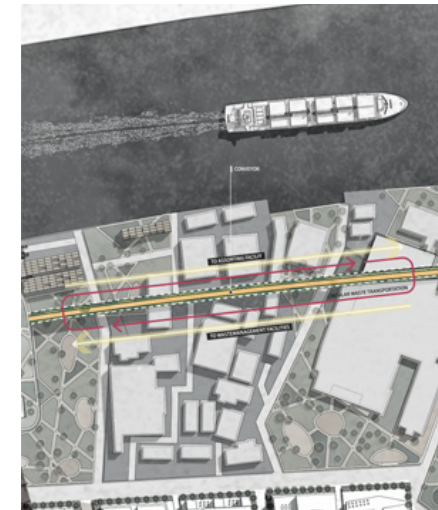
Upcycled City flow diagram

## New development that started within the community

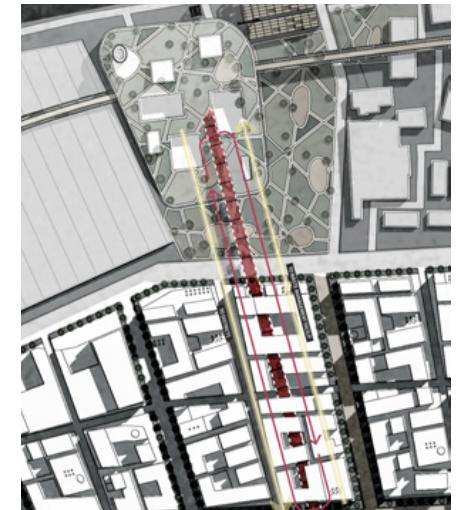
The district started with reusing the existing structures and streets. It developed in an organic way, through a series of development normativities that helped generate the main central axis first, to later expand into a new grid and a series of new buildings that responded to the new industry and living culture and processes



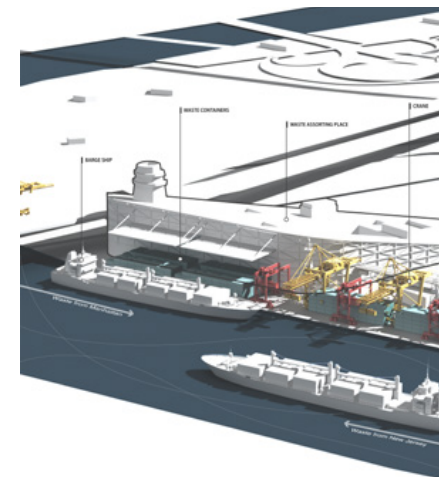
1. Sorting facility



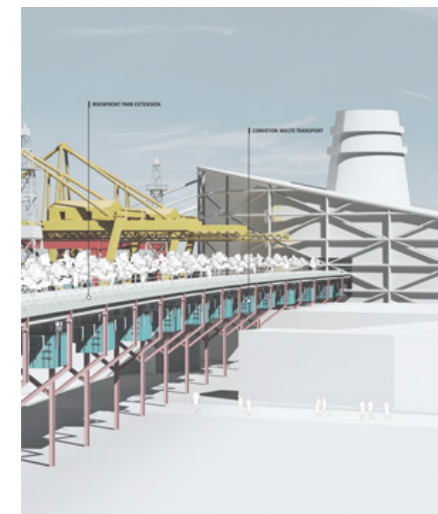
2. Waste circulation



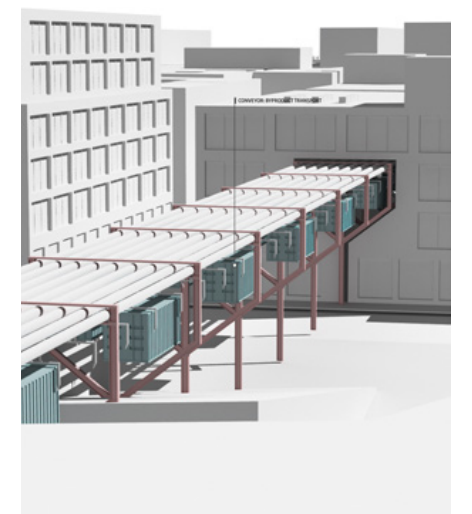
3. Feedstock circulation



4. Waste from New Jersey



5. Riverfront park



6. Container belt



### Waste management facility that can revitalize the community

This waste management facility will create a stronger community as well as economical benefits. Community members will be more affluent by these new interventions.



1. Service Alley



2. Localized community space



3. Transportation system

### Feedstock that revitalize the community

Through creating a new district the relationships between the interrelated systems of industry, waste and urbanism can be reimaged by implementing new synergetic strategies.





## Upcycled City

This plan shows the upcycled feedstock circulation in Newark. Industry as an agent of change for social and environmental justice. Waste can be recycled and revitalize this city.



- WASTEMANAGEMENT FACILITY
- LARGE FACTORIES
- WASTE CONTAINER
- LIGHT RAIL
- CONVEYOR BELT
- MAIN CORRIDOR
- PARK
- SEA ROUTE
- CONVEYOR PARK





### Airplane

Airplane travel takes more time and it requires more energy. Airplane is the first target that the hyperloop will replace.



### Train

Train is not as fast as hyperloop and does not have enough merits for the freight.



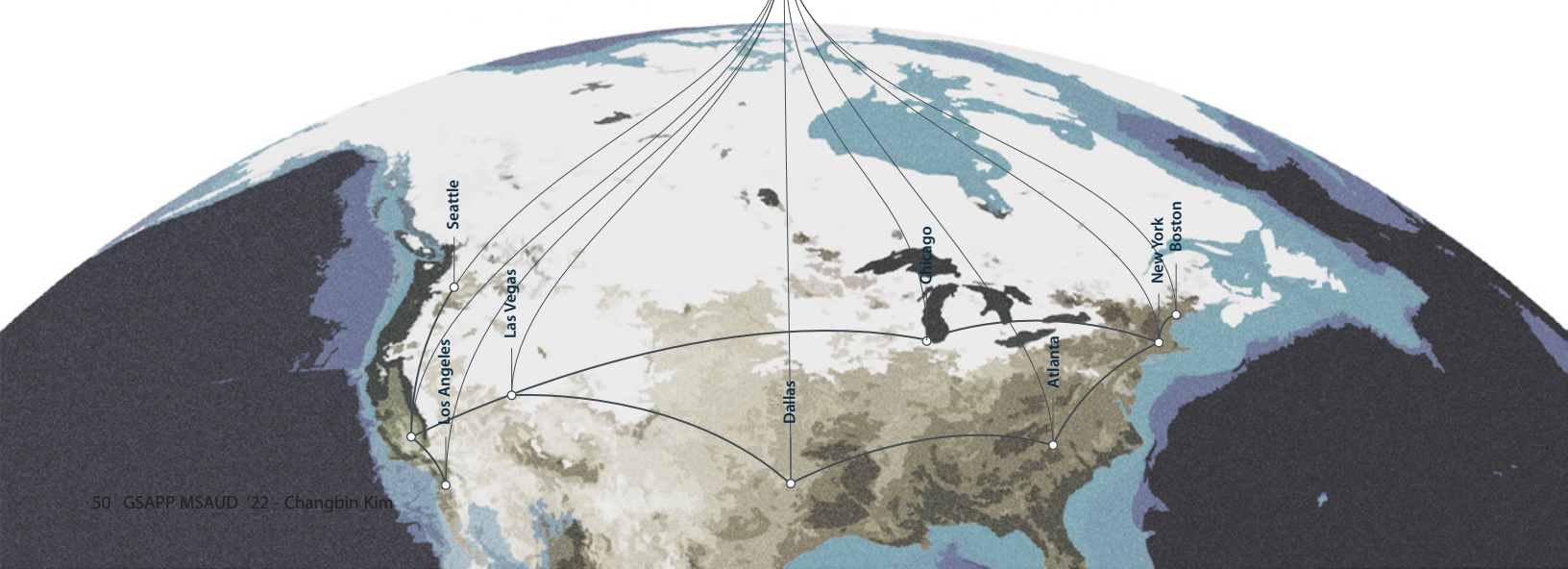
### Car

Autonomous cars will connect the town while the hyperloop connects the big cities.



### Ship

A lot of cargo that shipping does will be replaced by the hyperloop.



## 04 Hyperloop in Urban Fabric

Hyperloop, a new way to connect the world

GSAPP 2021 Elective Course Seminar  
- Man, Machine, and the Industrial Landscape -

**Instructor:** Sean Gallagher  
**Type:** Infrastructure  
**Location:** New York, United States  
**Individual Work:** Changbin Kim

Hyperloop is a means of transportation in the future and can be efficiently moved to a shorter time when moving between cities or countries. Since cities cannot expand indefinitely, freight need to be handled more efficiently when transporting. For people, more time and energy will be saved than conventional means of transportation.

Hyperloops will be emerging as a new mode of transportation, connecting the

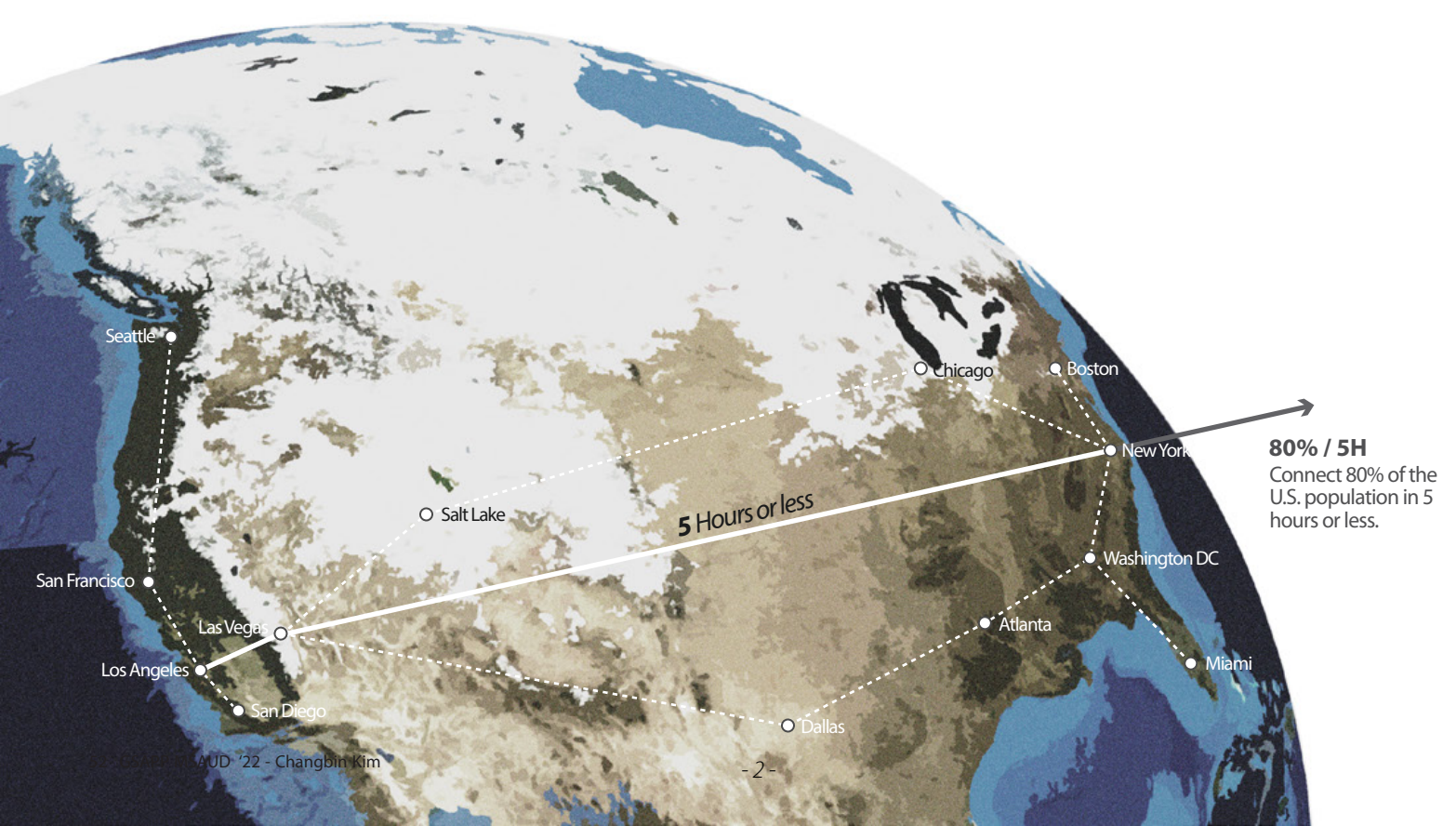
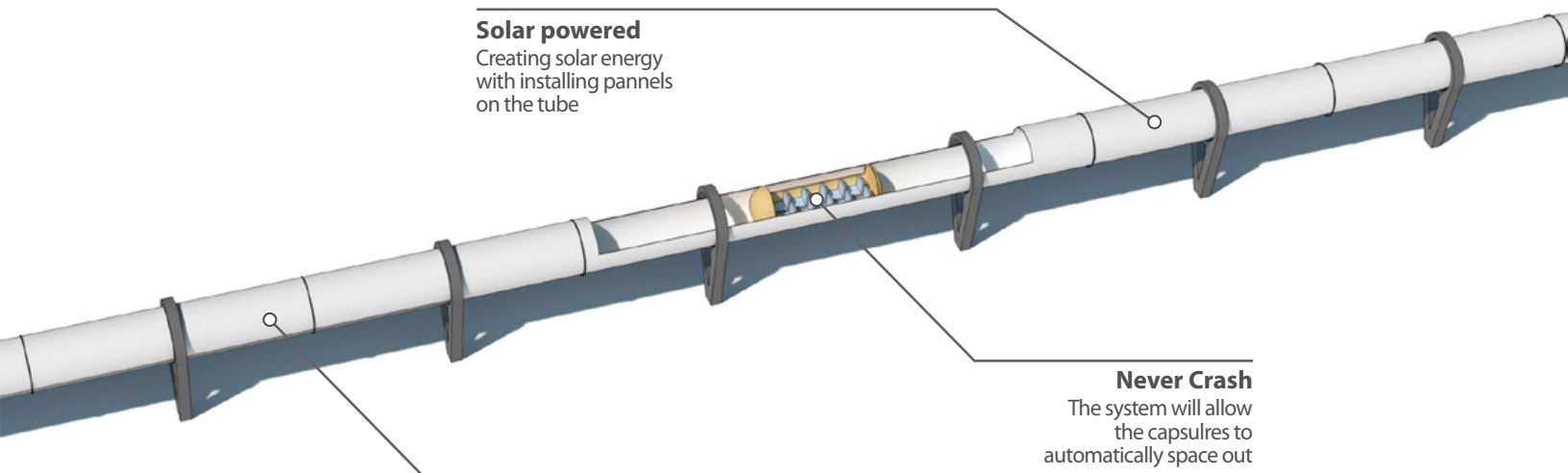
cities. To do so, it is necessary to find out more about where the hyperloop is located in the city and what networks it has, and continuous research is needed on how it will affect the city in the future.

Accordingly, I would like to study and investigate how the appearance of the city changes and the radius of life changes through the hyperloop.



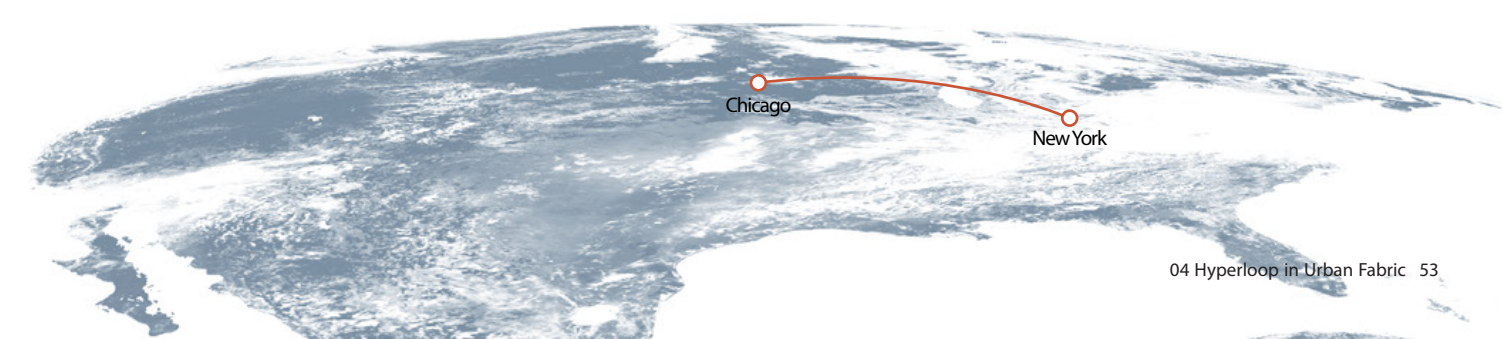
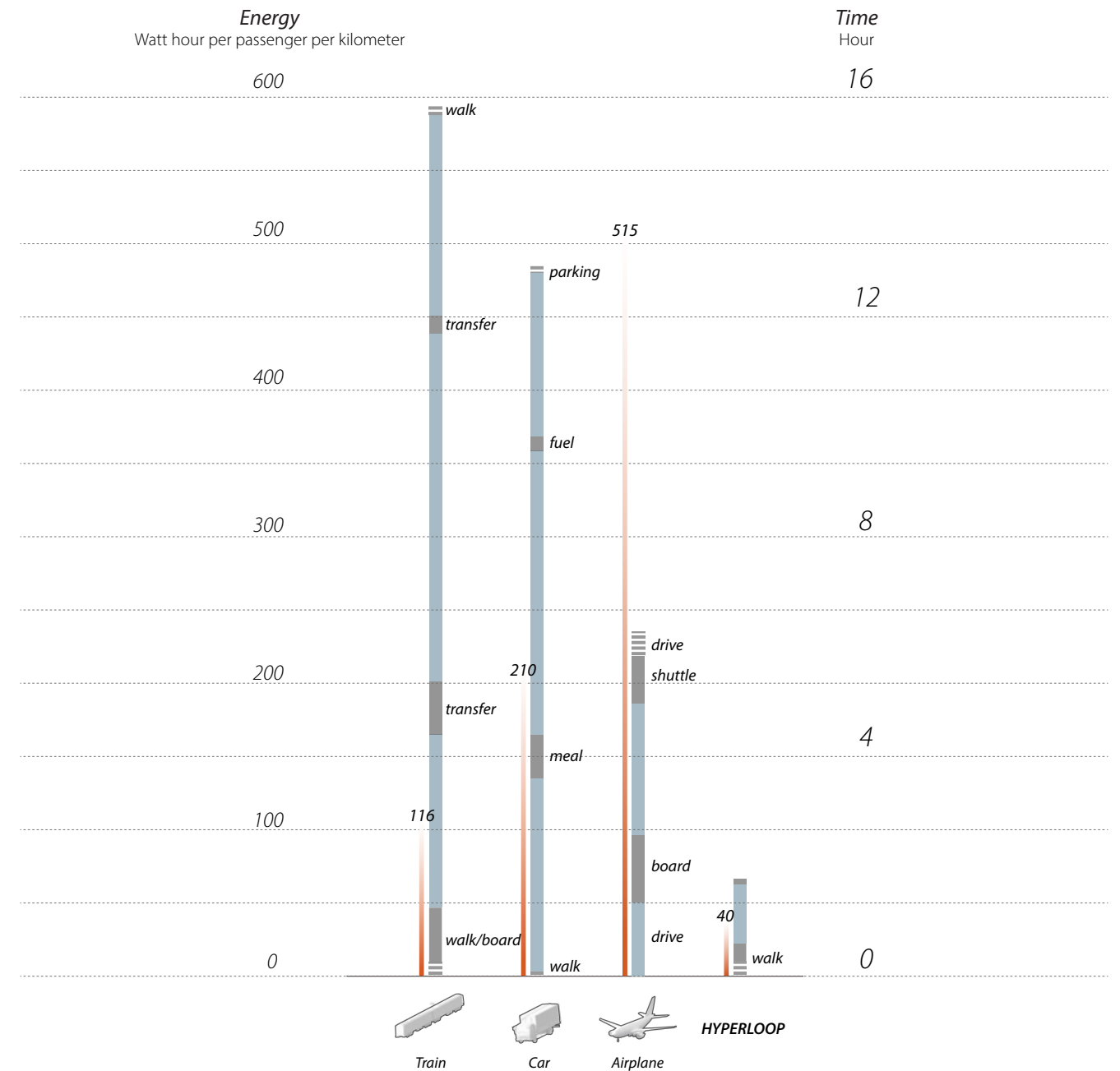
### Did you know that hyperloop can connect the America less than 5 hours?

Hyperloop can connect the America continent less than 5 hours. From LA to NY it might take less than 5 hours door to door. This is because people do not need to wait in the station or airport. Also there are not many restrictions like other transportation systems.



### Hyperloop, more efficient and faster way to connect the world

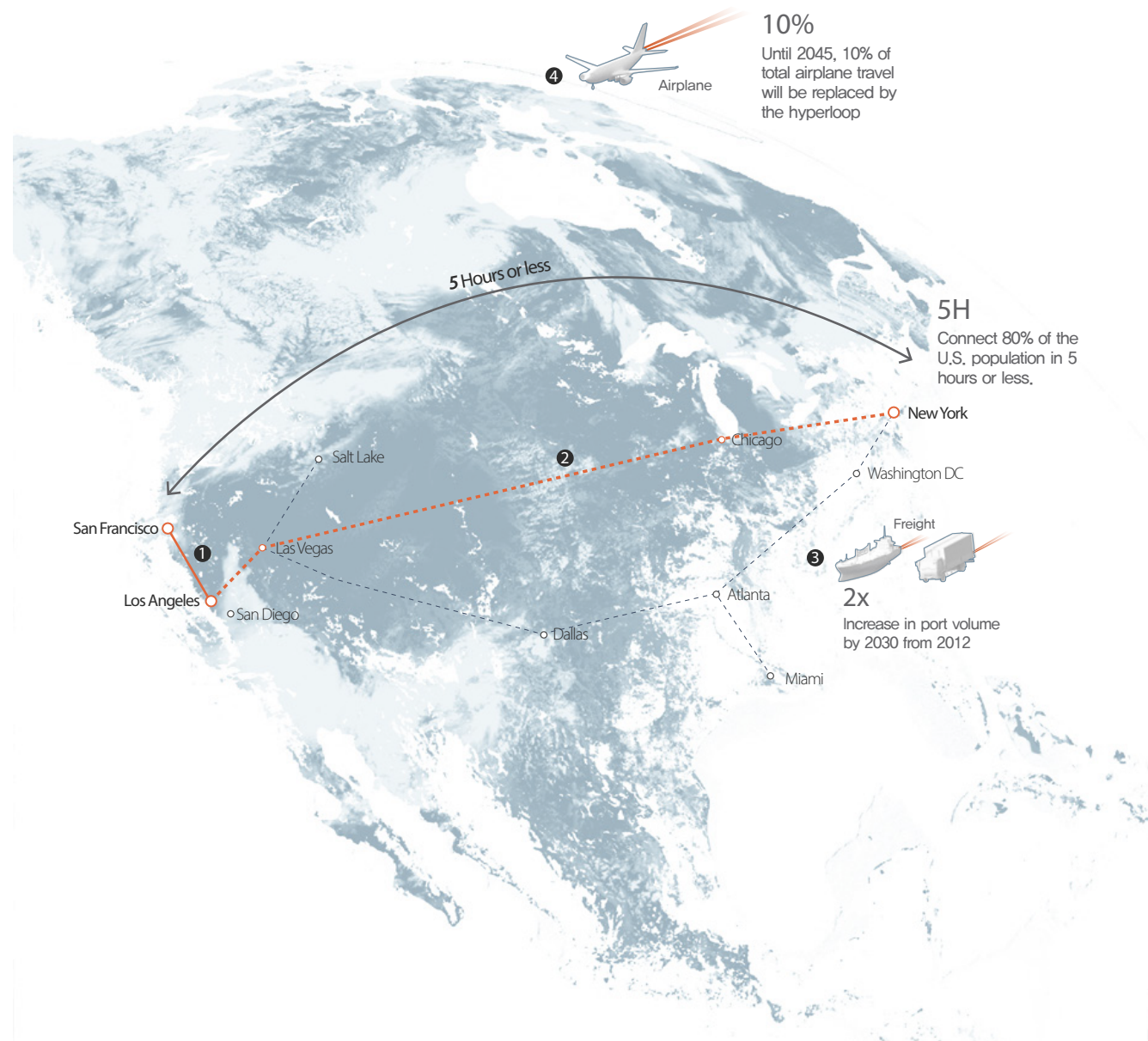
Hyperloop reduce amount of time compared to other transportation systems. People wait less in the station compared to the airport and they do not have to reach out the the suburban to take an airplane. Also, it uses about 9% of the energy consumption to the airplane.





## Hyperloop and the speculations

Hyperloop will impact the urban fabric a lot since it will replace airplane travel and amount of freight traffic. The first hyperloop connection will be LA to SF. New York to Los Angeles will be the key to connect the continent. Also, freight traffic from the harbor to the land will be replaced a lot by the hyperloop.



**1 The first hyperloop connection**  
San Francisco to Los Angeles will be the first hyperloop rail that will be constructed in U.S. The estimated construction date is 2035. Hyperloop will gradually replace 12 percent of the airplane travel.

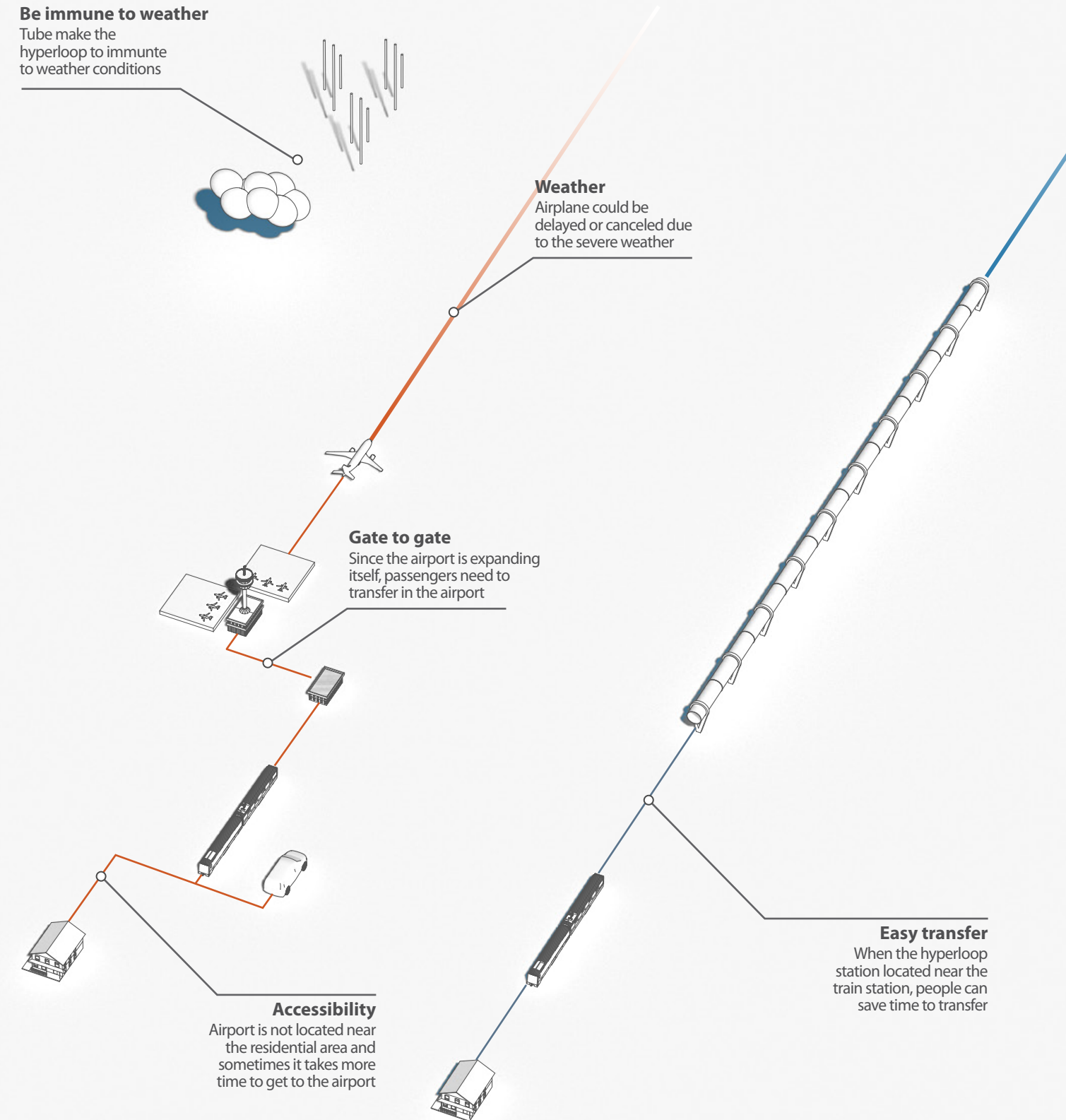
**2 LA – NY hyperloop**  
From Los Angeles to New York will be the major connection that fully utilize the hyperloop in US. Over 2.8 million people use this airline. When the hyperloop could be connected in 2050s, passengers will be increased to 4.0 million and hyperloop can replace about more than 25%.

**3 Freight traffic**  
Port volume will be increased about two times in 2030 compared to 2012. When the hyperloop has been built in US, More than 10% of the freight traffic by trucks will be replaced by the hyperloop.

**4 Airplane travel replacement**  
Until 2045, total 10% of the airlines will be replaced by the hyperloop. With the high efficiency of the hyperloop system, airplane travel will be more reduced when the infrastructures had built on the site.

## Hyperloop vs Airplane

Hyperloop could replace the airplane and the airport in the future. Since the accessibility to the station creates a gap and this will allow people to use hyperloop more than the airplane.





### Urban Impact – Local

Hyperloop could provide opportunities to commute different cities. Time could be a lot more reduced due to the enhanced accessibility and the new system. Also economic benefit can be increased when using existing infrastructure.

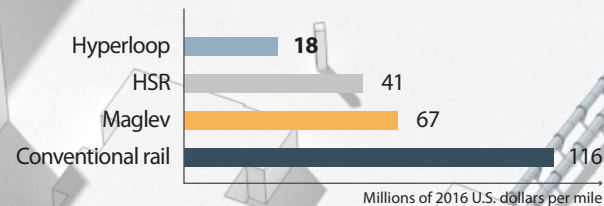
#### Enhancing accessibility

Subway could be easily connected to the hyperloop station.

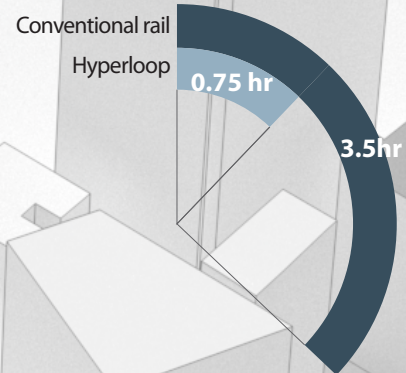
#### Using existing station

Train station can be transformed into the hyperloop station.

#### Cost of constructing rail routes



#### Commuting time 'New York - Boston'

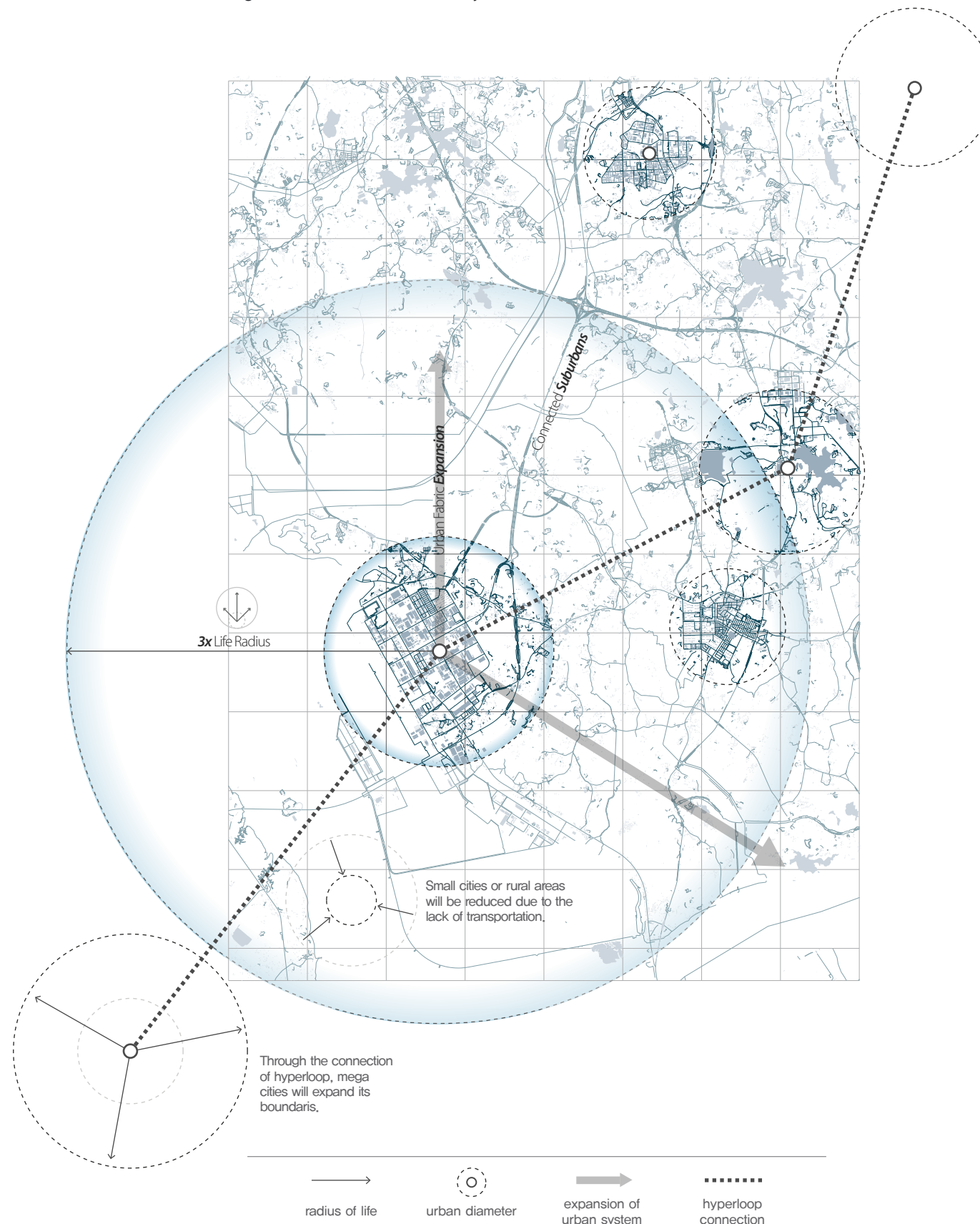


#### Preserve structure

Hyperloop needs only 60% space compared to conventional rail.

### Urban Impact – Regional

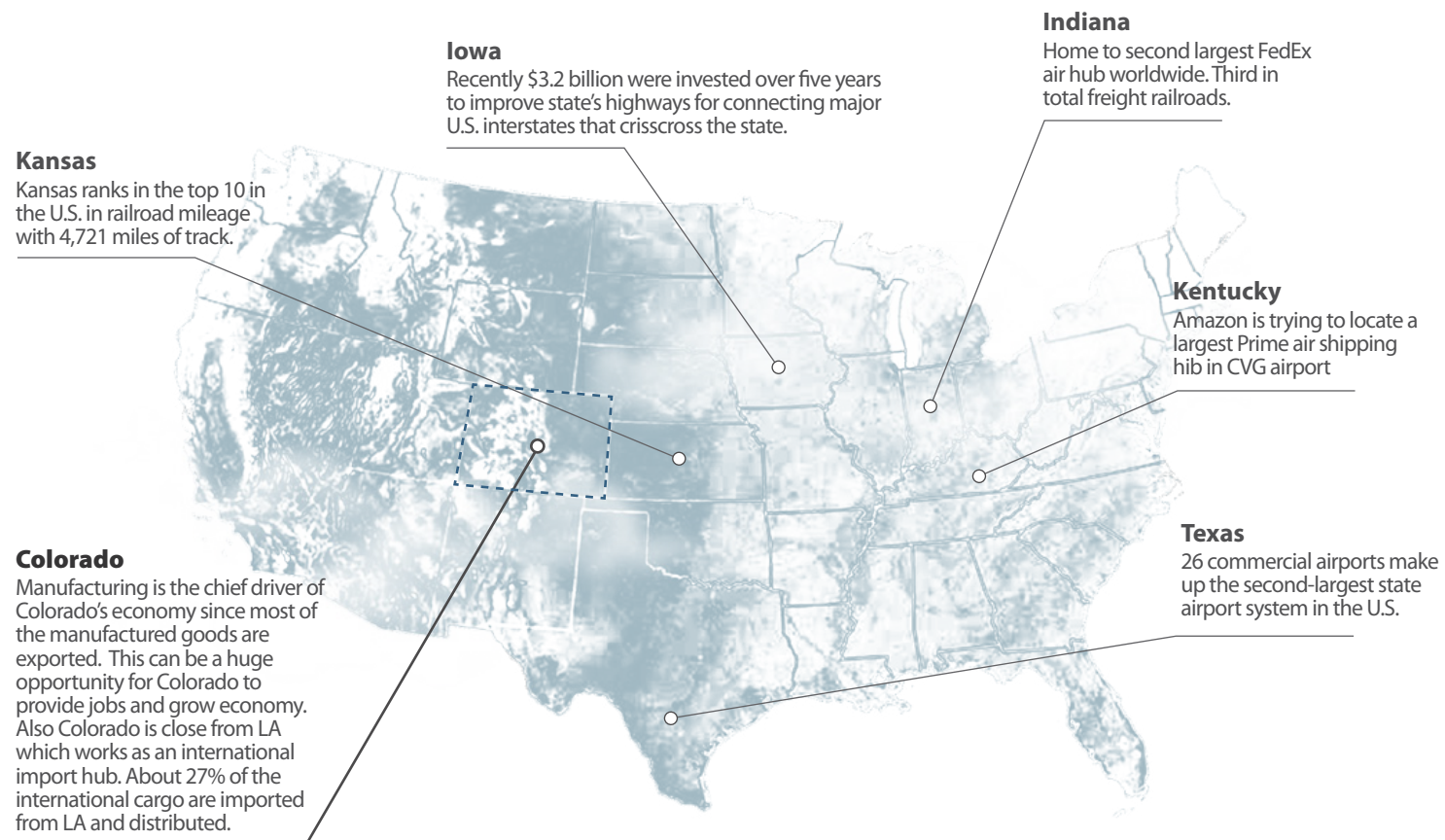
Hyperloop will affect our transportation system in many different aspects. The range of the radius of life will grow and the size of the city will evolve to a size that will swallow the suburban.





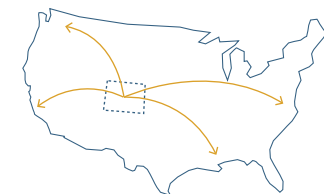
## Denver, A new cargo transporting hub

Denver in Colorado could be one of the possible candidate city for the new hyperloop station hub. Since the hyperloop will connect the US continent by cargo shipping in the beginning, Colorado is one of the best cities to become a cargo distribution hub in the nation. It is located in the middle of the continent and easily distribute materials to other cities.



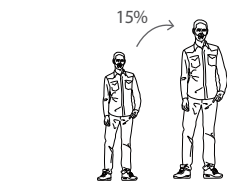
### Why Colorado need hyperloop?

Other cities invest money for airport, railroad, and warehouse. However, Colorado can become a cargo shipping hub by making a hyperloop connection to other cities. Harbor could not exist in this area and airport should be in the east side due to the mountains. For international distribution, hyperloop can carry cargo from LA and distribute to other cities. For domestic distribution, this city can easily distribute cargo within a short period of time.



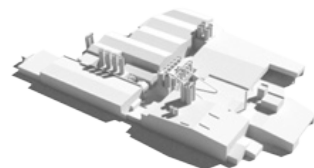
#### 1 Location

Since Denver is located in the middle of the nation, it is more efficient to distribute cargo from this city to other cities.



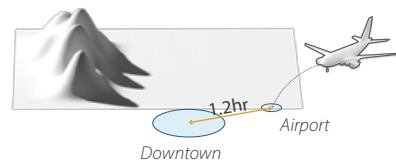
#### 2 Fast growing city

From 2010 to 2019, total population of Colorado state had been increased 15%. This is one of the fast growing state in entire states. One of the reasons is that new jobs had been created a lot recently.



#### 3 Manufacturing city

Manufacturing is growing fastly in Denver, Colorado. This could be an opportunity to shipping goods that made in this city.

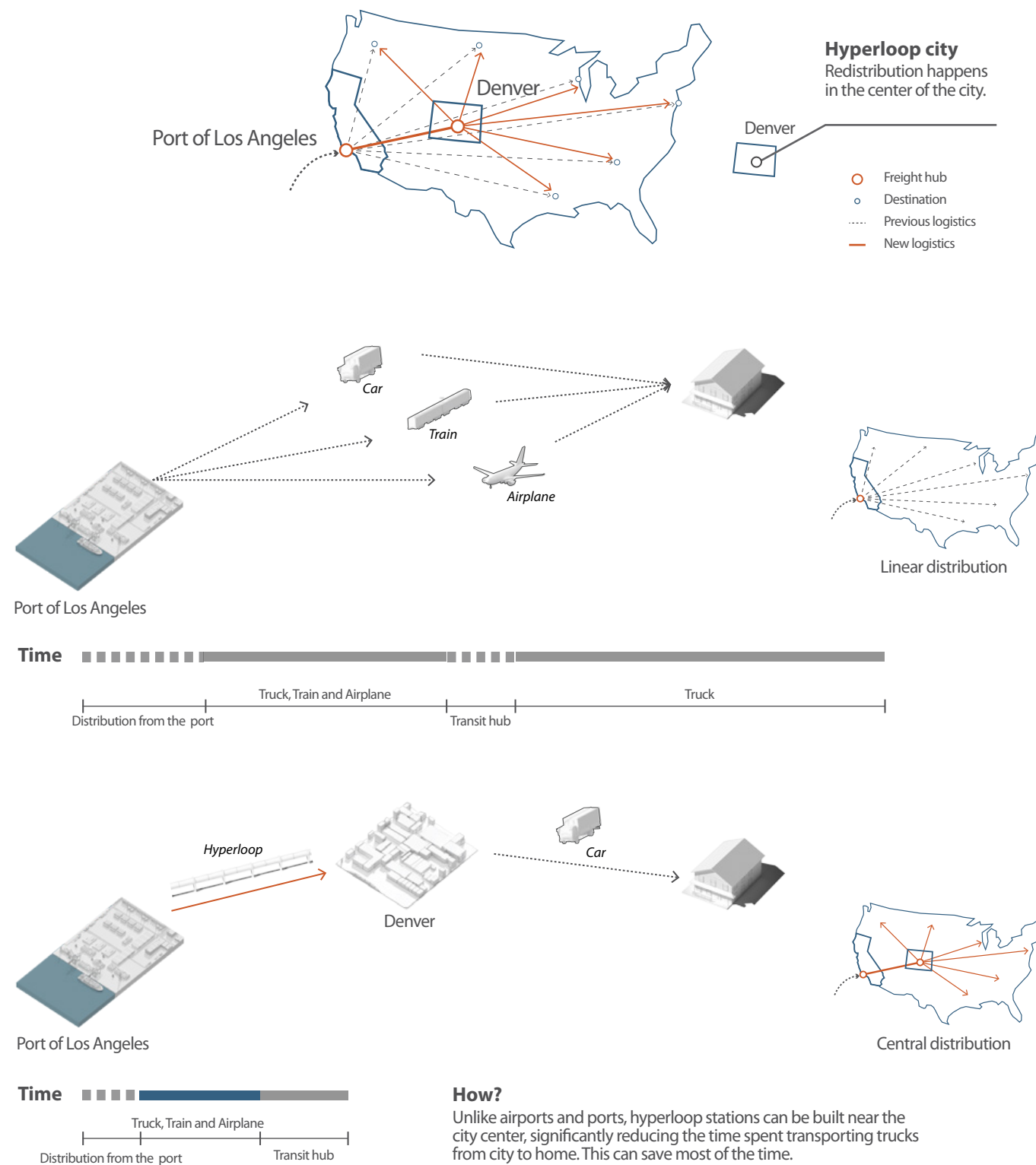


#### 4 Airport

Airport is located in the east side of the Denver. This is mainly because the mountains are located in the west side. However, mountains are not barriers for the hyperloop. It could locate in the center of the city.

## How the hyperloop system can change the shipping system in Denver?

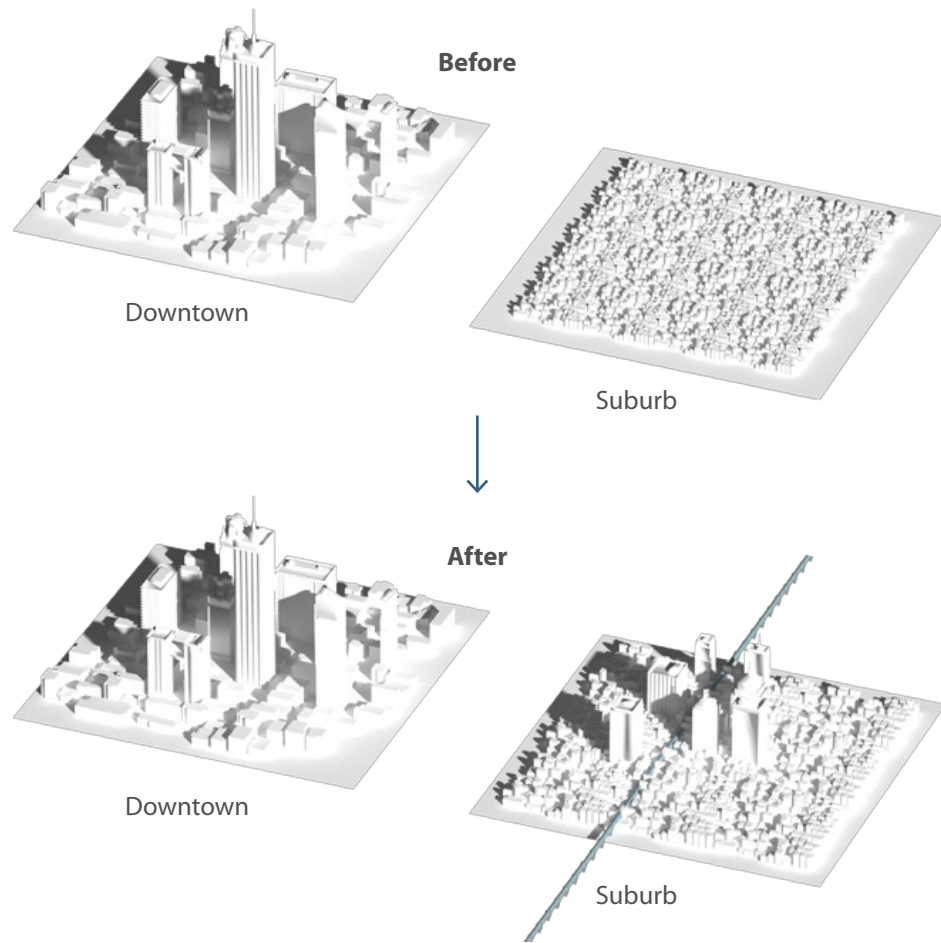
Cargo has been carried mainly in cities near the sea or major cities that has big hub airport. This is because cities near the sea can be built with ports, and large cities can efficiently transport logistics through large airports. However, hyperloop can efficiently transport cargo regardless of geographical constraints or city size. And these systems not only save time efficiently, but also create new added value.





## Hyperloop and the speculations

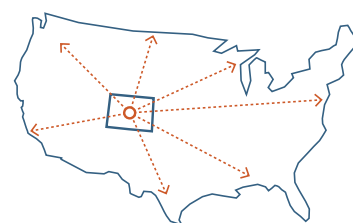
Hyperloop will impact the urban fabric a lot since it will replace airplane travel and amount of freight traffic. The first hyperloop connection will be LA to SF. New York to Los Angeles will be the key to connect the continent. Also, freight traffic from the harbor to the land will be replaced a lot by the hyperloop.



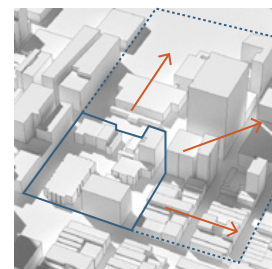
**Economic separation**  
Compared to downtown, suburb has low density and low economic independence.

**Growing suburb**  
If the hyperloop passes through the subcenter, the density is expected to increase with the economic growth of the subcenter.

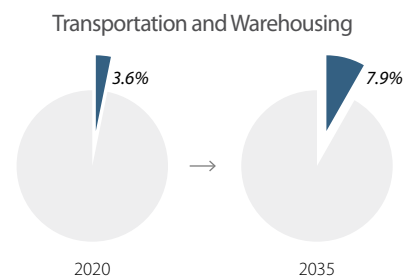
**Redistribution**  
The redistribution of cargo generates a variety of additional profits.



**Growth in suburb**  
The city gradually expands and the surrounding sub-center is also revitalized by hyperloop.

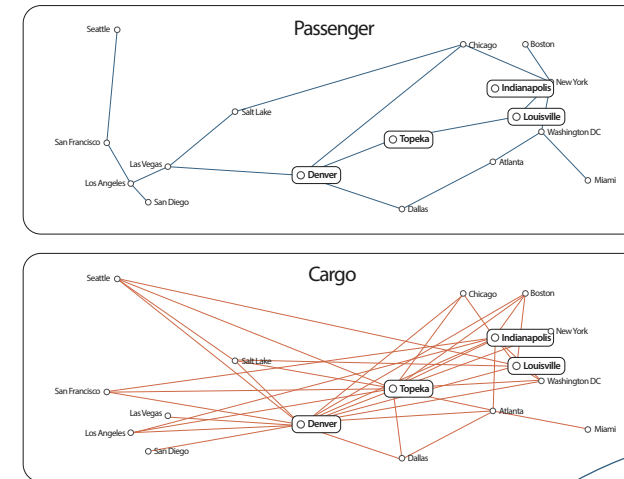


**Economy in Denver**  
By 2035, transportation is expected to account for more than twice the current share of the total economy.

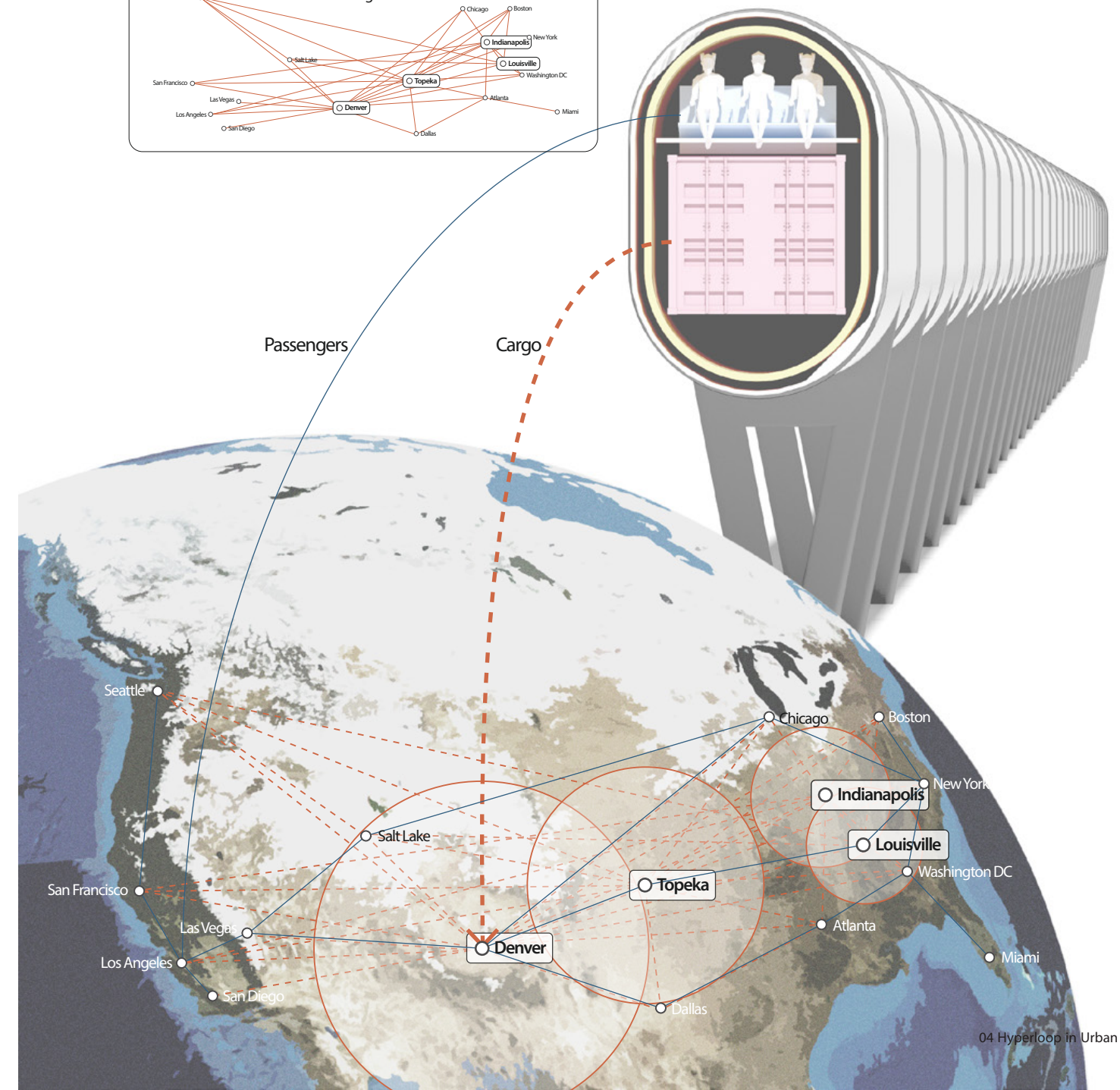


## Hyperloop and the future

Considering safety and economy, it is expected that the hyperloop will mainly carry cargo when it is first constructed. This could lead to economic expansion of small and medium-sized cities inland, not existing large city-oriented growth.



**Medium-sized inland cities**  
Major hub cities will be mainly occupied by passengers, but small and medium-sized inland cities will first become testbeds for hyperloop for proper distribution of cargo.

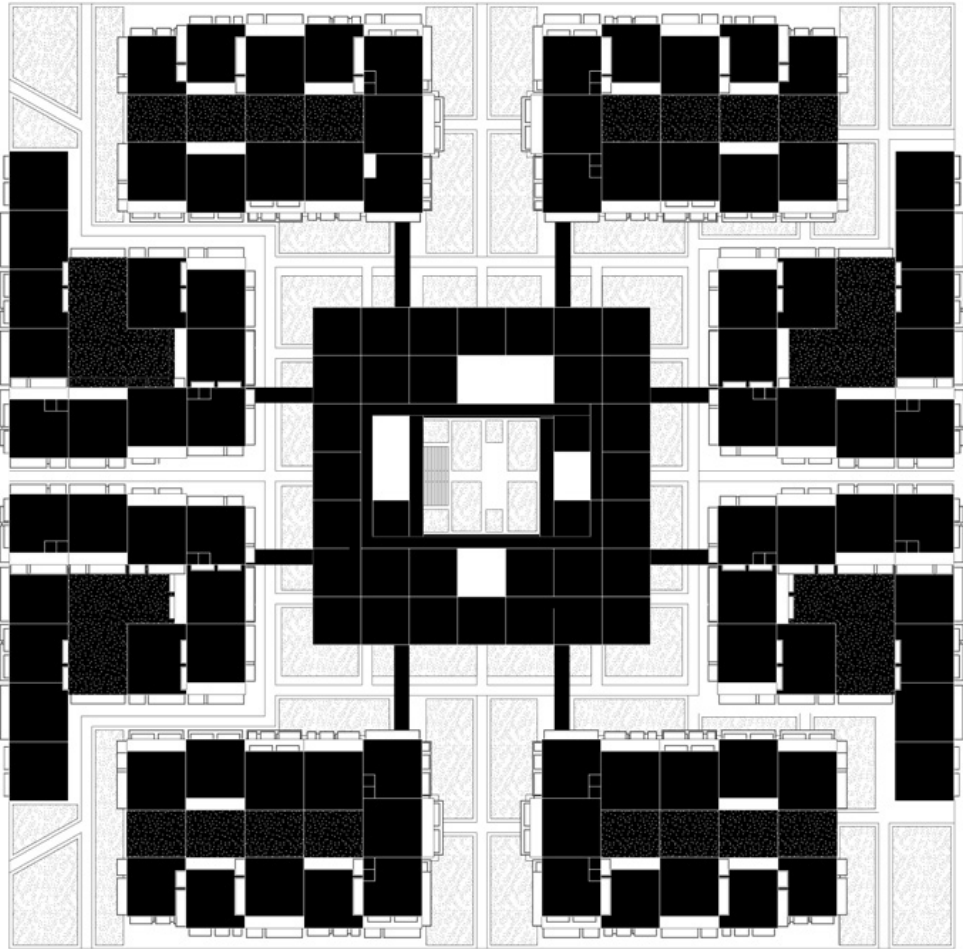




# 05 The Eunma Apartment Complex Renewal

Redevelopment of the residential complex

GSAPP 2021 Elective Course Seminar  
- Fabrics and Typologies -  
**Instructor:** Richard Plunz  
**Type:** Urban Theory  
**Location:** New York, United States  
**Individual Work:** Changbin Kim



New proposal of the Eunma Apartment Complex

This educational infrastructure system in Daechi district attracts many families to the area, which brings in real estate developers to establish more apartments. In 1979, a large apartment complex, called the Eunma Apartment Complex, was constructed in this area. It consisted of 28 buildings with approximately 4,500 households. It has been regarded as one of the expensive apartments in the real estate market. Convenient location and proximity to schools and hagwons continuously maintain the high demand in housing and raise the housing prices, making the neighborhood one of the most expensive neighborhoods to live in Korea.

There has been a big debate about how to redevelop this area. Since this is one of the largest apartment complexes in Korea, many ideas had been suggested by planners and architects. Our team try to find the current issues that had been played an obstacle of this redevelopment plan and propose a creative way to address these issues.

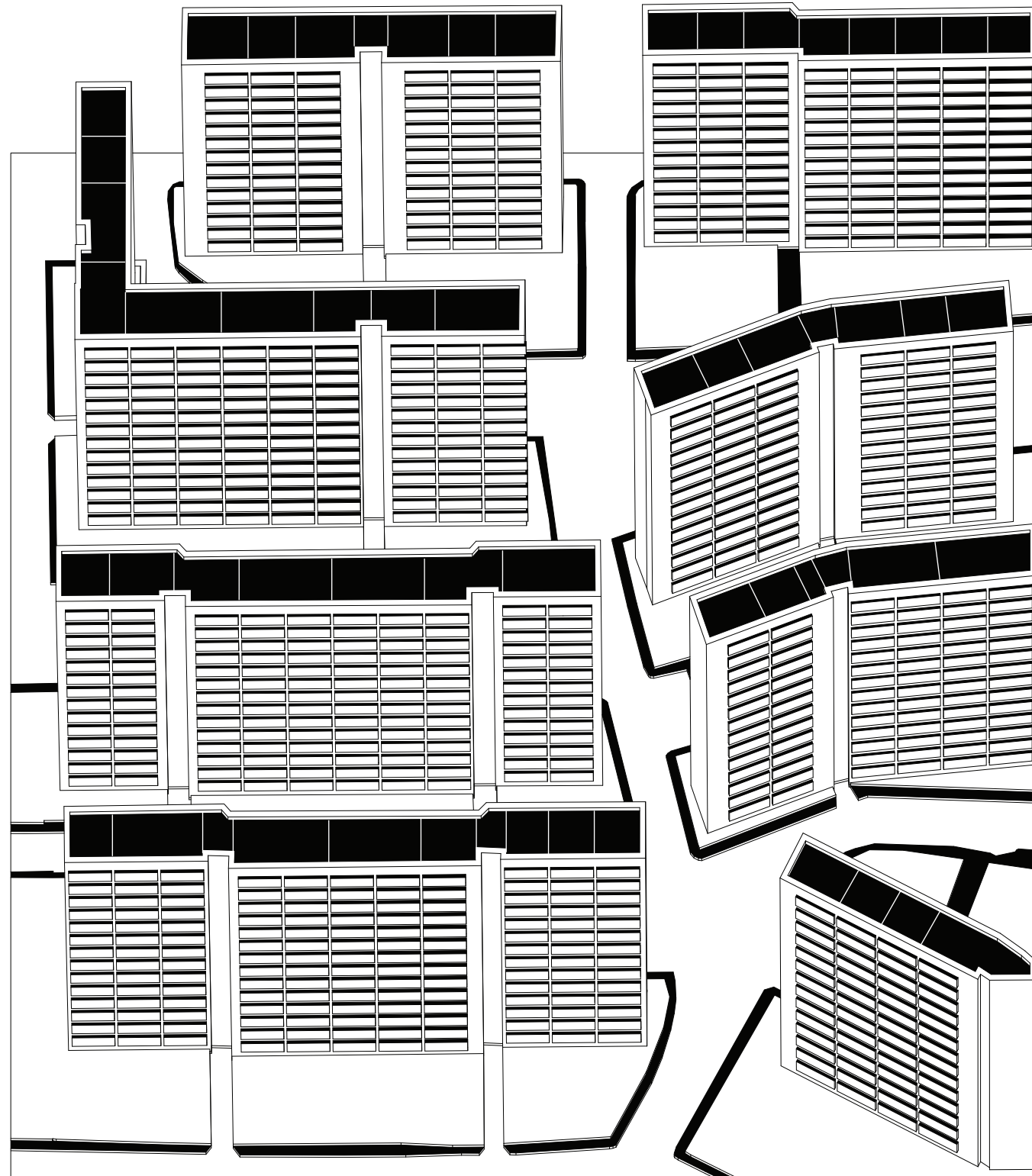
Since this apartment had been built within 50 years, there are four major problems in this complex. Firstly, parking is one of the major problems in this area. The current parking lot is about 0.7 per household but average cars per household is more than 1.2 in this apartment. The lack of parking lot created a new chain of problems. Open and green spaces are removed to make more parking lots in the complex. Therefore, all the vehicles park on the street within the apartment complex, which makes the street very crowded and narrow.

On top of that, this huge super block creates a certain boundary that other community members or local people from outside try hard to access this area. Apartment buildings created a physical wall and even people who live in Eunma cannot easily access to the commercial areas. Lastly, waste in the basement is one of the issues that we are trying to adjust. New waste disposal system will be replace the current system.



### Eunma apartment complex

The existing Eunma Apartment is a 14-story apartment complex with 4,000 households. It is the most representative example of a large apartment complex located in Seoul.



### New proposal on the site

We would like to plan a new residential complex by cutting out the location of the site's 1000x1000 ft square. At this time, the relationship with the surrounding area, transportation, and population were comprehensively analyzed.



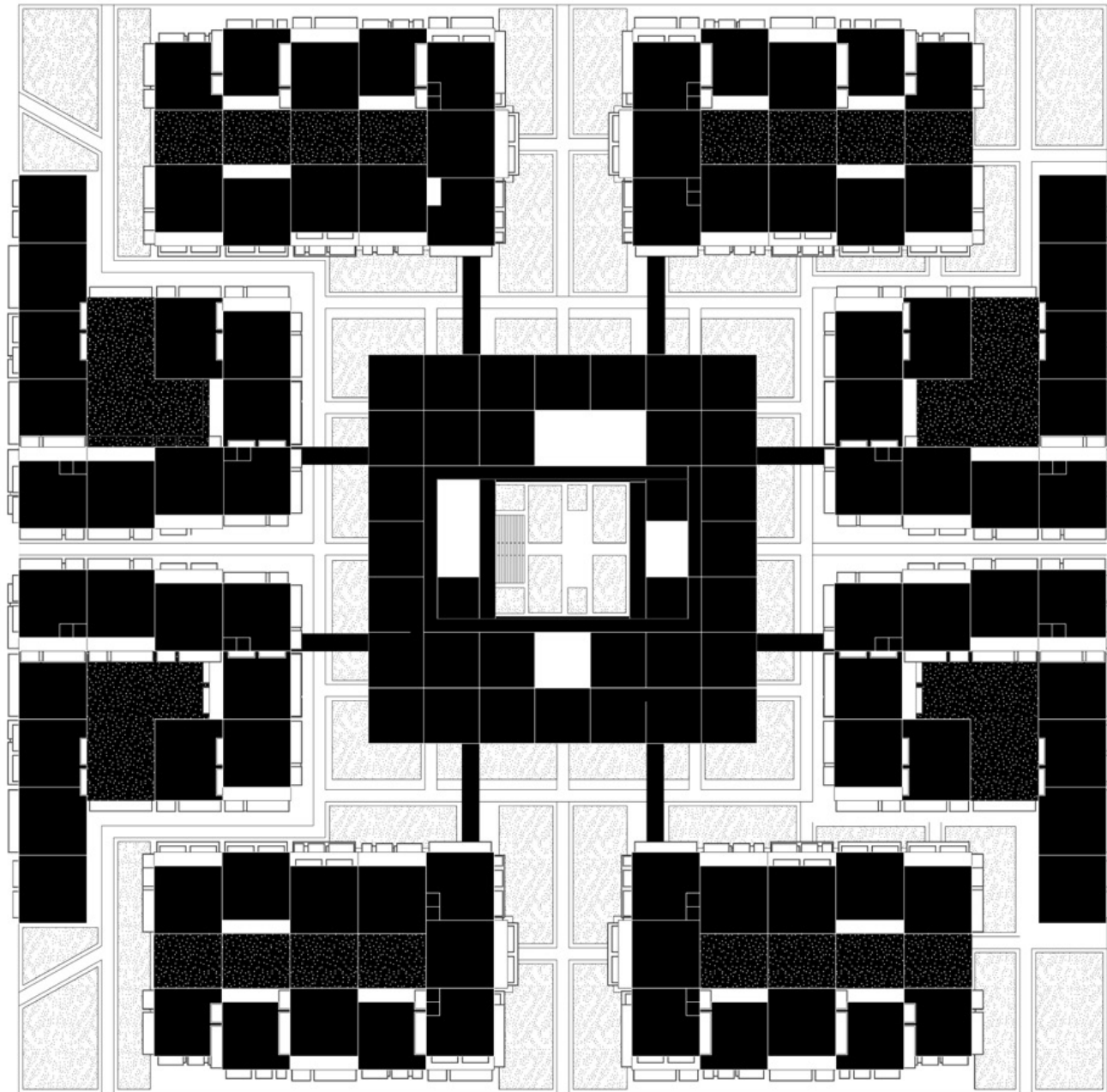
100 500 1000ft

- ① Eunma Apartment Complex
- ② Eunma Shopping Center
- ③ Daedo Elementary Scshool
- ④ Mido Apartment



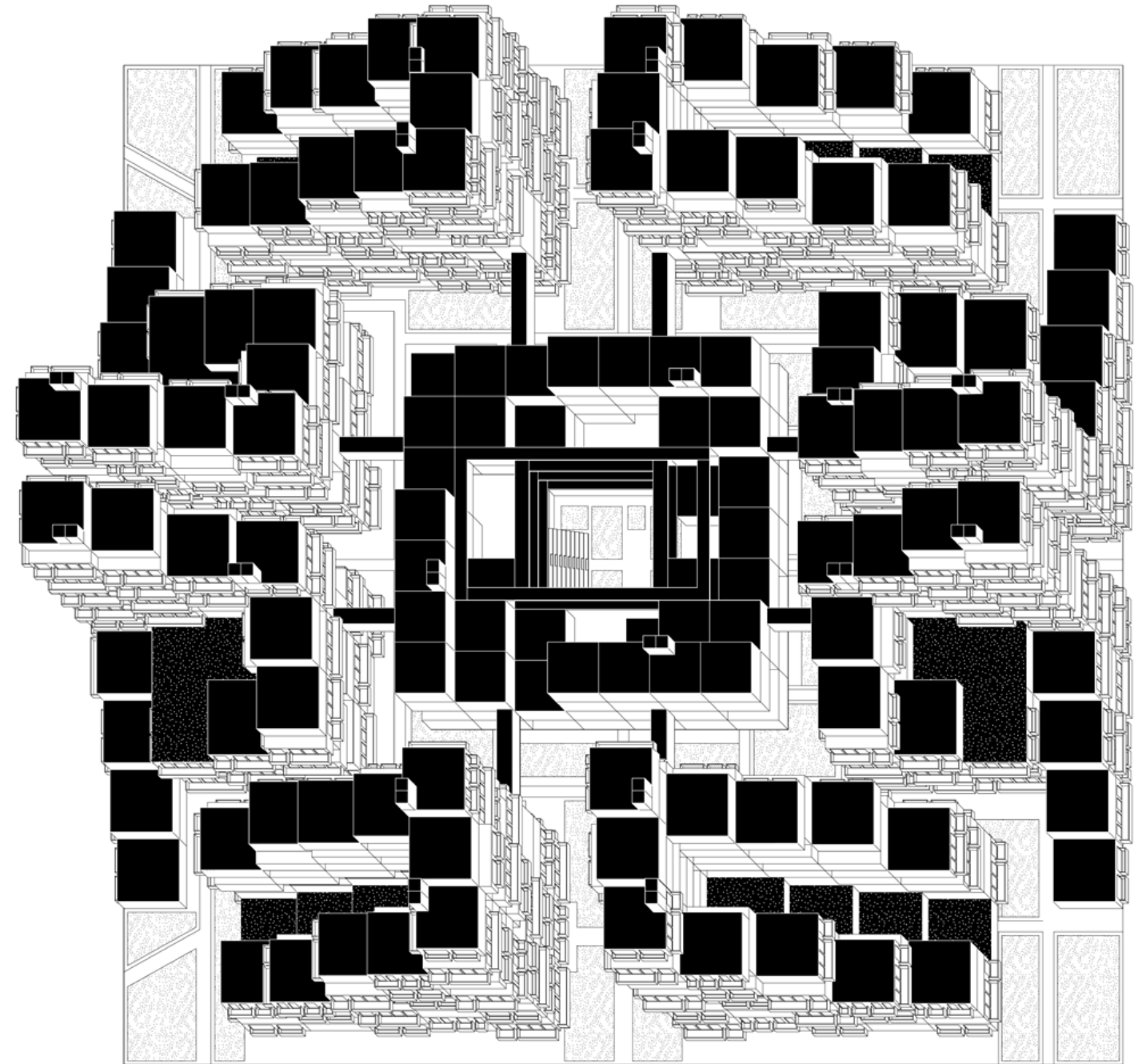
### Central courtyard that connects the apartment complex

From our proposed plan we can see it more clearly: each of the buildings has their own central courtyard surrounded by the terracing apartment building. The central courtyard is located inside the market and amenity complex at the center as well.



### Individual yards on the rooftop

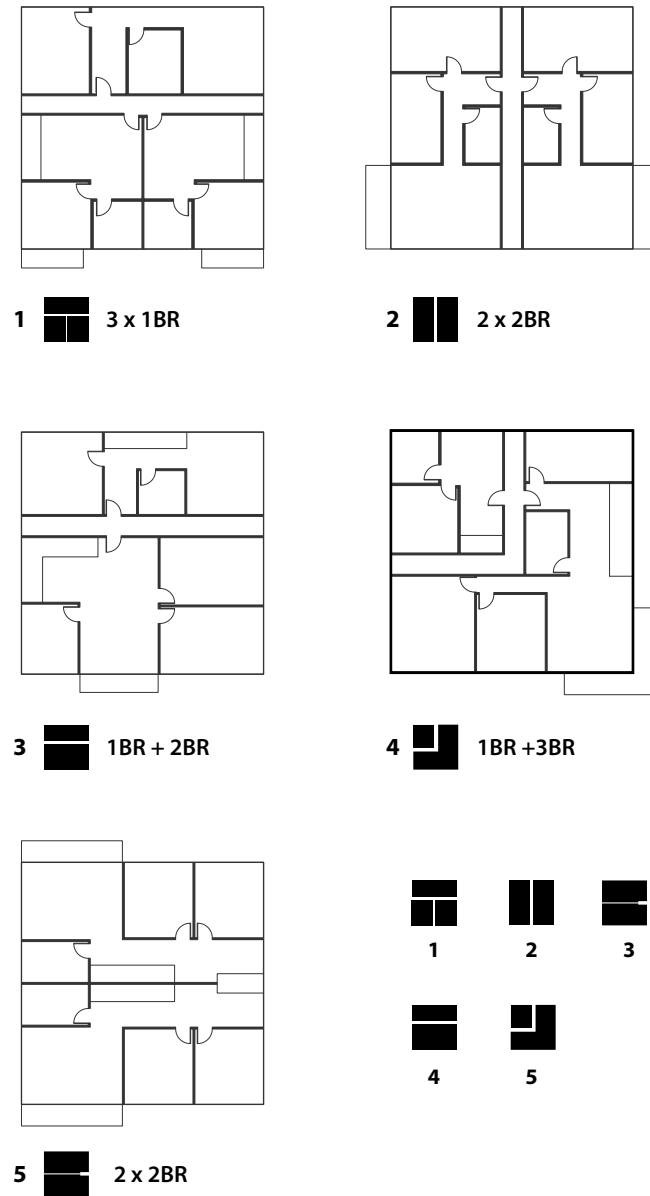
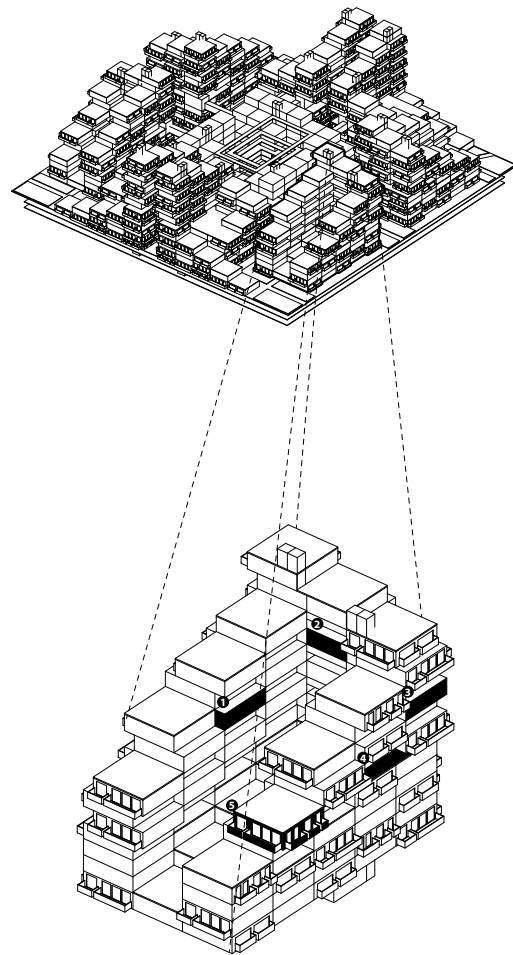
Individual balconies are added to the residential units to provide better sun exposure and ventilation. Moreover, each households are able to have their own yard.





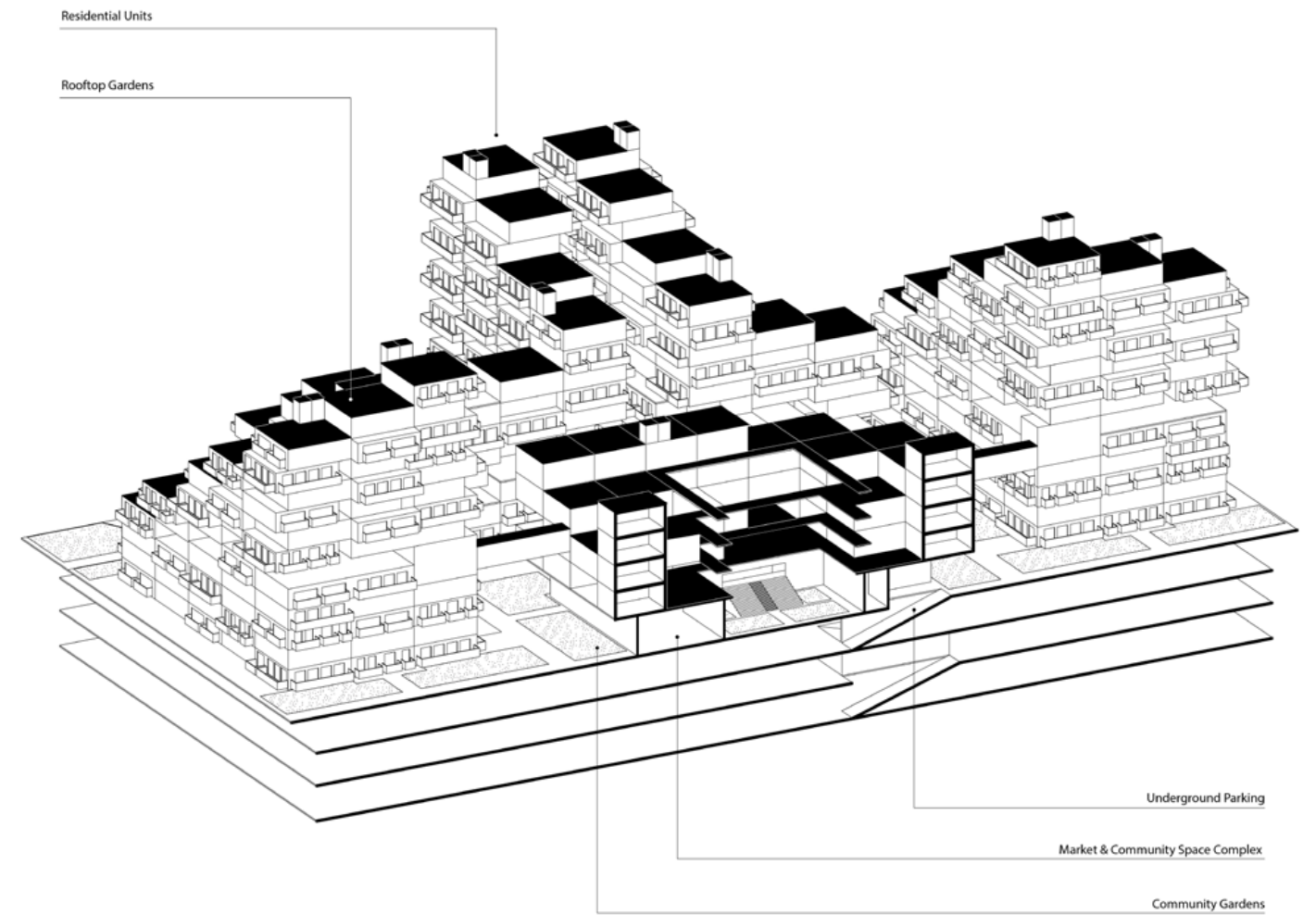
## Housing unit types

There is a total of five different unit types that could accommodate residences. From one-bedroom to three-bedrooms, people can choose according to their needs.



## Overall design strategy summary

Underground parking, communal playground, gardens on the ground floor, roof garden, central courtyard, and sky bridges can connect each buildings.



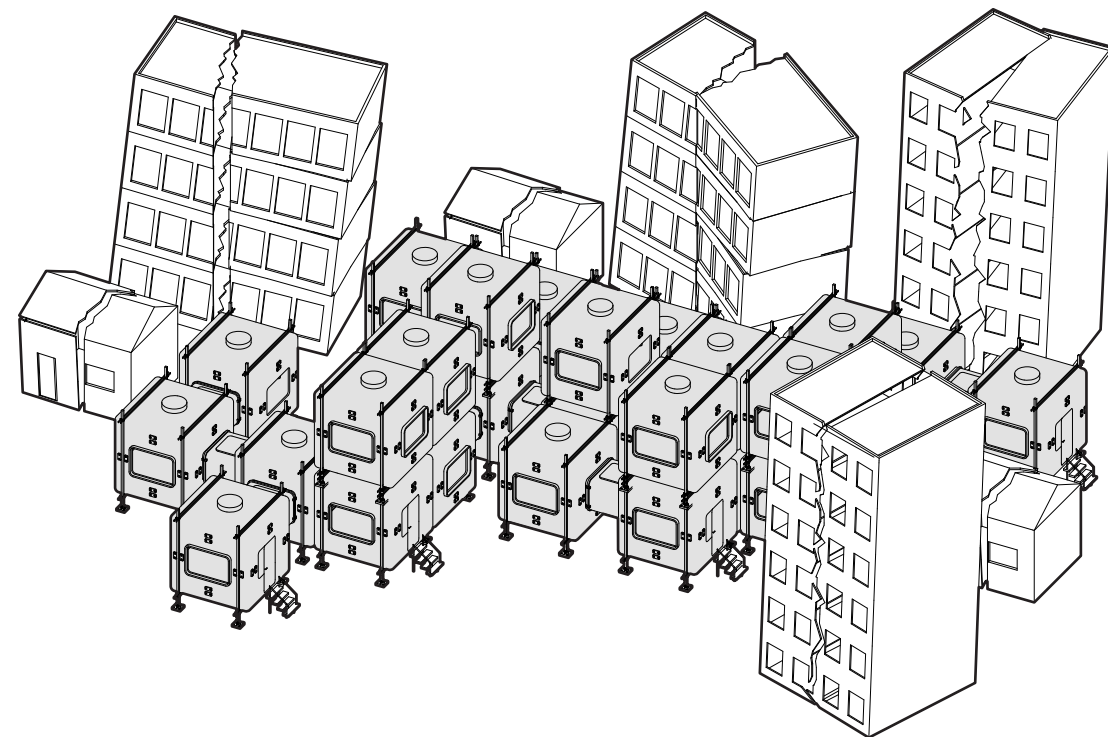


## 06 Metabolism Architecture for Japanese Turmoils

New metabolism architecture for disasters

GSAPP 2022 Elective Course Seminar  
- Speculative City -

**Instructor:** David Eugin Moon  
**Type:** Architectural Study  
**Location:** Tokyo, Japan  
**Individual Work:** Changbin Kim



Metabolism architecture for Japanese turmoils

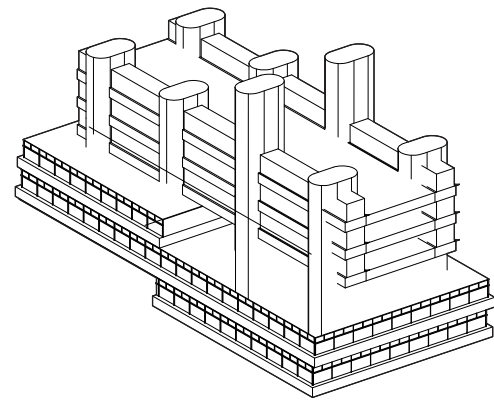
Metabolic architecture can present new possibilities when noting that earthquakes and tsunamis continue to occur due to Japan's geographical constraints. When the house is torn down and the place of life is lost due to a disaster, it can be seen that the growing creature can be transformed into a space that can bring hope in. The modular structure encapsulated in the ruined space can allow everyone to build a temporary community together with a simple guide. If there is a process of making something by the victims themselves, rather than simply being provided with a house missing, the wound will heal much faster.

In addition, it intends to provide several encapsulated spaces to the victims

by connecting them with community spaces that the existing metabolism architecture did not have. Toyo Ito emphasized the necessity of a space where privacy is guaranteed to heal sadness after the disaster in his Home For All Project, but also the necessity of public space. What can be relied on at the disaster site is not a better facility, but in the end, it can be found in relationships with people. Overcoming pain through communication with other victims is most important, and to this end, capsules are put together to form a large public space. Meeting in a public space can be a space that strengthens the bond between people and helps them to rise again in the lost place of life.



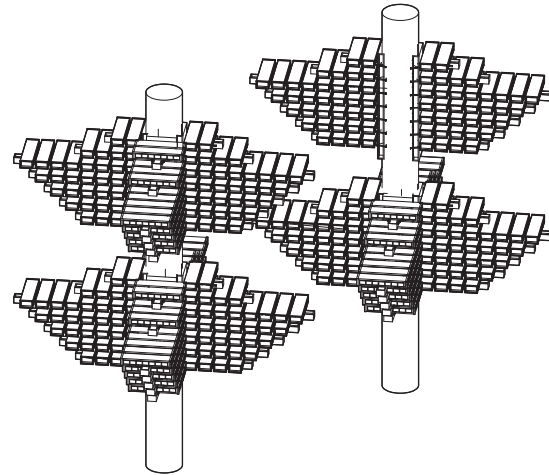
1961



**Yamanashi Press Centre**  
1961, Kofu

Tange Kenzo was assigned to design a press and broadcaster center in Kofu. He designed this building for further expanding. He tried to combine three different offices into one building and this was a very first metabolism architecture that had built in Japan.

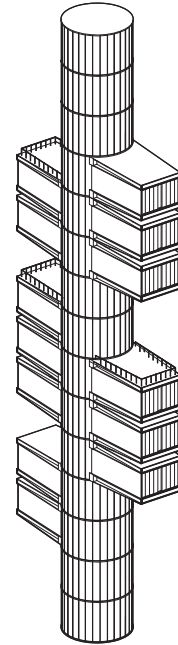
1962



**Clusters in the Sky**  
Nakagin Capsule Tower

Tange Kenzo was assigned to design a press and broadcaster center in Kofu. He designed this building for further expanding. He tried to combine three different offices into one building and this was a very first metabolism architecture that had built in Japan.

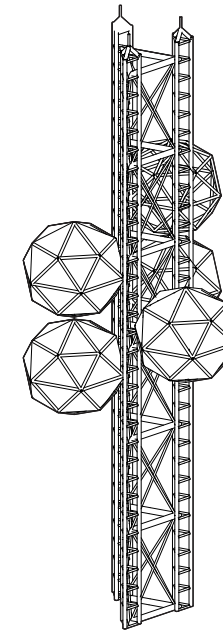
1966



**Shizuoka Press Tower**  
1966, Tokyo

Tange Kenzo was assigned to design a press and broadcaster center in Kofu. He designed this building for further expanding. He tried to combine three different offices into one building and this was a very first metabolism architecture that had built in Japan.

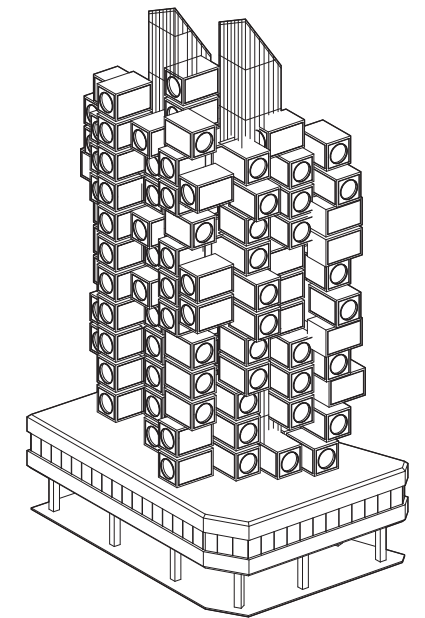
1970



**Osaka Expo Tower**  
1970, Osaka

Tange Kenzo was assigned to design a press and broadcaster center in Kofu. He designed this building for further expanding. He tried to combine three different offices into one building and this was a very first metabolism architecture that had built in Japan.

1972



**Nakagin Capsule Tower**  
1972, Tokyo

Tange Kenzo was assigned to design a press and broadcaster center in Kofu. He designed this building for further expanding. He tried to combine three different offices into one building and this was a very first metabolism architecture that had built in Japan.



**+1792**  
Mt. Unzen volcanic eruption  
32°45' 41" N 130°17' 55" E  
12,000



**+1828**  
North Kyushu Typhoon/Tidal Wave  
33°N 131°E  
19,113



**+1923**  
Great Kanto Earthquake  
35°19.6' N 139°8.3' E  
105,385



**+1944**  
Tonankai Earthquake  
33.57°N 136.18°E  
1,251



**+1946**  
Nankaido Earthquake  
32.93°N 135.85°E  
1,330



**+1983**  
Nihonkai-Chubu Earthquake  
40.462°N 139.102°E  
100



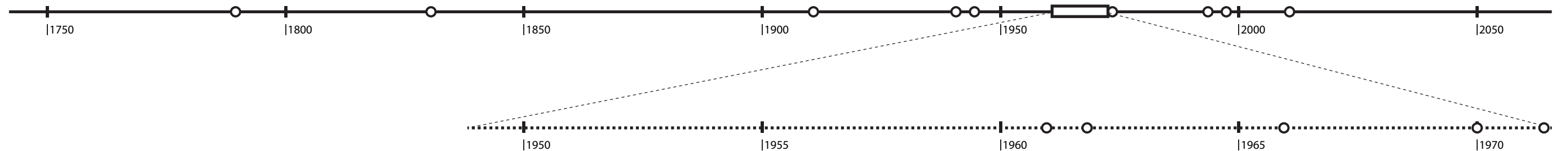
**+1993**  
Hokkaido Earthquake  
42.851°N 139.197°E  
230



**+1995**  
Great Hanshin Earthquake  
34.59°N 135.07°E  
6,434



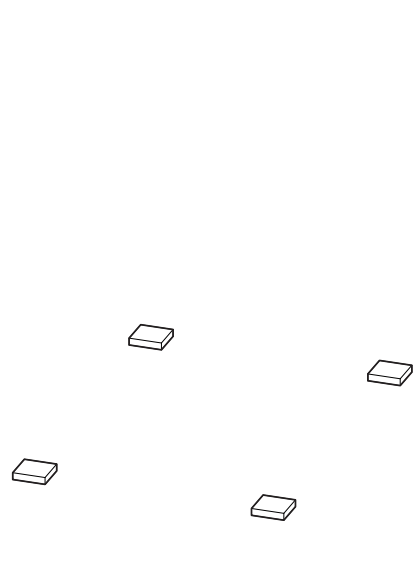
**+2011**  
Tohoku Earthquake  
38.322°N 142.369°E  
19,747





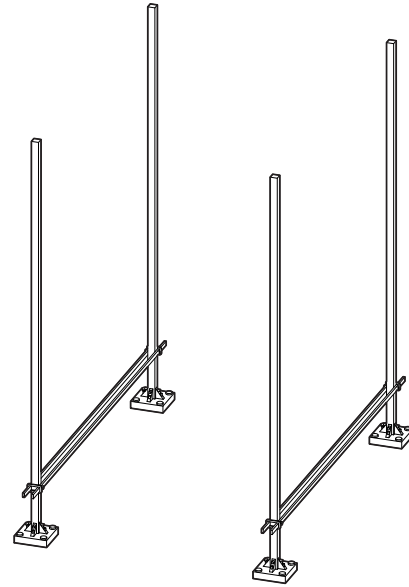
## How to assemble capsules

It aims to provide shelters and homes to those who lost their homes by using encapsulated structures in ruins. At this time, especially, the capsules can be connected on several scales, creating a community center where as many people can gather from a space where one or two people live.



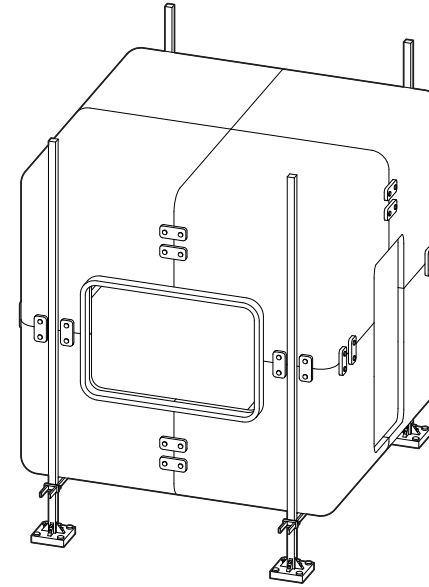
### 1. Positioning

Place a foundation on the floor and select a seat.



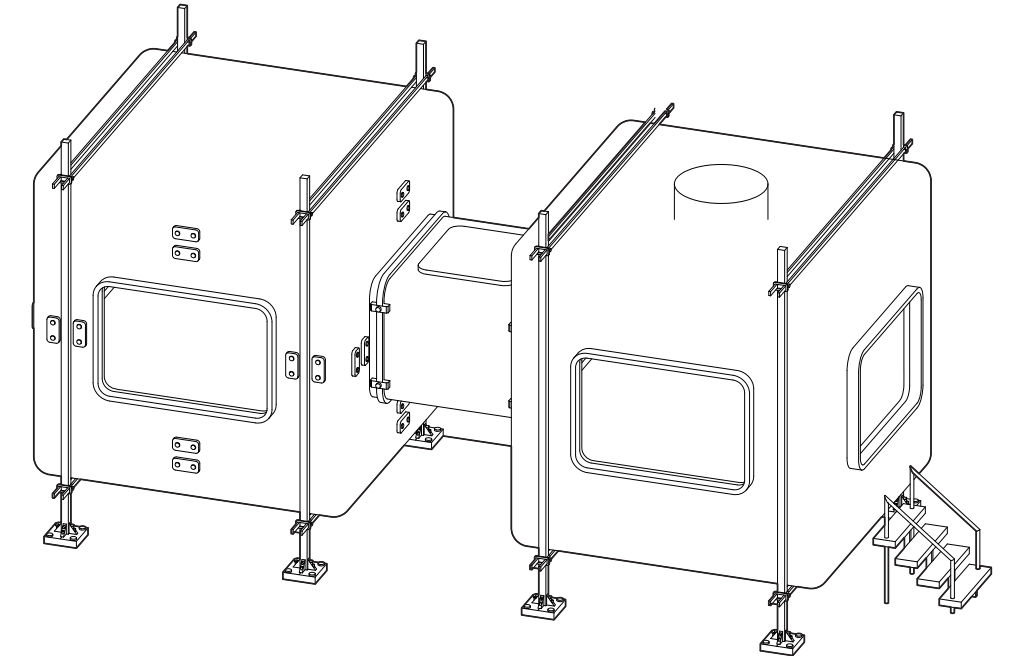
### 3. Weaving of Pillars

The columns and columns are woven together as auxiliary materials to strengthen them.



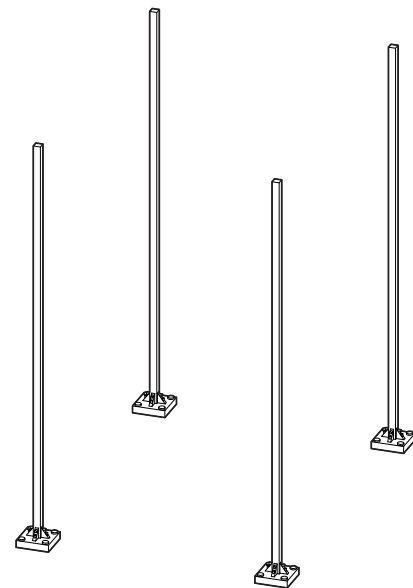
### 5. Inserting windows

Place the windows and doors in place.



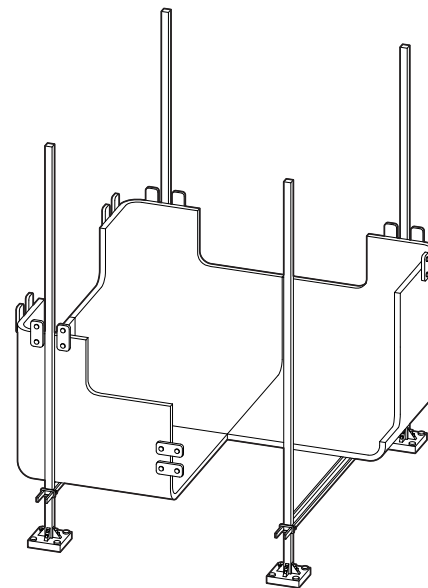
### 7. Additional Capsule Connections

Insert the capsule with a connection passage when it is a multi-person family or when you want to connect it.



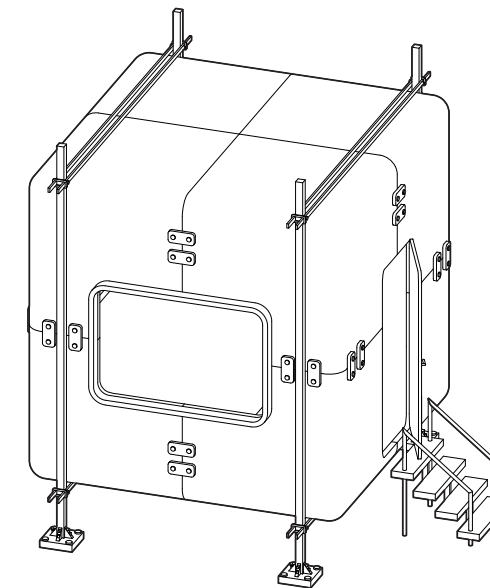
### 2. Laying the Pillar

Place a column on top of the foundation and use screws to combine the foundation with the column.



### 4. capsule insertion

Place plastic capsules on foundation and post and secure.

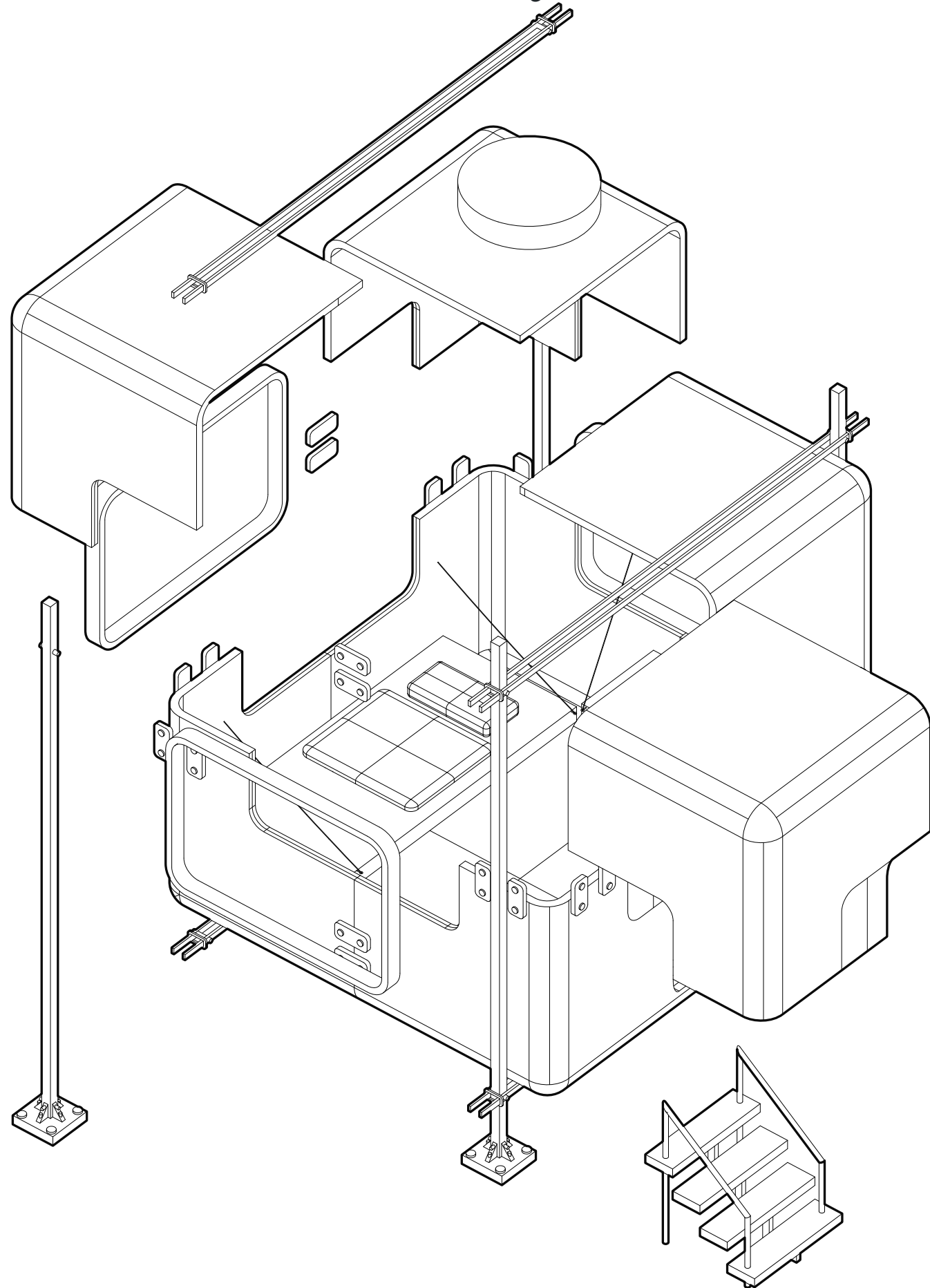


### 6. Installation of stairs

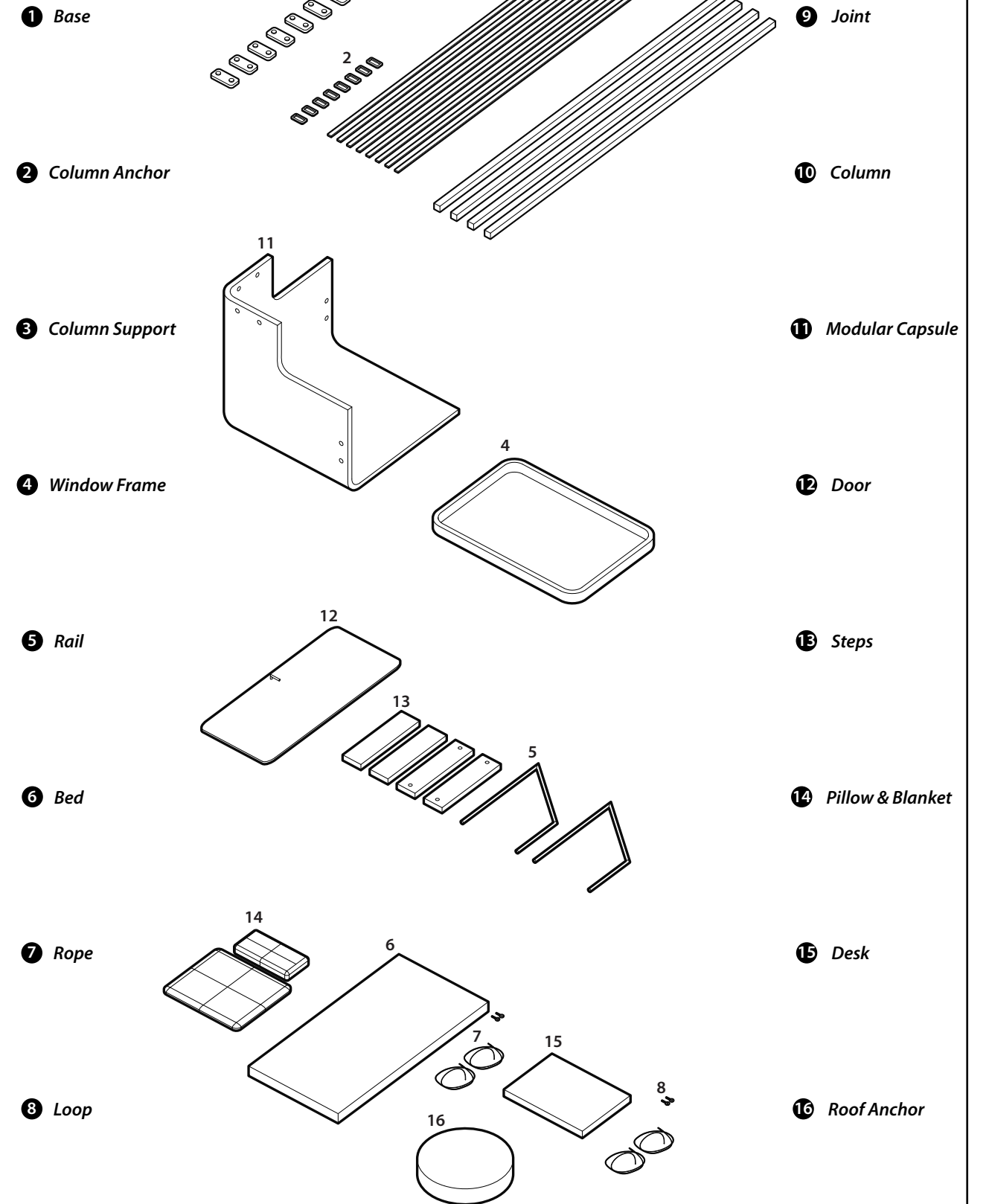
Stairs are installed to make an entrance and weave columns and columns on top of the capsule.



Axonometric diagram



Toolkit diagram





## 07 Displayced

A physical and virtual installation in Manhattanville



A QR code for the augmented reality of Manhattanville

GSAPP 2022 Elective Course Seminar  
- If Buildings Could Talk -

**Instructor:** Sharon Ayalon

**Type:** Architectural Study

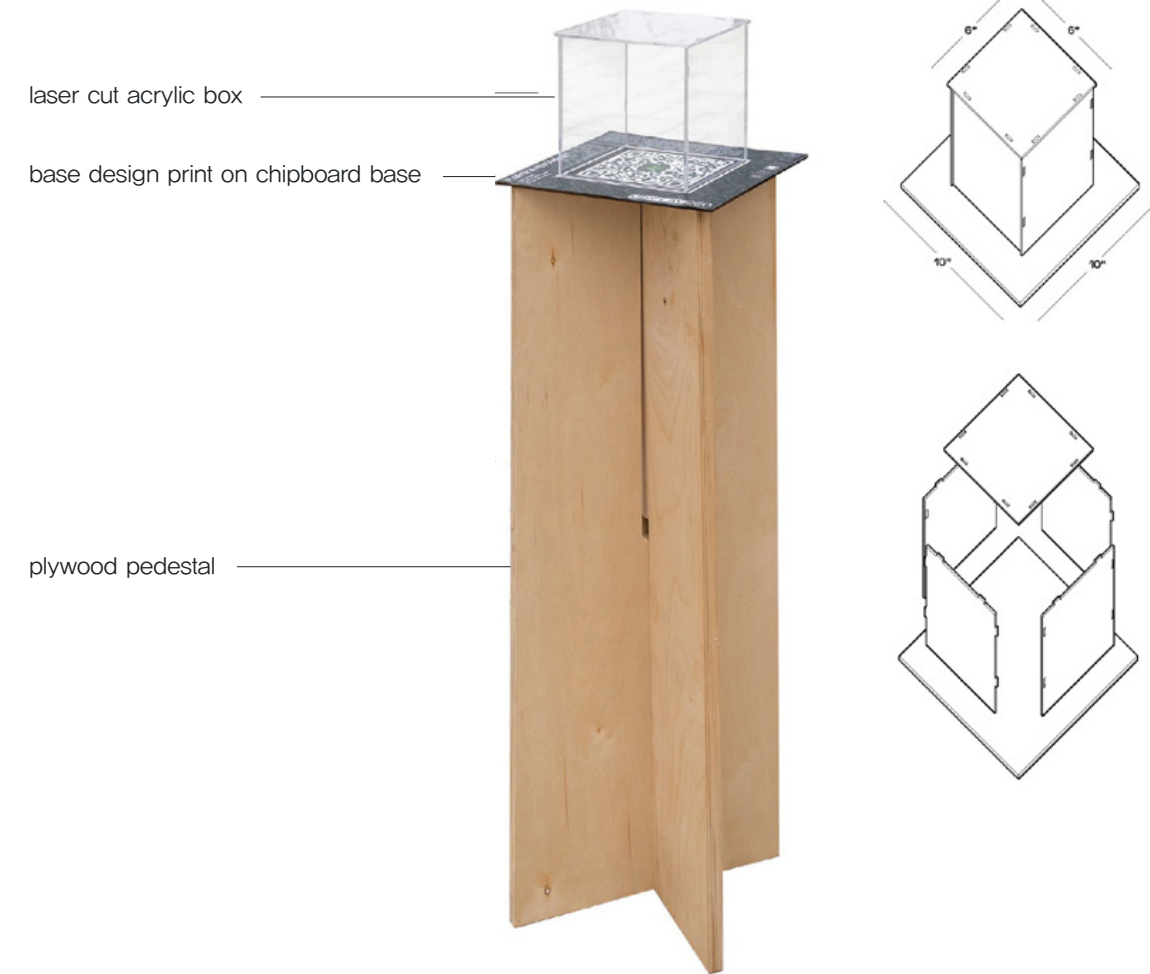
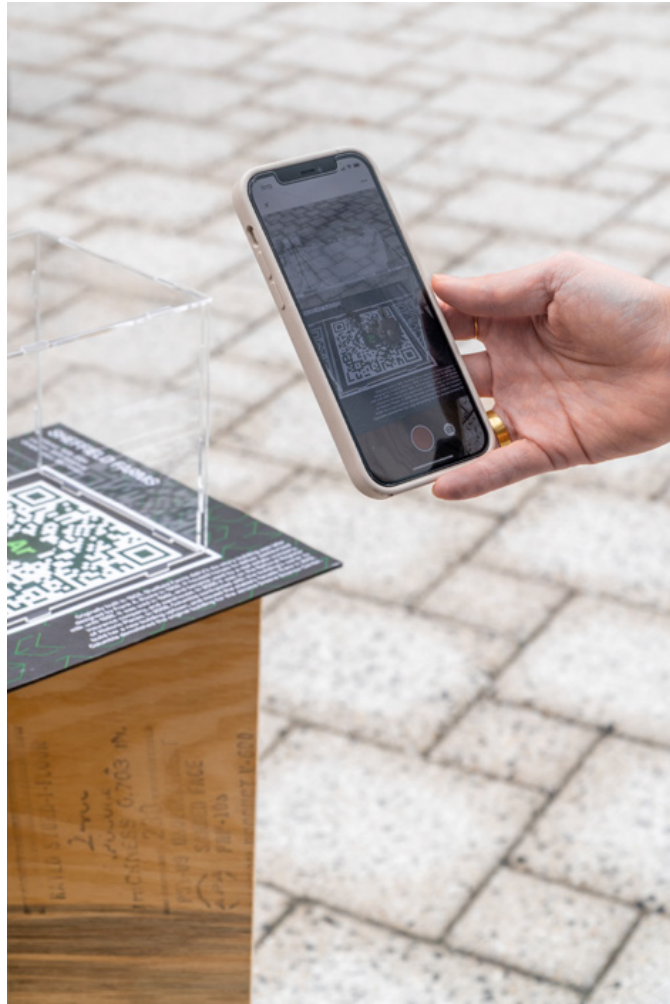
**Location:** Manhattan, USA

**Group Work** with Yunha Choi, Lula Chou, Cesar Delgado,  
Ben Diller-Schatz, Max Goldner, and Erisa Nakamura

DISPLAYCED puts Columbia's gentrification and displacement of the Manhattanville community on display, literally. Asking what traces of Manhattanville's past remain and what was fully erased, the work contends with the numerous scales of displacement, from families to local businesses to entire community networks. In comparing multiple time periods, disputes, and phases of change, the DISPLAYCED also grapples with the many nuances that come with displacement at such a large scale: the discrepancies of settlements, the other various agents of change and exploitation, as well as the archives that remain lost.

The work uses an empty display case as both a physical and virtual signifier. Physically, the display case suggests a curated museum space as well as the affect of sheer absence. Jarring and peculiar, visitors are encouraged to go up to these cases where they can scan a QR code to take them to an augmented reality on their phones, whereby they can see objects, buildings, and stories from various pieces of Manhattanville that no longer remain. While primarily clustered around the Manhattanville campus, some of these cases are dotted along the walk from Columbia's main campus, suggesting a longer tour that takes into consideration Columbia's evergrowing domain.



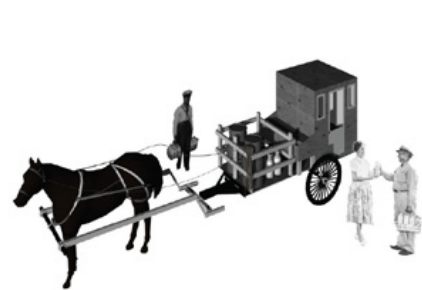
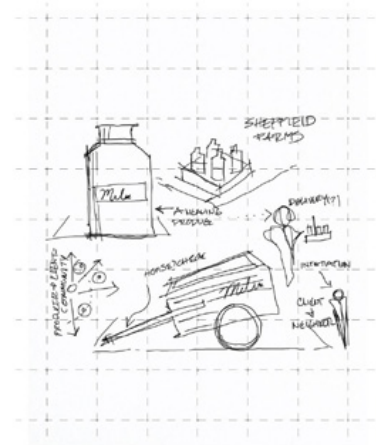


### Design Strategies

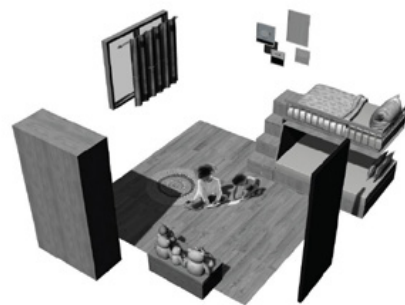
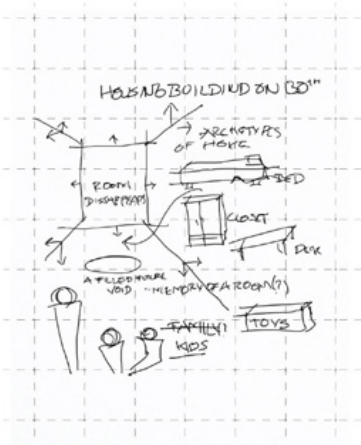
We designed a laser cut acrylic box that can be simply attached together to minimize the use of adhesives. This will also allow for the edge conditions to be as less apparent as possible in order for the AR objects “inside” the box to be able to be seen clearly. We placed the acrylic box on a base that includes the QR code to be read. This was balanced on top of plywood pedestals provided by GSAPP to optimize the height of the objects for viewing.



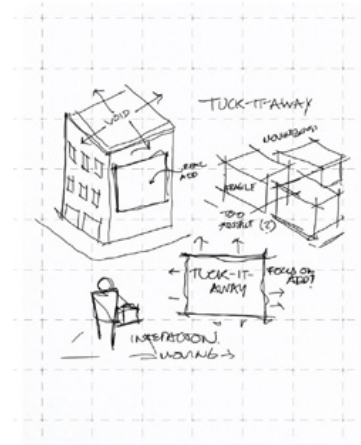
**Sheffield Farms**  
A farm in the Manhattanville



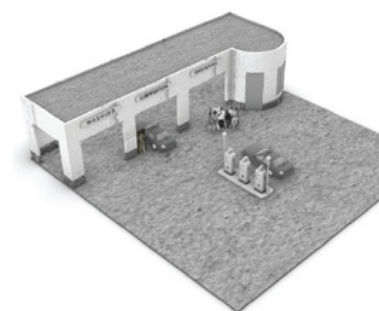
**Housing**  
Housing of the Manhattanville



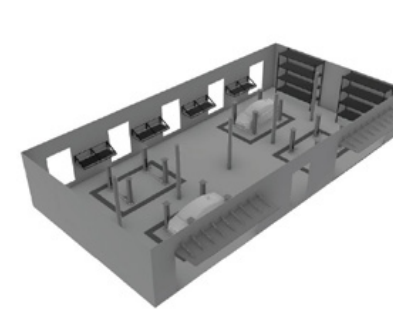
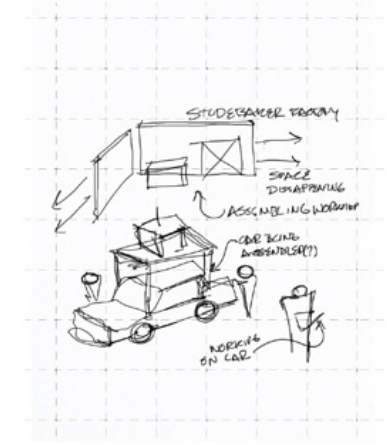
**Tuck-It-Away**  
Storage center



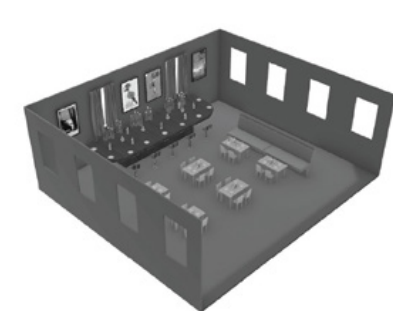
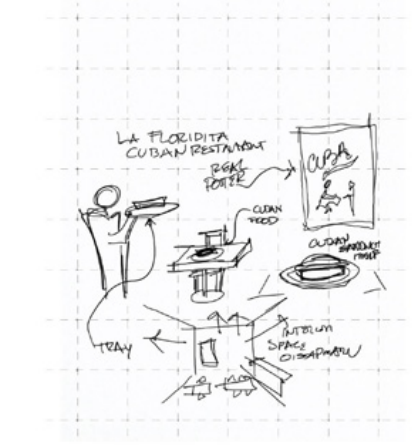
**Gas Station**  
A gas station near Manhattanville



**Studebaker Factory**  
Car repair center



**Floridita**  
Cuban restaurant



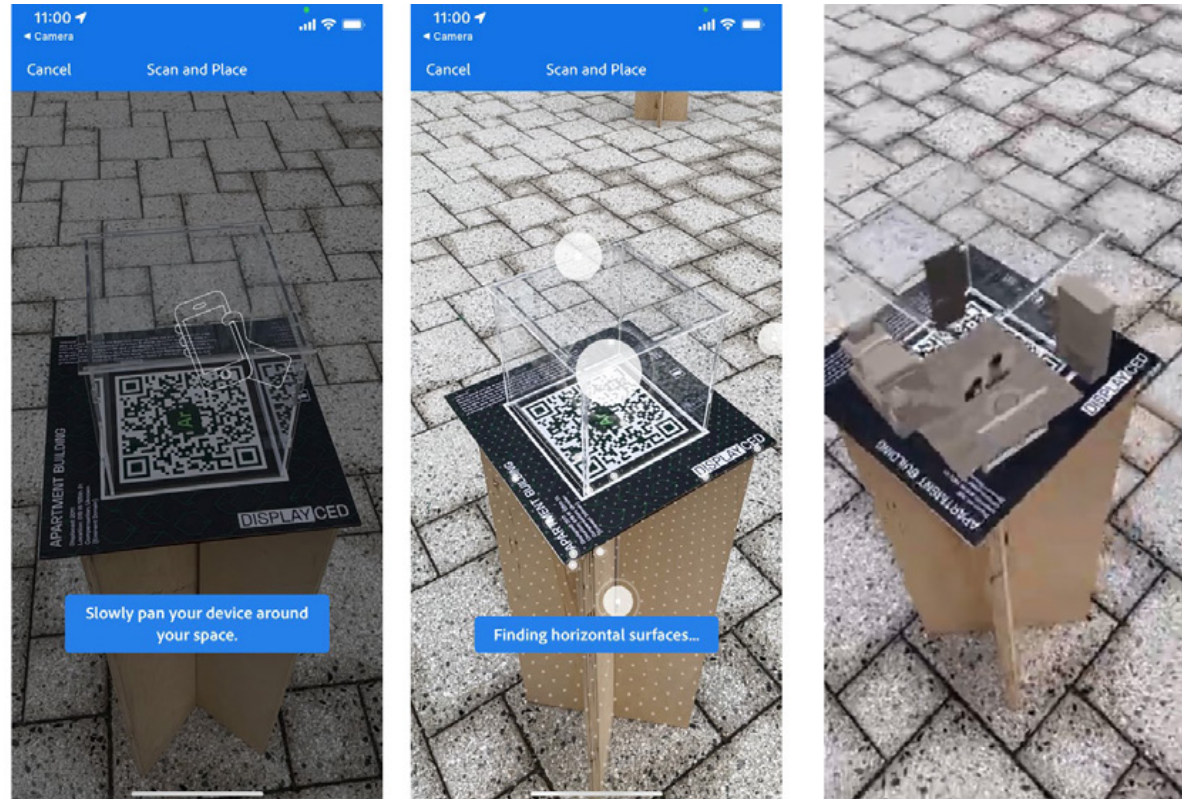
**Augmented reality to restore the historic buildings in Manhattanville**

It will be interesting to restore the previous buildings using ar technology and compare what the buildings of that era have now looked like. Physically, it cannot capture the appearance of the building that changes with the times, but if you use the augmented reality technology, you can check the appearance of the previous building again.



## How to use

How to use an augmented reality with your phone



1. Locate a Displayced QR code on a gallery pedestal and stand parallel to it.
2. Open your phone camera app and point it at one QR code. After a few seconds, a notification will appear on your screen directing you to Adobe Aero. Press it and continue to Aero to view the augmented reality content of this gallery.
3. After Aero launches, slowly pan your camera. Small white dots will appear on your screen. These are used by the app to help position 3D content in a fixed location.
4. When instructed (approximately 1–3 seconds of panning to create white dots) tap the screen to place the Displayced model on top of the pedestal.
5. You are now ready to experience the Displayced gallery! Feel free to move around the exhibit. Get down close to the model to explore smaller details.

## Site map

Site map of the six historical places

