

01 Redesigning the Urban Grids - A Possible Paradigm of the Post-COVID New Town

The Covid -19 outbreak was caught off guard. During the epidemic, in order to control the spread of the epidemic, traffic control and lockdown measures had to be adopted. This makes people think of the relationship between urban space, block patterns, traffic patterns, and epidemic control.

It raises the question that can we start from the perspective of urban design and make efforts to prevent and respond to the coming of the plague crisis?

In the project, we redesign the urban grids and reorganize the basic circulations of residents under both normal and epidemic circumstances in order to envision a possible paradigm of the post - COVID utopia new town.

Background Research: Urban Grids and Covid-19 Outbreak



1. How do urban grids influence transmission?

- On basic daily route
- On abstract model of road network

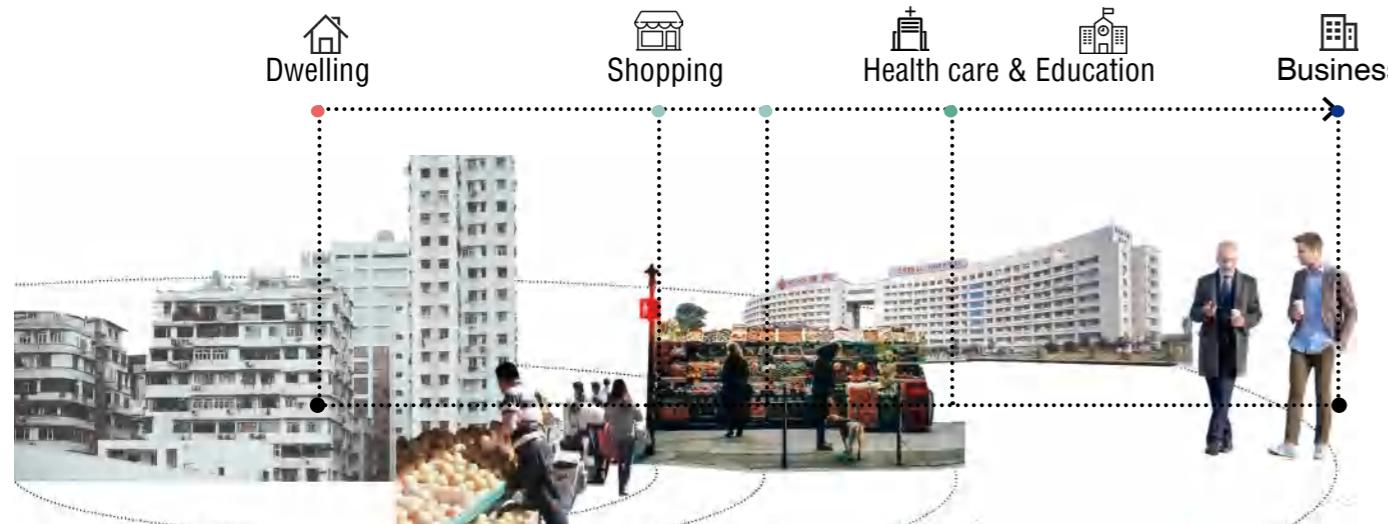
2. What kind of urban grid helps the epidemic control?

A better model

Gtree model

Relationship between urban grids and transmission based on Basic Daily Route

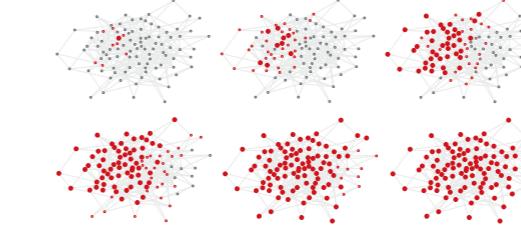
To avoid infection people go out along **Basic Daily Route**. The basic daily route is the route people going out for daily life needs, from shopping around residential area, to education, health care and public service in city centre. How many crossings there are in people's basic daily routes effects the infection risk. Thus road network effects the infection risk.



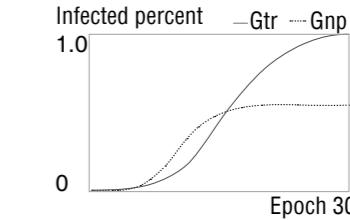
Relationship between urban grids and transmission based on abstract model of road network

Network, anti-epidemic and urban planning ©Longxu Yan

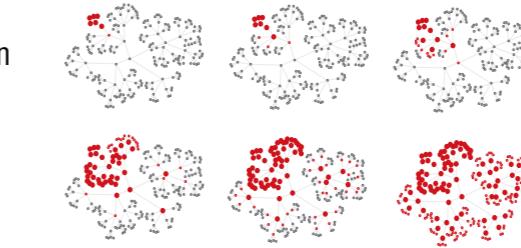
Relationship between abstract model of cities and transmitting time



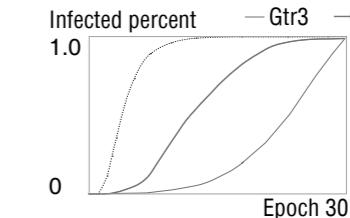
Gnp model is the abstract model of current road network in Wuhan.



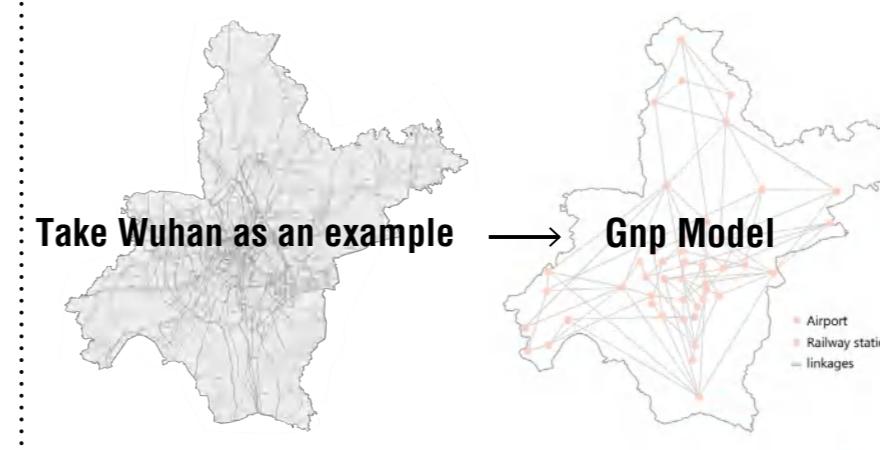
Transmitting time under 2 models. Gtree model is better for epidemic control.



Gtree model is an ideal network model against pandemic.

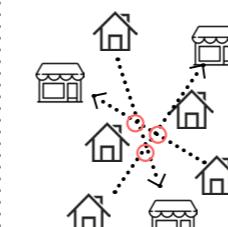


Fewer branches there are, longer the transmitting time is.



The abstract model of current road network in Wuhan is put forward by taking crowd gathering spots like airports, shopping malls as nodes and add linkages between each two of them. A Gnp network model is formed, which is not advantageous for outbreak control.

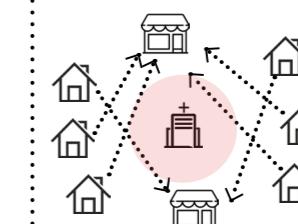
People may easily get infected at the crossings.



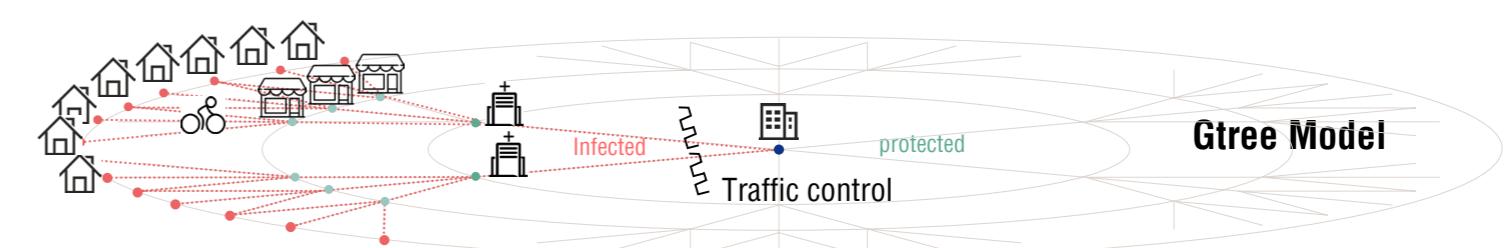
Less crossing helps the epidemic control.



People may easily get infected at the crossings.



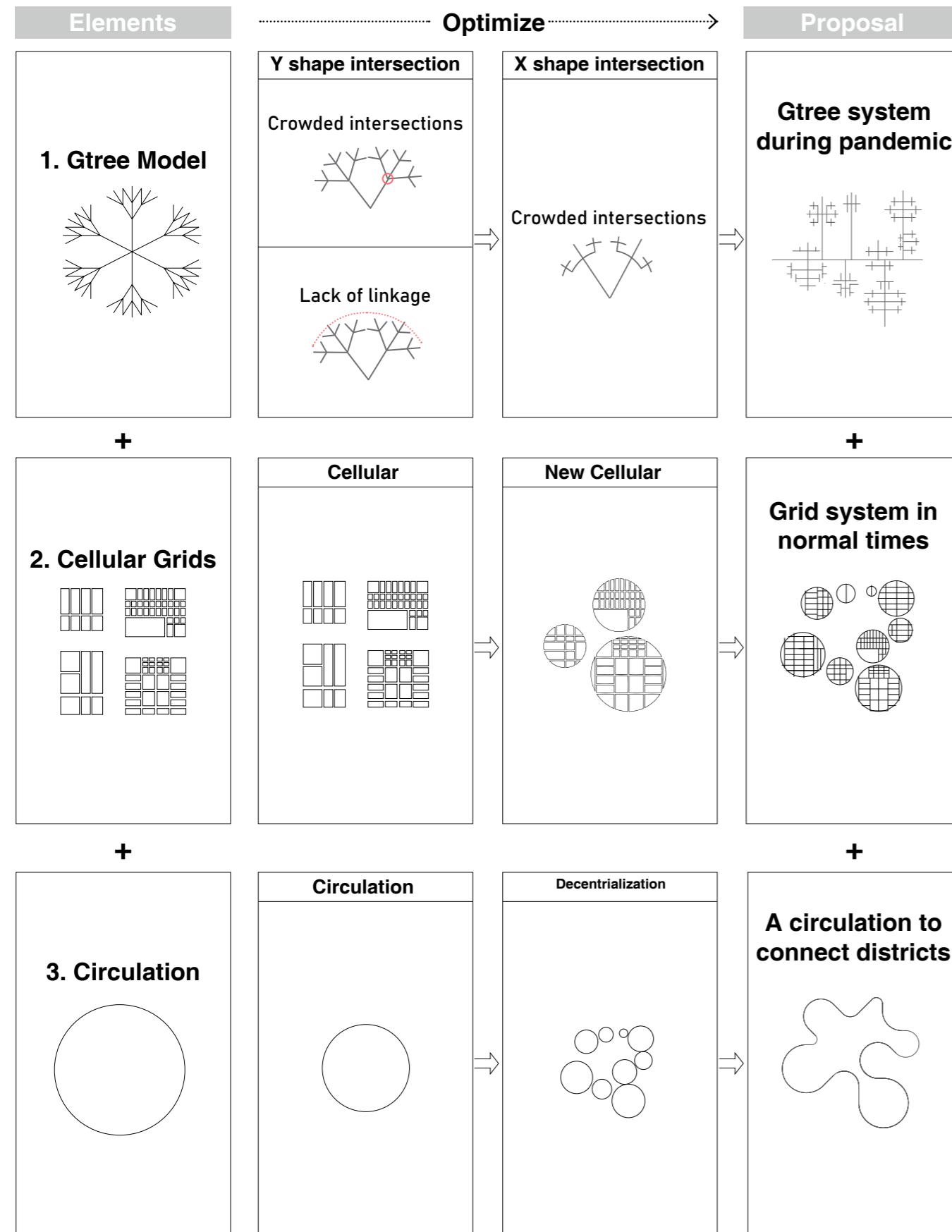
Less crossing helps the epidemic control.



Gtree Model

Strategy

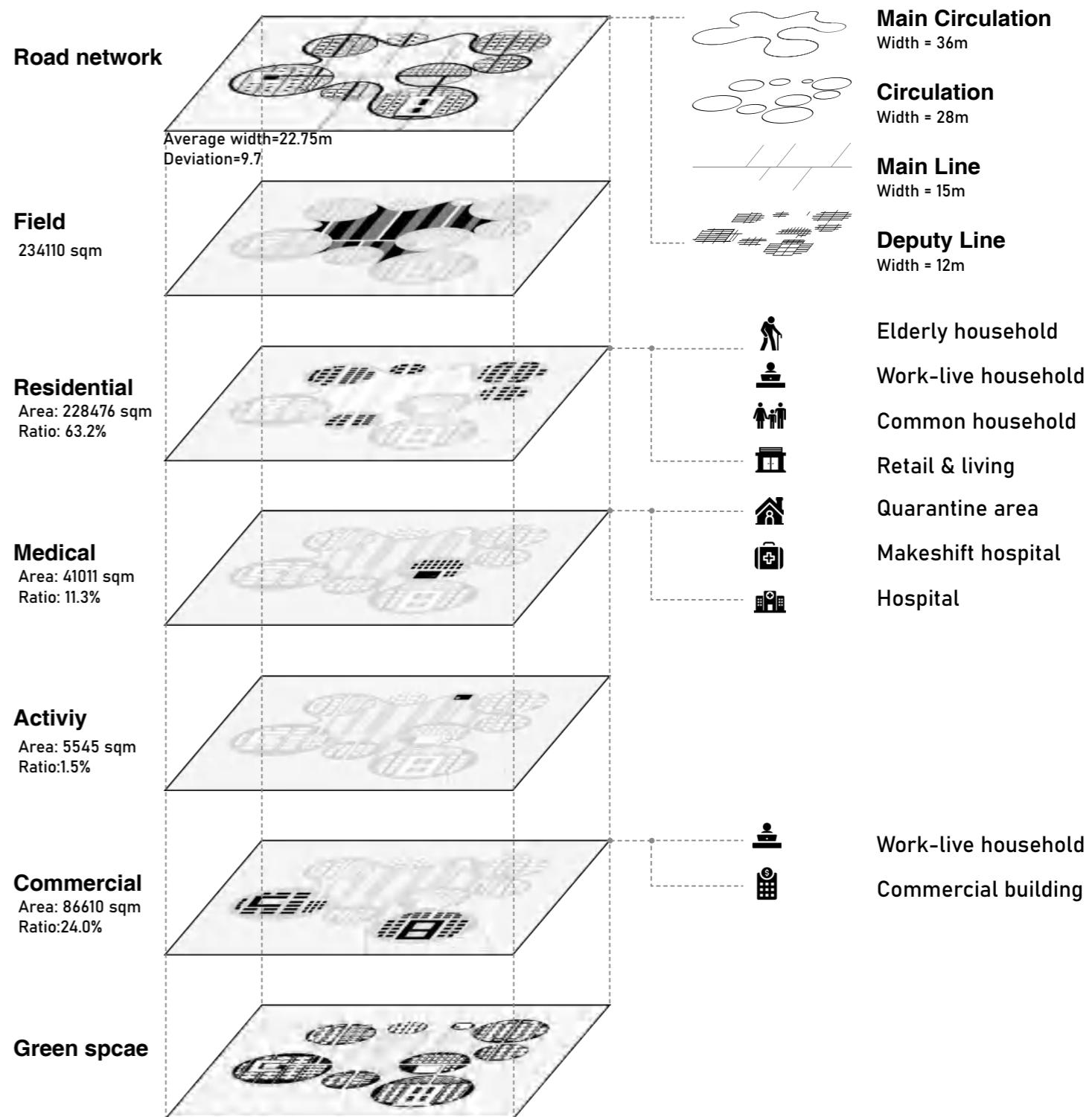
■ 1 Redesign the urban grid



■ 2 Layout

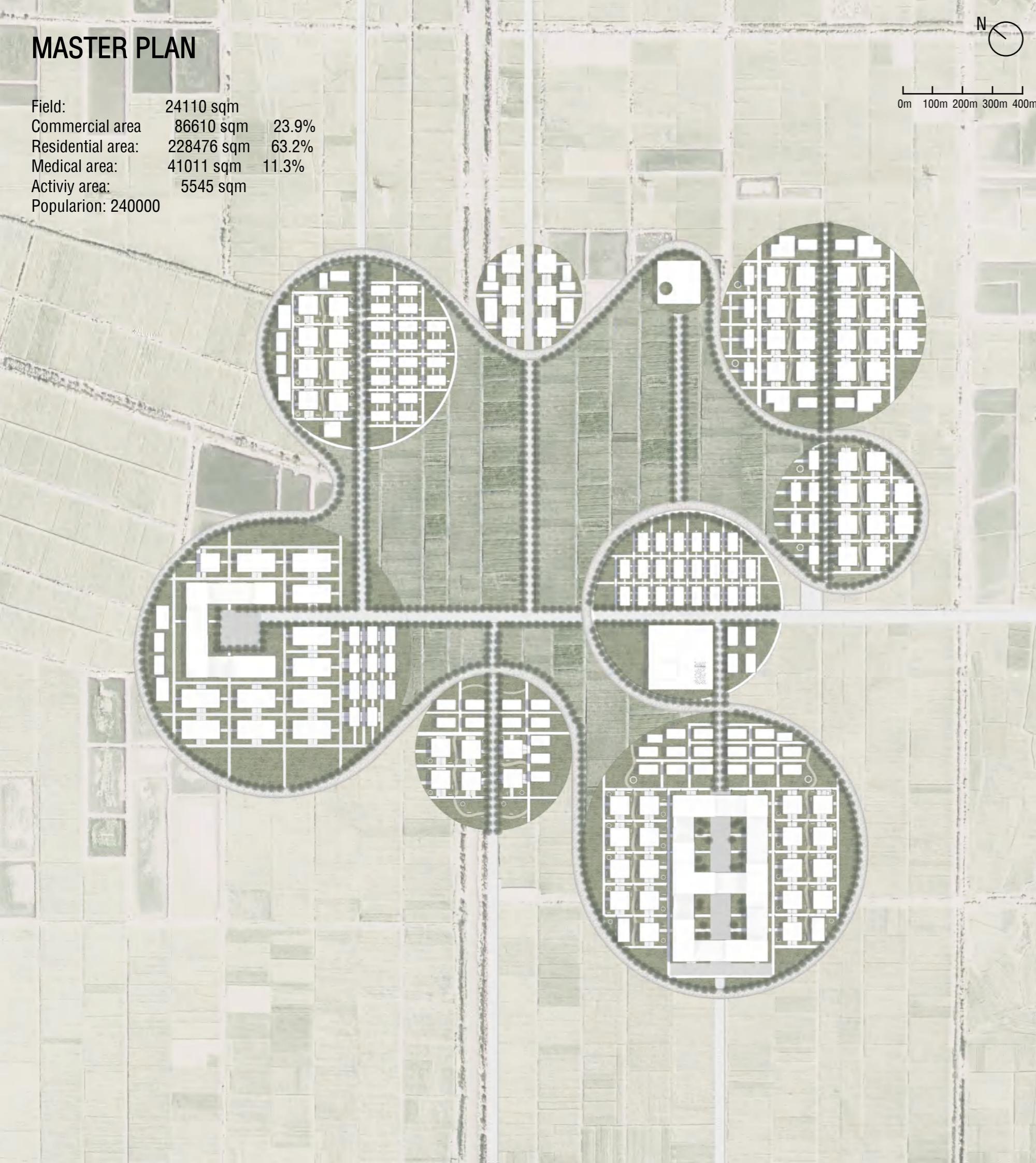
High complexity (deviation) of the grid system caters to the need to differentiate multiple modes of movement in both normal and epidemic times.

Based on the fact that those aged 60+ are most at risk, we designed **age-based community**. We also designed work-live household to avoid transmission on long commuting routes.



MASTER PLAN

Field:	24110 sqm
Commercial area	86610 sqm
Residential area:	228476 sqm
Medical area:	41011 sqm
Activity area:	5545 sqm
Population:	240000



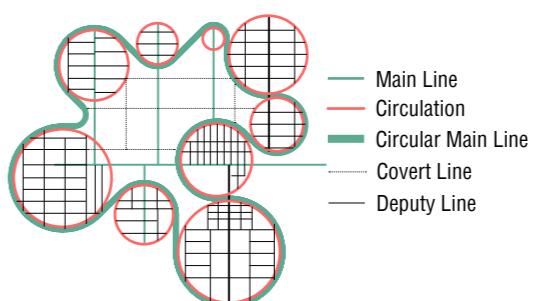
FUNCTIONAL REQUIREMENTS

	Commercial	During epidemic time	
		During normal time	
	Residence	During epidemic time	
		During normal time	
	Sanitation	During epidemic time	
		During normal time	
	Activity	During epidemic time	
		During normal time	

ISOLATION & CONNECTION

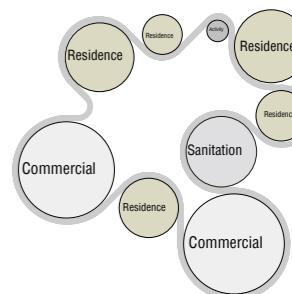
Flowline analysis

Circular main line **links** the circles. Main lines penetrate the circles and thus increase the **connection** of functional areas.



Function analysis

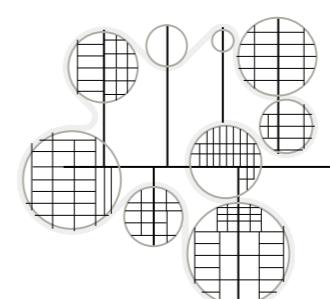
Layout of functional areas in groups is better for **isolation**. Independent circulations for **isolation**.



TRAFFIC CONTROL STRATEGY

In normal times

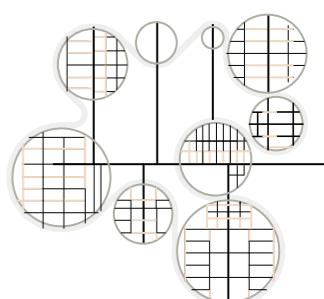
Based on the existing road texture of Wuhan, the roads are formed into **grid structures** inside each circle in normal times.



— Main Line
— Circulation
— Circular Main Line

In epidemic times

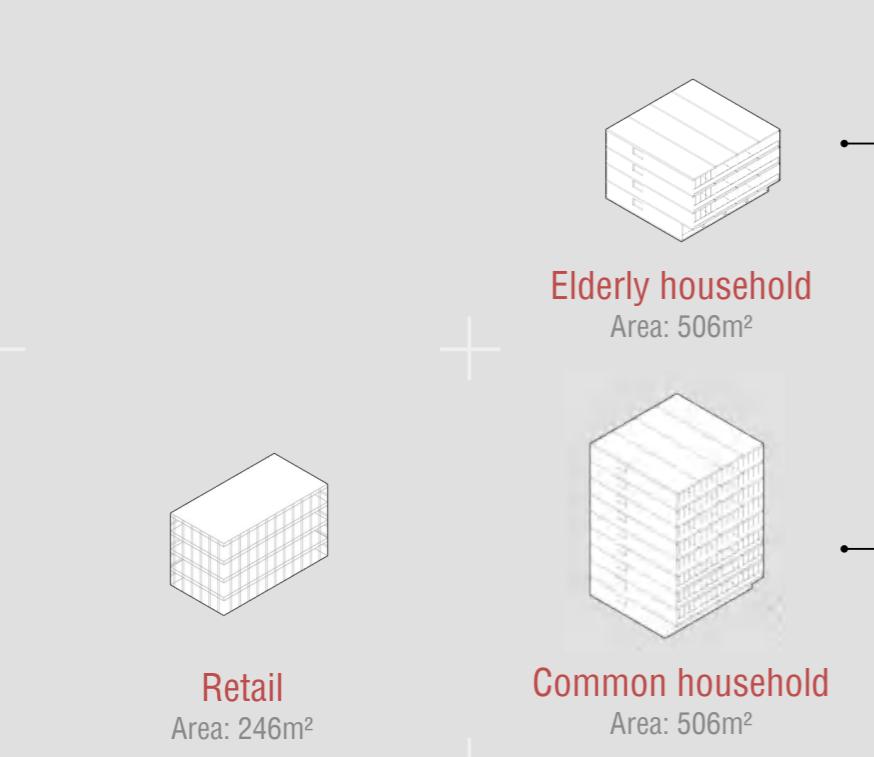
In epidemic times, the road texture could be transformed into a **tree structure**, so that the transmitting time could be longer.



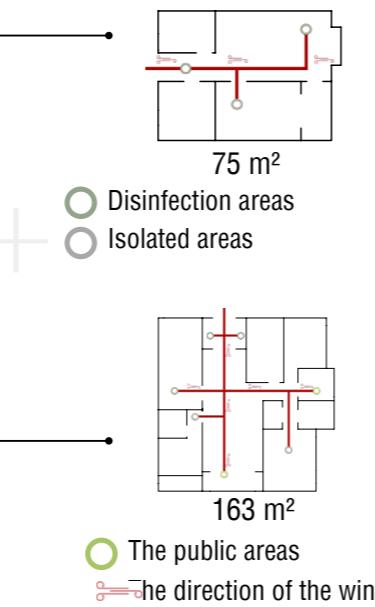
— Tree Structure
— Circulation
— Main Road
— Blocked Road

Composition

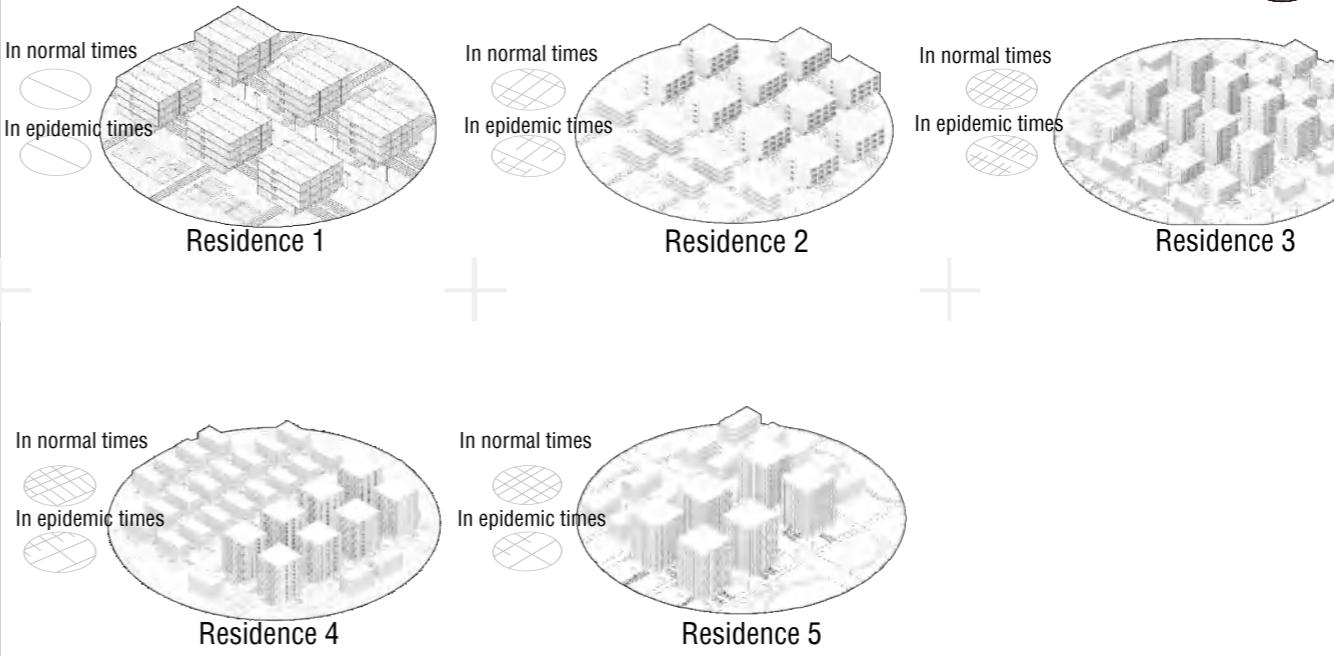
Residence



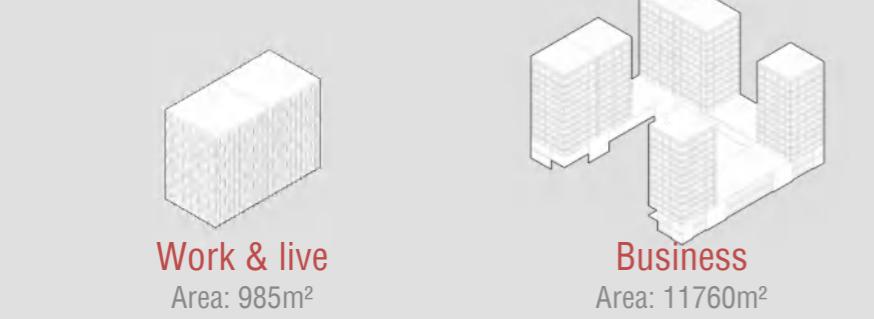
Household Type



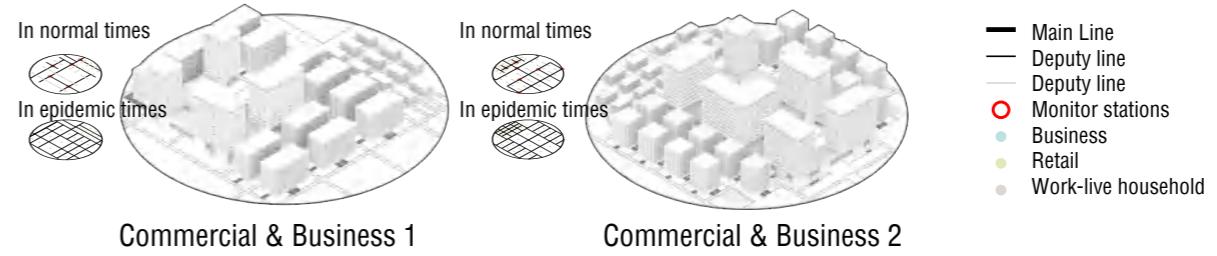
Residence Area



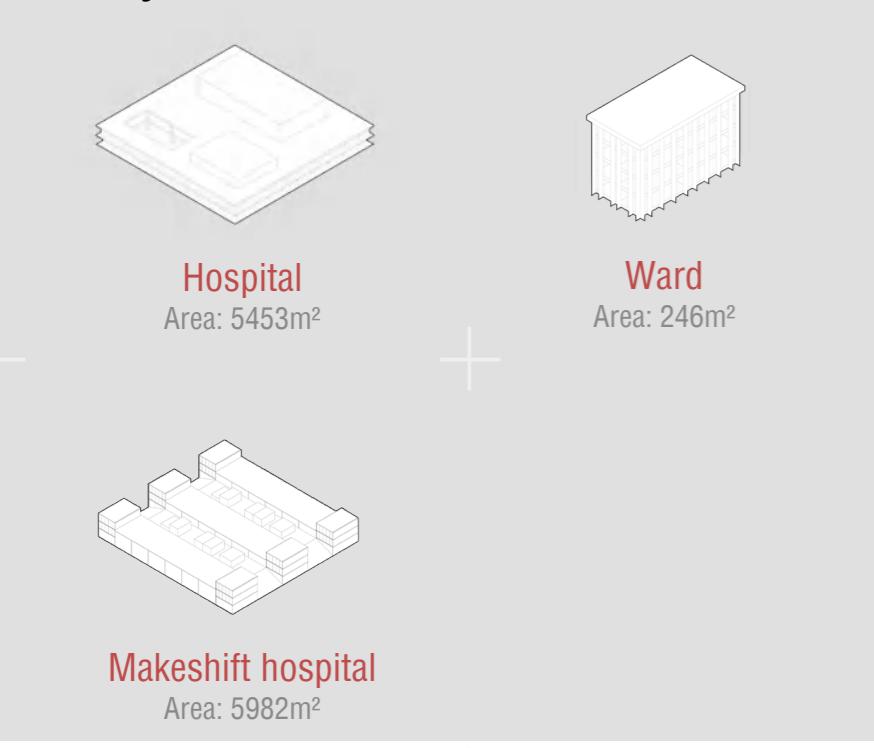
Commercial Business



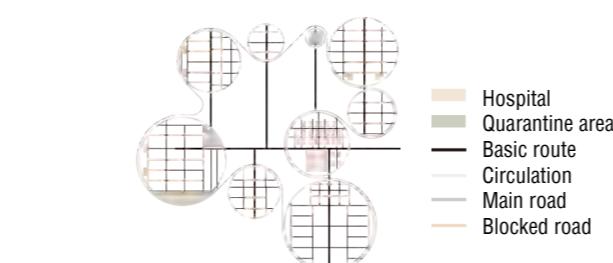
Commercial & Business Area



Sanitary Infrastructure

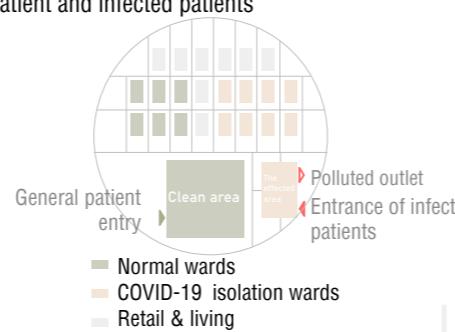


General Sanitary strategy

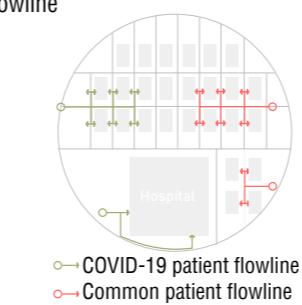


Layout & flowline

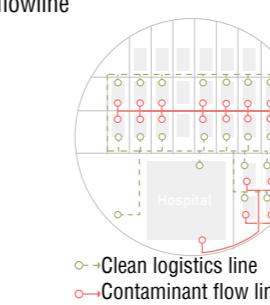
Isolate polluted outlet, entrances of General patient and infected patients



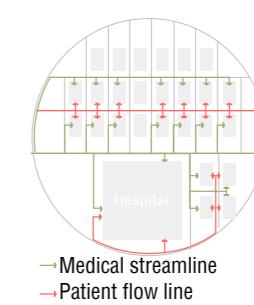
Isolate the common and COVID-19 patient flowline



Isolate the clean logistics and contaminant flowline

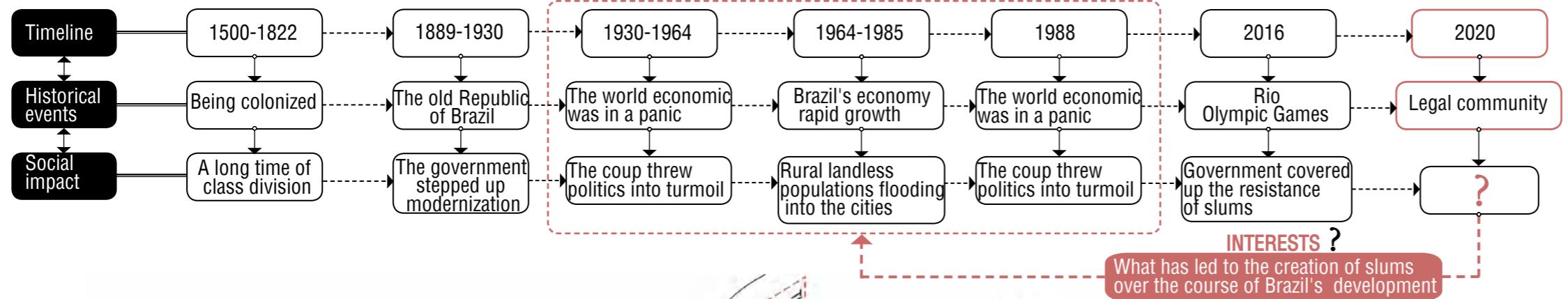


Isolate the Medical and Patient flowline

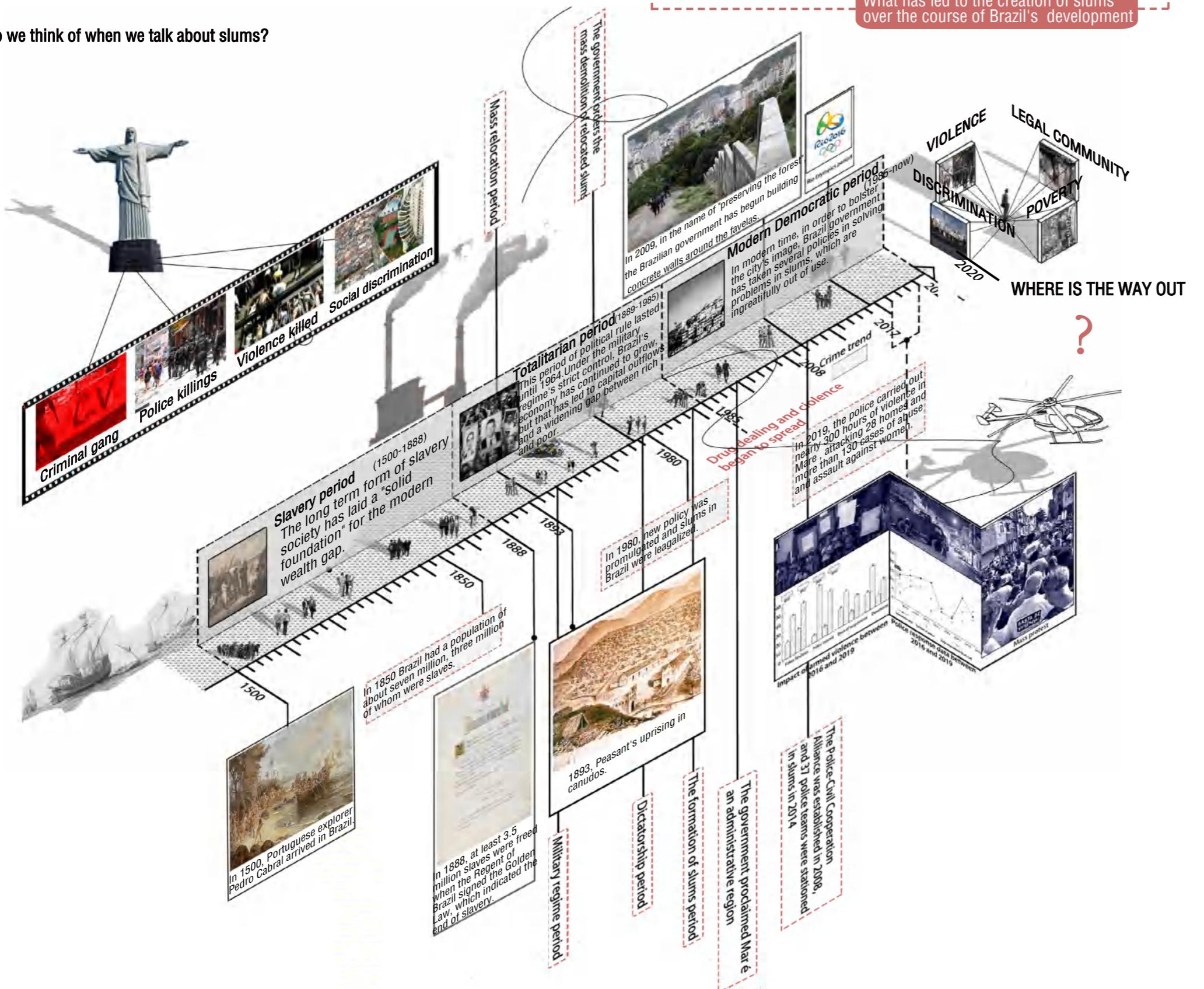


TIMELINE

02 Rio's pauper adventure



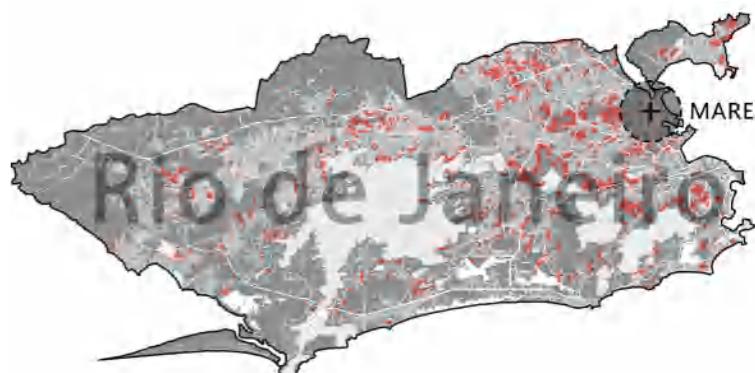
What do we think of when we talk about slums?



Group Work
Instructor: Xinyan Xu
Collaborator: Jingtao Huang
Aug. 2020

In today's highly developed cities, more and more people are pouring into cities. The rapid development also brings about many urbanization problems. Among them, slums are one of the most typical urban problems.

The project site is located in Rio de Janeiro, Brazil. This city has a lot of slums, where riots, gun battles, drug trafficking and other dangerous cases often occur. Through the translation of the space, the design shows the slum people's pursuit of fairness and justice in the harsh environment, and their resistance against surveillance and violence



The distribution of Rio's slums (2020)

In Brazil, one of the fastest-growing Countries in South America, a huge gap between rich and poor has led to the prevalence of slums. More than 6% of the Brazilian population, 11.25 million people, live in slums. In Rio, the slums are more than 1,000, accounting for 25% of the population, and the site of design, Mare, is one of them.

When we wanted to do something for the people of the slums, we wanted to figure out the reason. We divide Brazil's history into three periods and tease out the factors that led to the formation of slums. The long-term social form of slavery in the slavery period laid a foundation for the modern gap between the rich and the poor. Under Totalitarian period, the gap between the rich and the poor grew. In modern democratic period, the government's negative attitude towards the slums has caused a large number of casualties and personality infringement.

Under the influence of these historical factors, the neglect of the government, the segregation and discrimination of Brazilian society make people in slums unable to obtain basic human rights. For the people live in slums, there is no way out. They cannot find their way for self-development, but with the help of religion and other forces.

METHODOLOGY

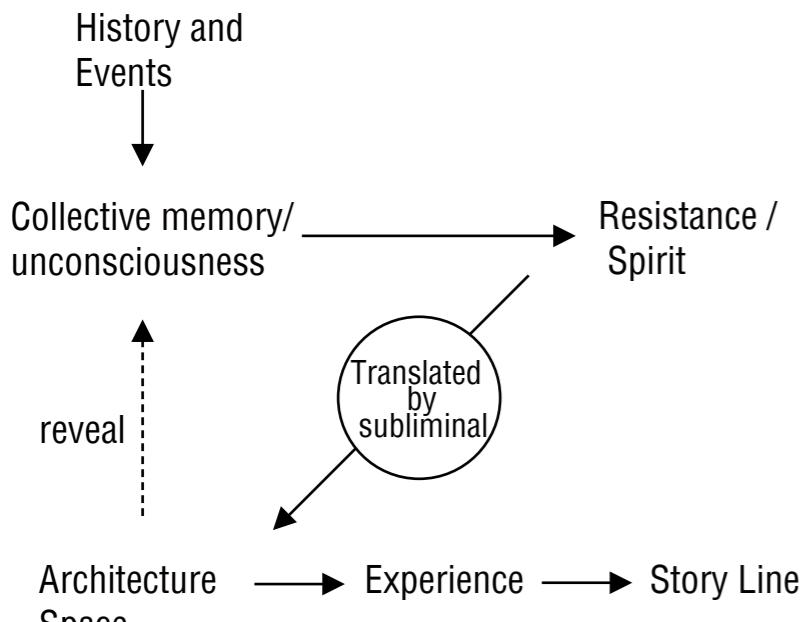
Raphael Moneo's theory of man and typology

According to Raphael Moneo's theory of man and typology, human consciousness will automatically classify the things with similar characteristics into one class, which forms a common understanding of such things. The myriad types in memory combine to form a holistic view of life and environment. The process is unconscious, and this collective unconsciousness forms people's psychological cognition of the real built environment.

Moneo's typological design method has two main stages:

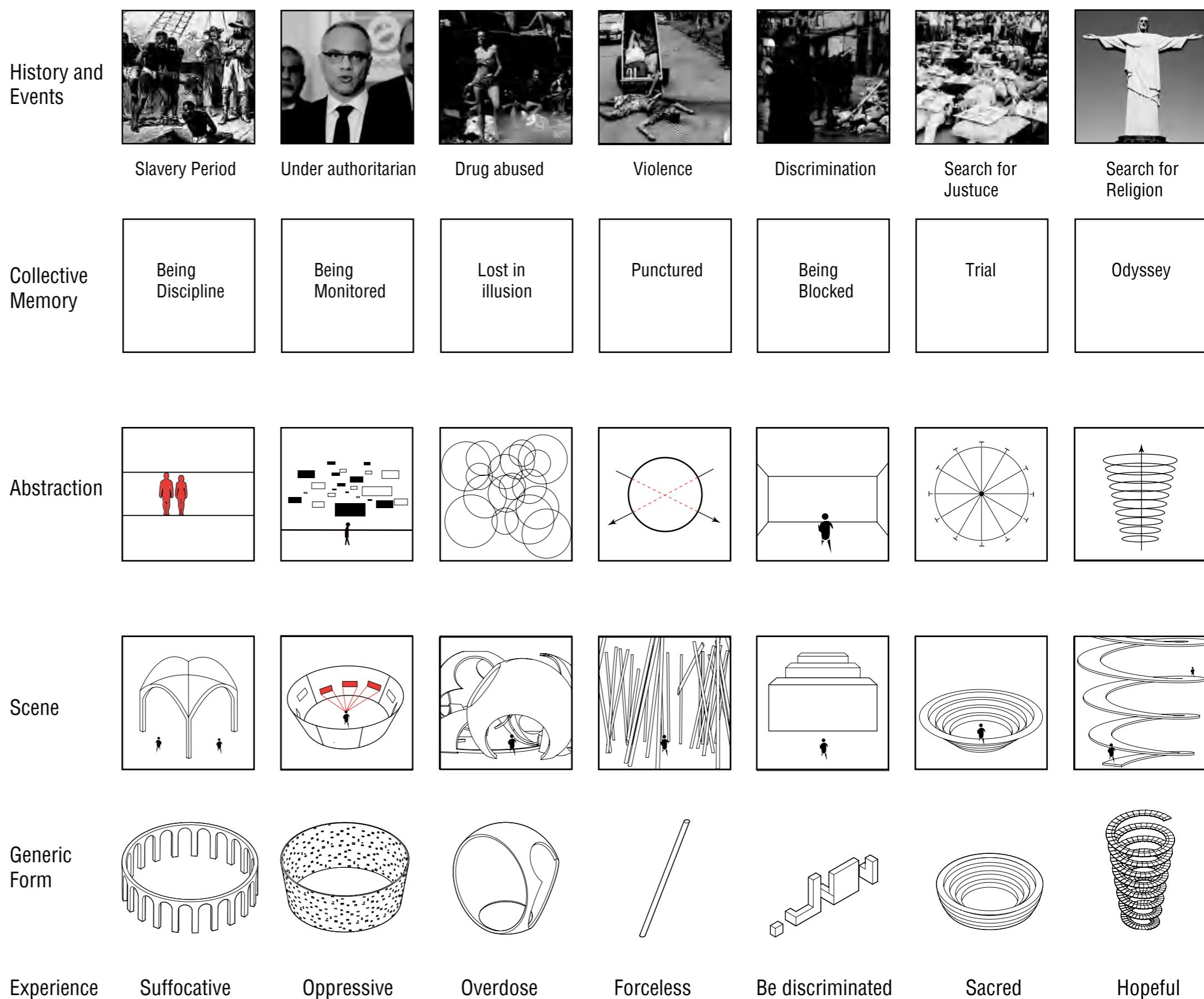
- First: The type abstraction phase
- Second: the stage of type locale

From events to architectural spaces

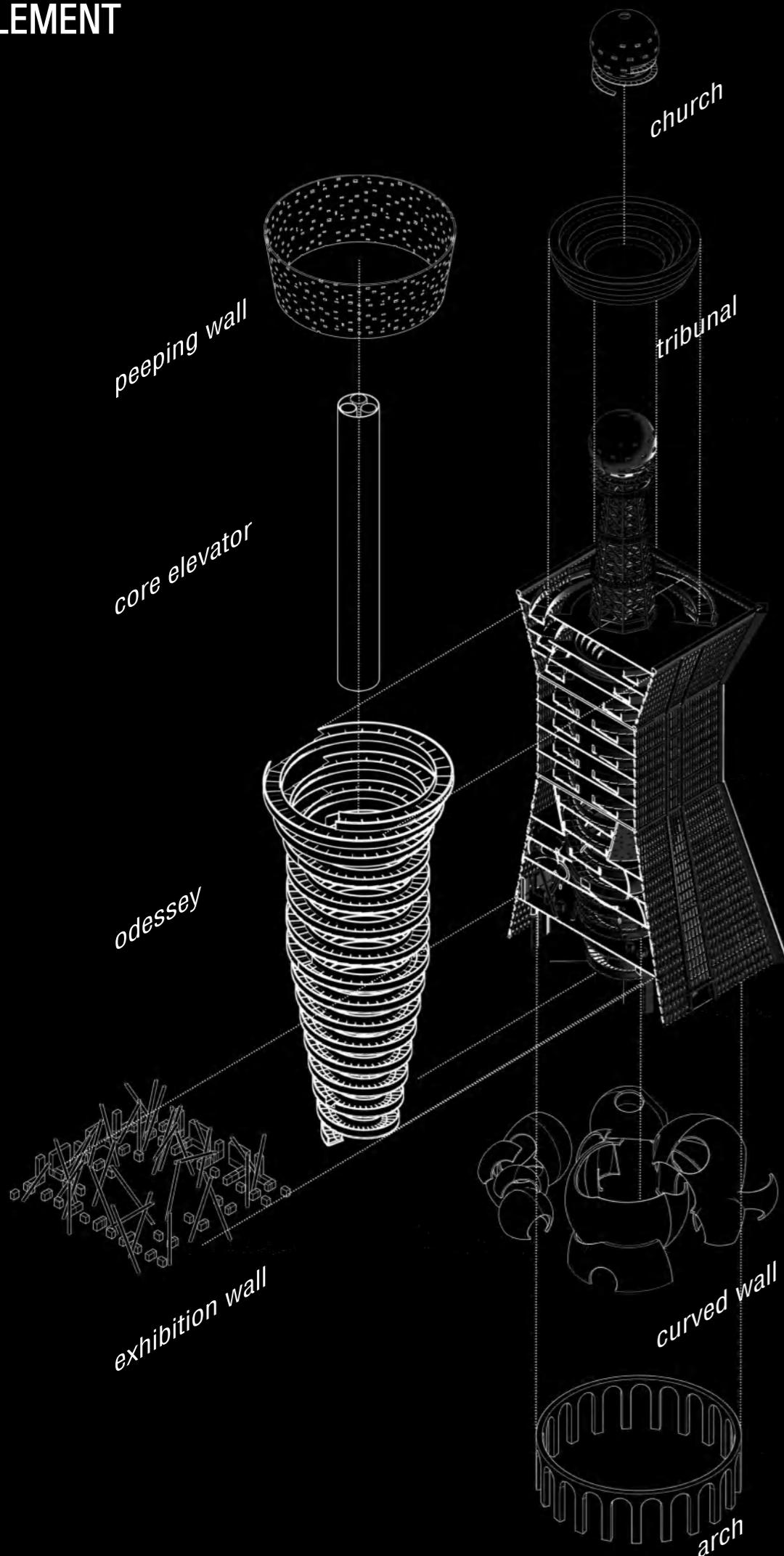


In this design, through abstract extraction of the historical events of Mare, we reveal the unconscious resistance and pursuit of the people in Mare, extract the prototype, and then combine the prototype with the needs of the specific environment for form, density and function to form the type of architecture, and combine the flow line to form the story line.

Based on the complex situation of residents in Mare which was both influenced by government and local drug dealer, the story use space as narrative medium to create different scene spaces, through the strategy of spatial inclusion, spatial combat and spatial metaphor to create the inward world of local people. The process of walking through spaces is the process of group identification.

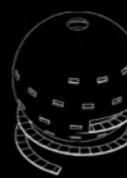


ELEMENT



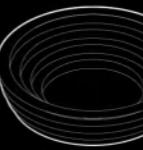
Space translation

6 THE CHURCH



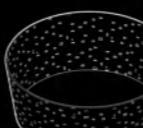
The last destination of the odyssey. We see the lights from above. It is the place we can find peace, tranquility and eternity. A place always exist in our subconsciousness that filled with the spirit we are pursuing. In the end, we can rest in peace.

5 THE COURTROOM



For those who have struggled for life, who die easily for injustice, this is the place for impartial trial of the sinner. They enslaved, they murdered, they tortured us throughout the history, for thousands of years. But now, here we are.

4 THE PEEPING SPACE



"Shhhh...Hush. They are watching."
"Who is watching?"
"The police, the gang. Or...us."
"Where are they?"
"..."
"Everywhere."

3 THE PRISON



Drugs. The thing that imprisoned us for hundreds of years. Eroding our souls, weakening our will. We fell into the abyss of deadly enjoyment time after time. It's too dark here, dark as hell. My body is rotting. Don't stay, keep walking. I can feel the heat of light, just above us.

2 THE EXHIBITION HALL



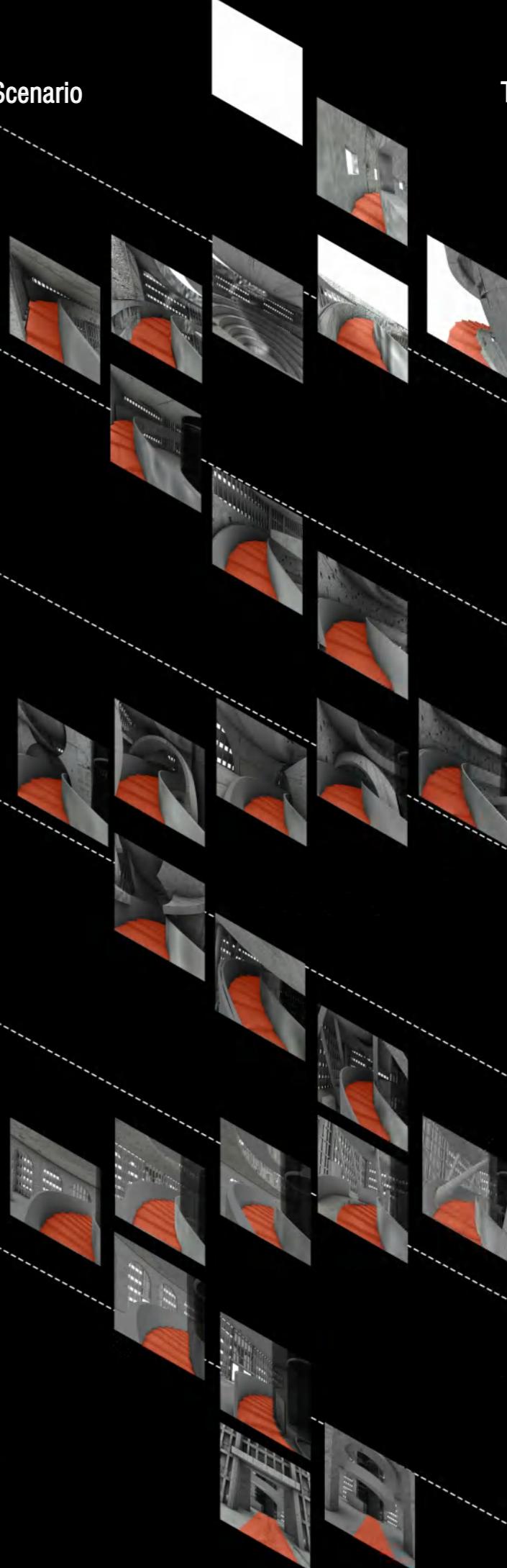
Tombs have been turned into exhibition stand, on which are placed by bloody history. Reminding us of the forceless feeling while family died in our arms. Meaninglessly, they died in a gun-fire between cops and gangsters. What a ridiculous.

1 THE SYNAGOGUE

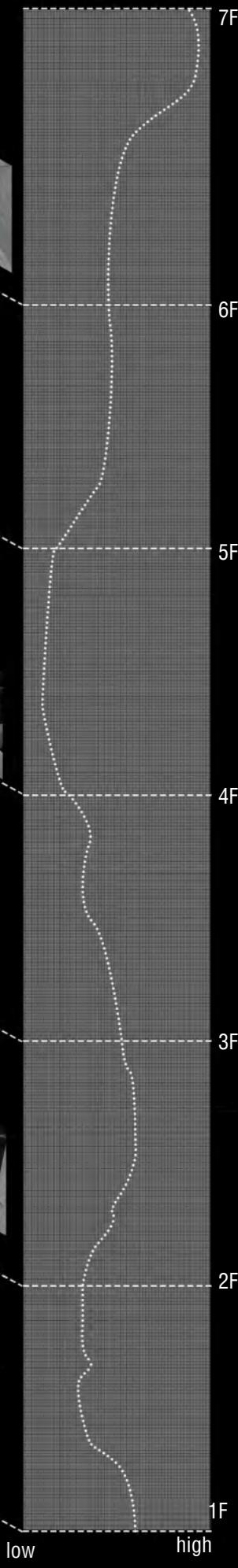


Slavery, discrimination, social gap, we have nowhere to go but this pagoda. We are disciplined by unfair provisions, which are turning us into livestocks. But our spirit is still alive, follow the toplight in the center. This is our odyssey.

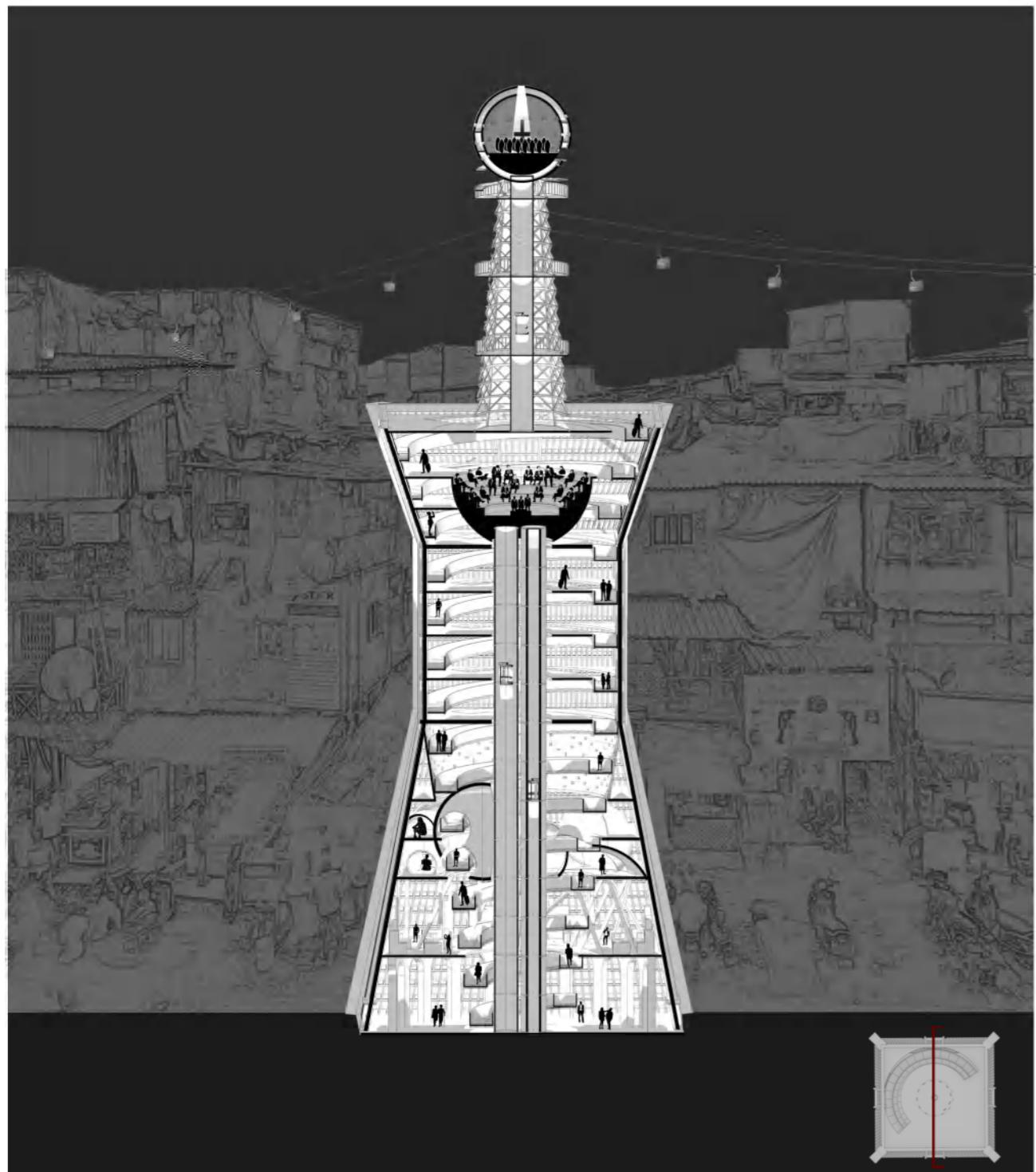
Scenario



The width of the space



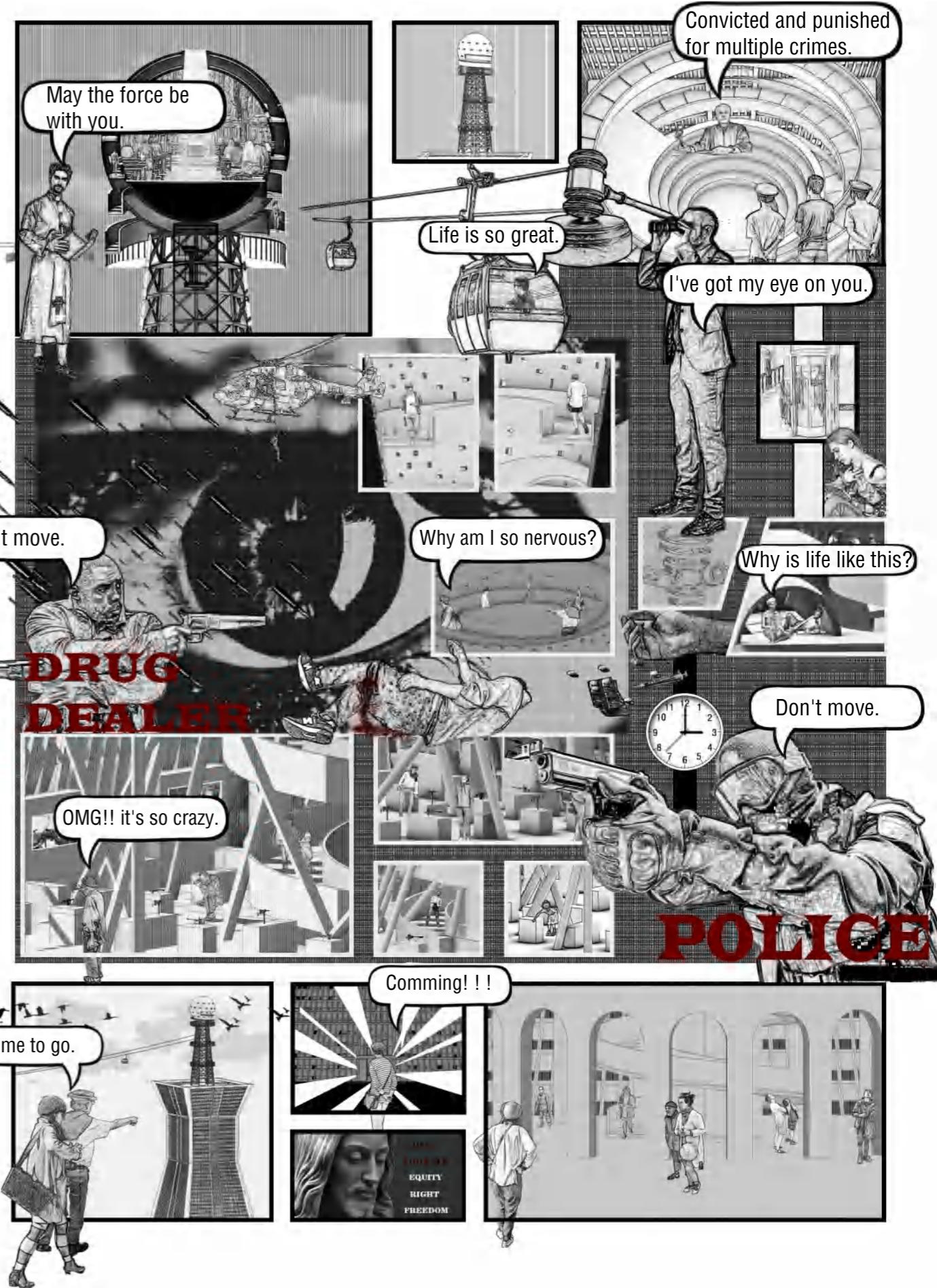
PROFILE & ANIMATION SCENE



Chapter:

The whole building translates the violent, gunfight, drug trafficking and other extreme dangerous events that the people in the Brazilian slum face in their lives. Each floor represents the different dangers they face every day. The whole building creates a repressive and suffocating atmosphere under the dim light.

The whole building space from bottom to top shows the slum people's pursuit of fairness and justice, their criticism of classism and their yearning for spiritual freedom in the face of numerous difficulties.

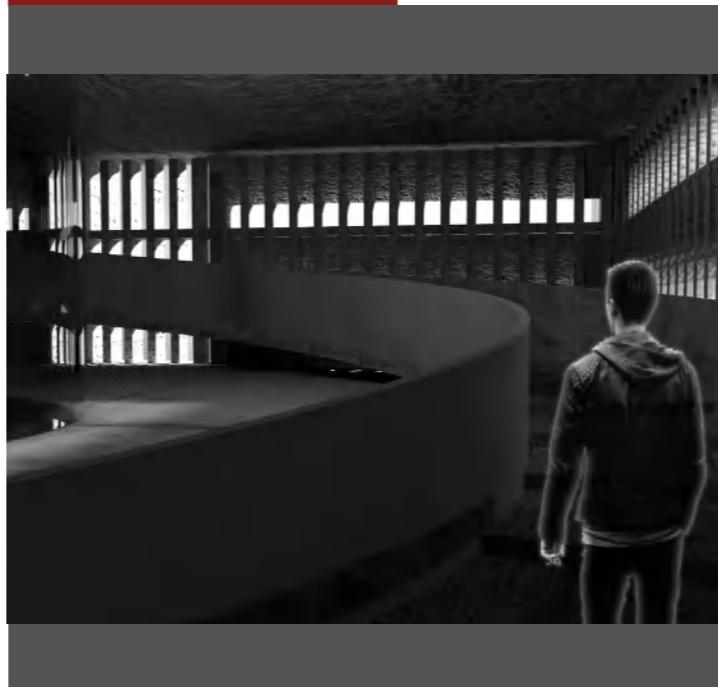


EXHIBITION

THE CHURCH



odessey



Imprison



THE SYNAGOGUE



THE PRISON



THE COURTROOM



THE PEEPING SPACE



THE EXHIBITION HALL

Design of Xuhui Waterfront Public Open Space on the West Bank of Shanghai

Instructor: Kexin Ni
Aug. 2020



With the progress of The Times. With the continuous increase of urban density in the development, people living in the city become less and less of a sense of belonging in the city full of reinforced concrete.

Shanghai is a rapidly developing international metropolis. In such a densely populated and densely built city, there are still many areas to be developed or incompletely developed.

Located on the west bank of the Huangpu River in Xuhui District, Shanghai, it is a public place that has not reached the expected development after planning. The public space originally used for activities has no crowds most of the time, and lacks more reasonable planning and zoning and targeting. Design and planning of the crowd.

In this project, we redesigned the public space on the west bank of Shanghai by discovering and solving the problems in the site, aiming to create a more reasonable and livable living environment.

SITE LOCATION



ASIA



CHINA



SHANGHAI

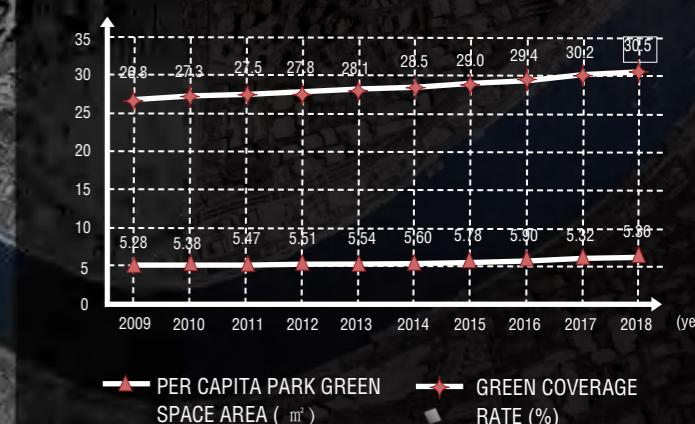
SITE HISTORY ANALYSIS

In the 20th century, the riverside area of Xuhui on the West Bank of Shanghai was one of the cradles of modern Chinese national industry. It gathered many industrial facilities and enterprises, including LongHua Airport, Beipiao Coal Terminal, Shanghai cement plant, etc, bearing the centenary national industrial history of China.

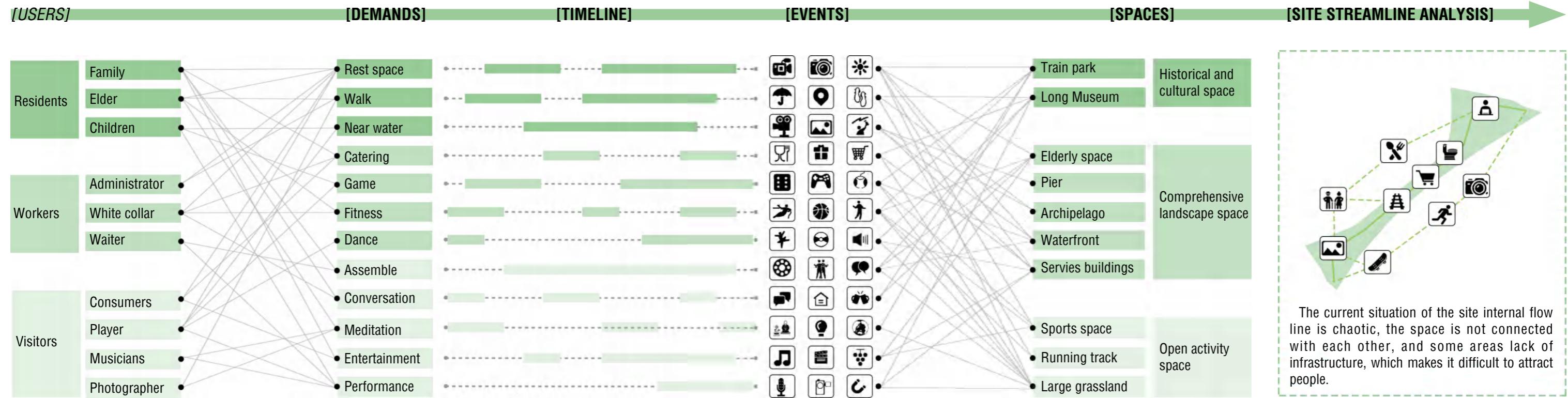
In 2010, Shanghai launched the "comprehensive development plan for both sides of the Huangpu River" including the Expo venue.

In 2013, the Ninth Party Congress of Xuhui District put forward the project strategy of building "West Bank cultural corridor brand", and the West Bank of Shanghai was officially used as a new appellation of Shanghai Xuhui riverside area.

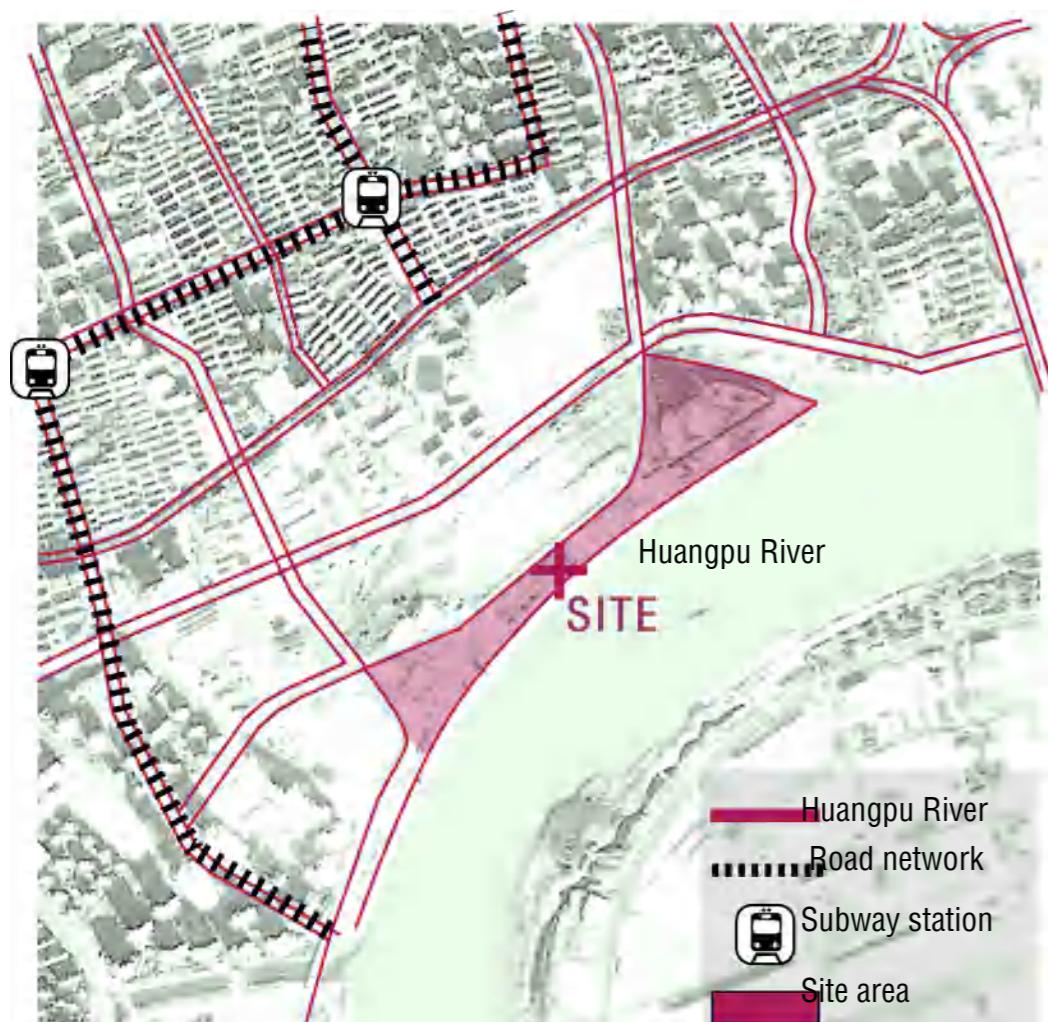
CURRENT SITUATION ANALYSIS



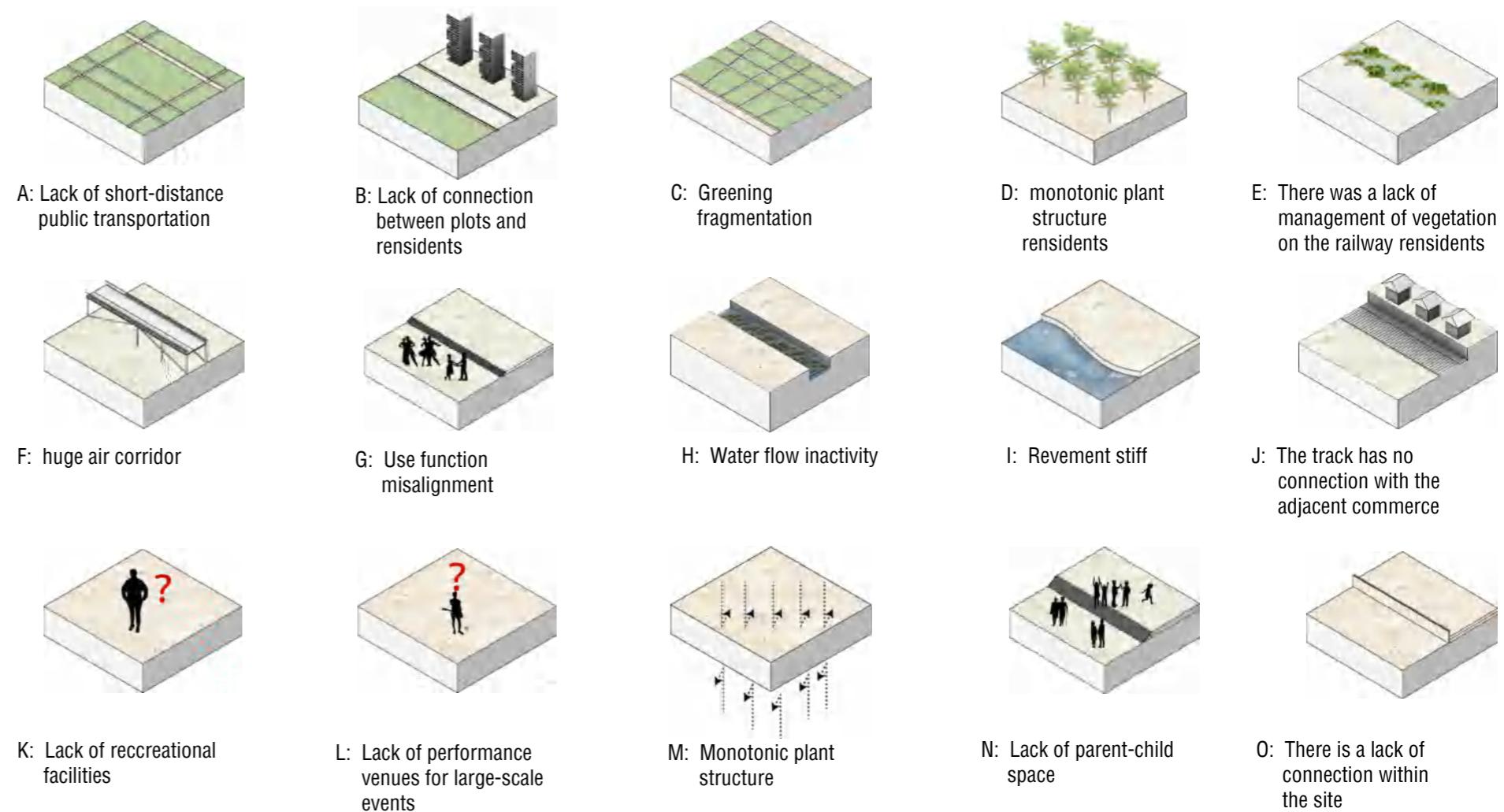
ANALYSIS OF SPACE SHARING



SITE ANALYSIS

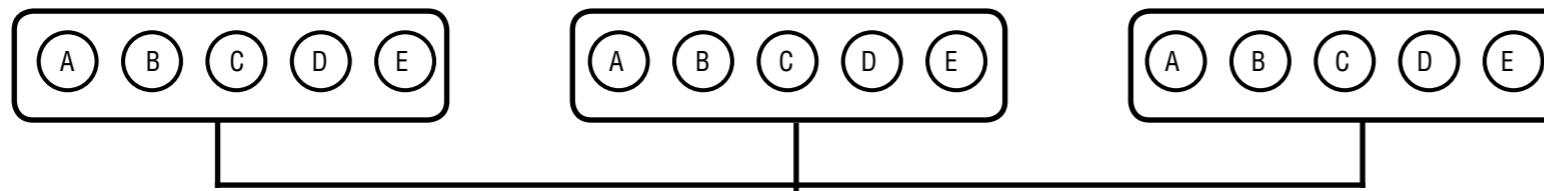


ISSUE ANALYSIS

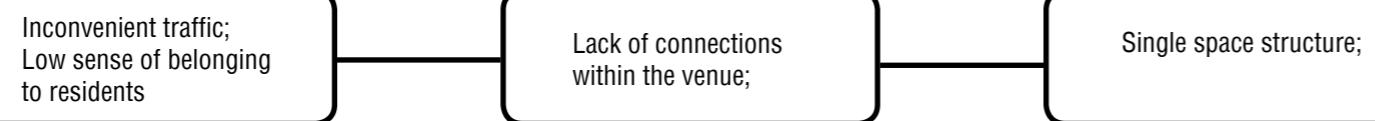


FRAMWORK OF WHOLE DESULT

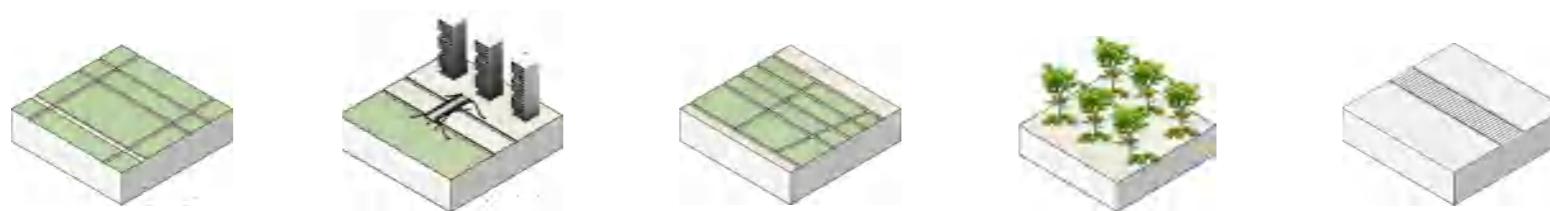
ISSUE



INFLUENCE

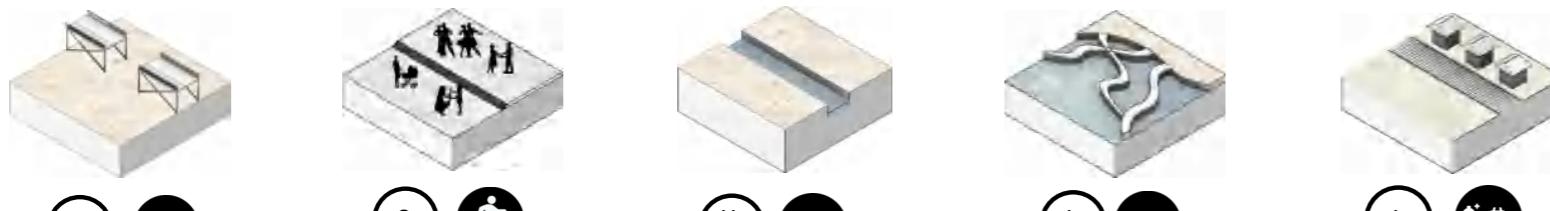


CONCEPT

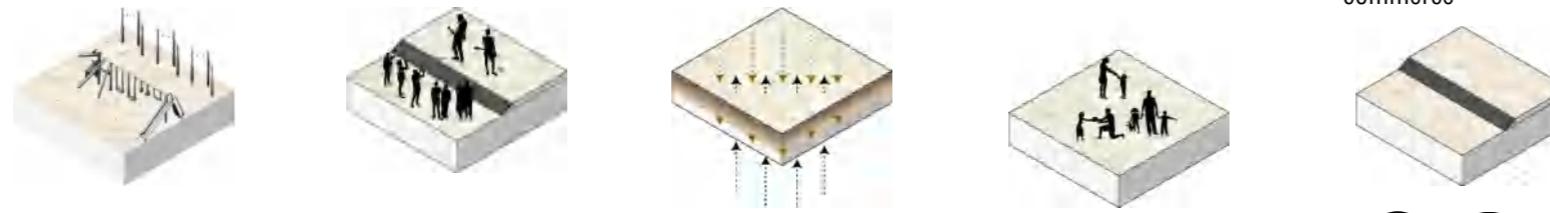


A Set up bus station along the route
B Repair viaduct
C Integrated green space
D Rich plant structure
E Strengthen cleaning management

STRATEGY

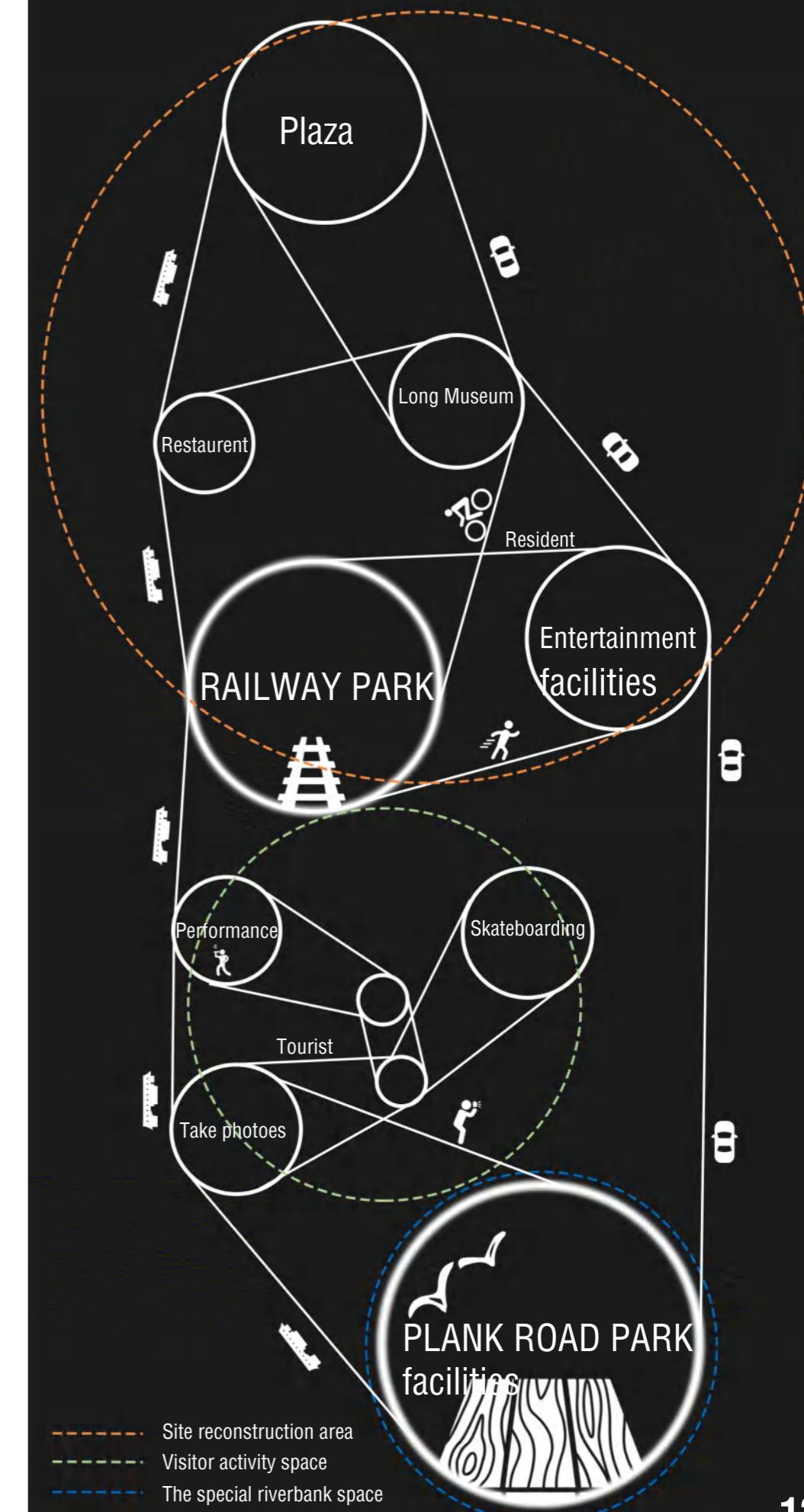


F Reduce corridor size
G Set up a more reasonable functional area plan
H Enhanced watercourse activity
I To reshape the riverbank
J To strengthen links between railways and commerce



K Increase recreational facilities
L Create stage space
M Switch to advanced permeable and breathable paving
N Create parent-child space
O Enhance internal spatial connections

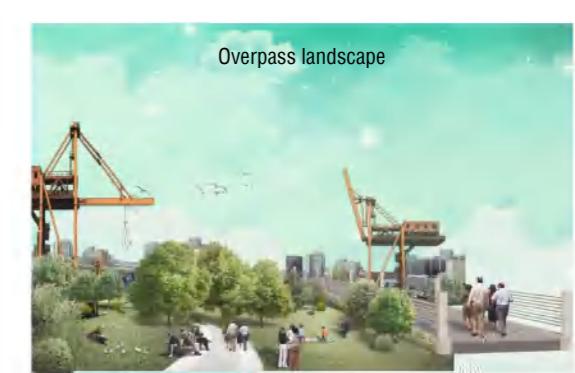
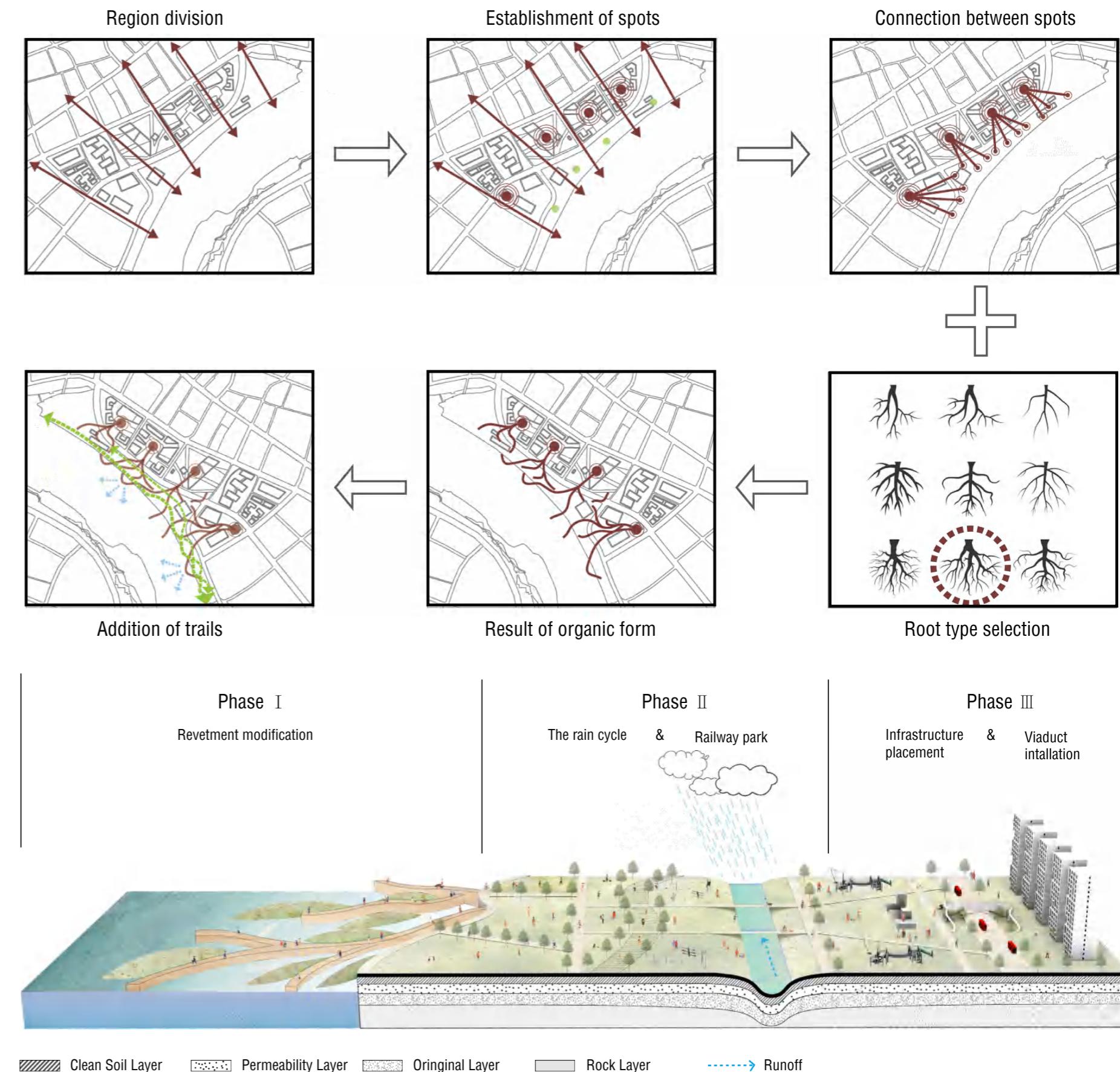
PLANNING SYSTEM



MASTER PLAN



FORM DEDUCTION PROCESS



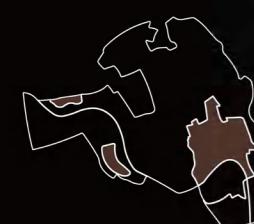
PLANNING OF SHANGHAI GOVERMENT IN 2035



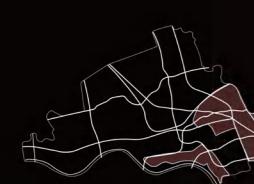
The status of the West Bank in Shanghai



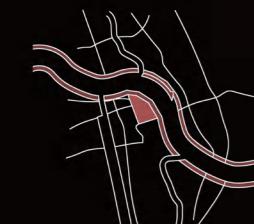
Shanghai main center



Shanghai innovation function cluster



Xuhui District Business Center

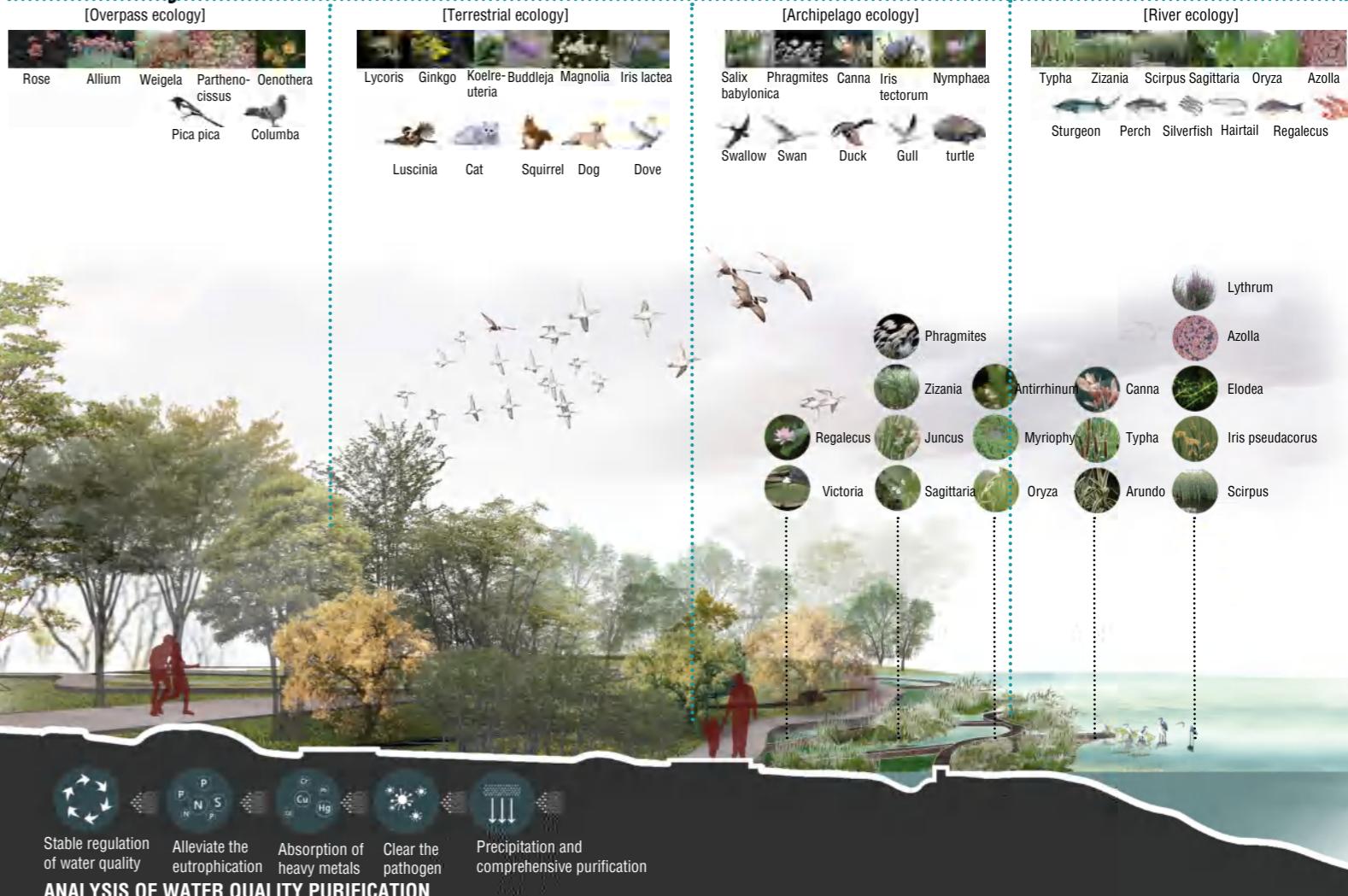


Huangpu River green corridor



In the next 15 years, with the completion of the construction of the surrounding planned area and the increase of the surrounding population, we hope to build a waterfront landscape with the integration of urban ecology.

Profile analysis



Design vision

With the rapid development of Shanghai's urbanization today, we hope that through our design, the small public space in the city will become more livable, closer to the lives of urban residents, and at the same time attract external tourists to enter and stimulate the local area's economic development.

Model



Vertical farm in the city

Group Work
Instructor: Lin Wei
Collaborator: Yi Li
Aug. 2020

In the next 50 years, humans will consume more food than the past 10,000 years combined, and 80% of this consumption will come from cities. Obviously, we need to find an alternative ecosystem to replace the existing food supply system. We will relocate agriculture to the center of the city to meet the population's demand for food, so that the public can clearly see our food. The source of the product and the process of its production and processing.

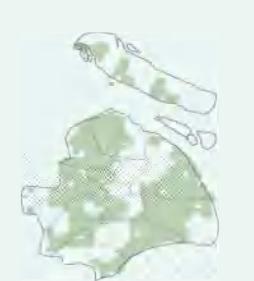
BACKGROUND

Shanghai is the city with the fastest urbanization process in China. The urbanization process is as high as 88%. The population has increased rapidly, the demand for food has increased, and the agricultural land has been rapidly reduced.

In the future, when the available food is far below the amount needed to ensure people's basic survival, the resulting social conflicts will cause people to fight for food in order to survive.

Change and forecast of agricultural land area

1980 -272.745 Km²



2000 -398.931 Km²



2020 -156.034 Km²



2050 -236.470 Km²

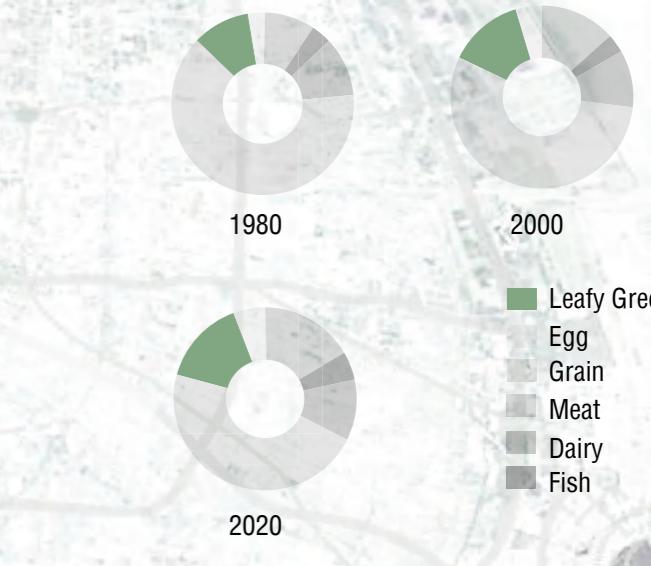
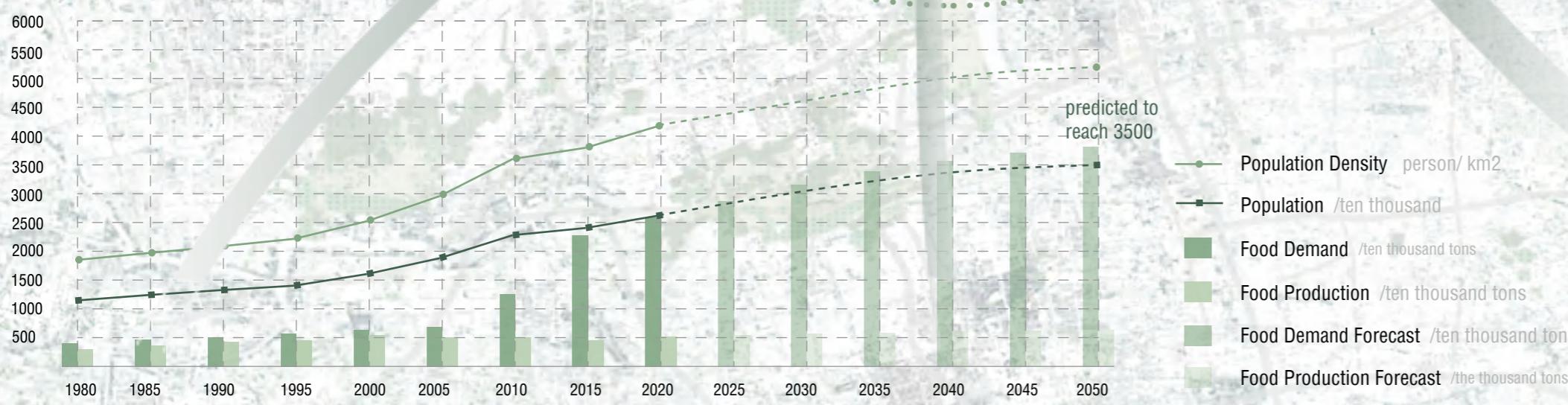


SITE LOCATION

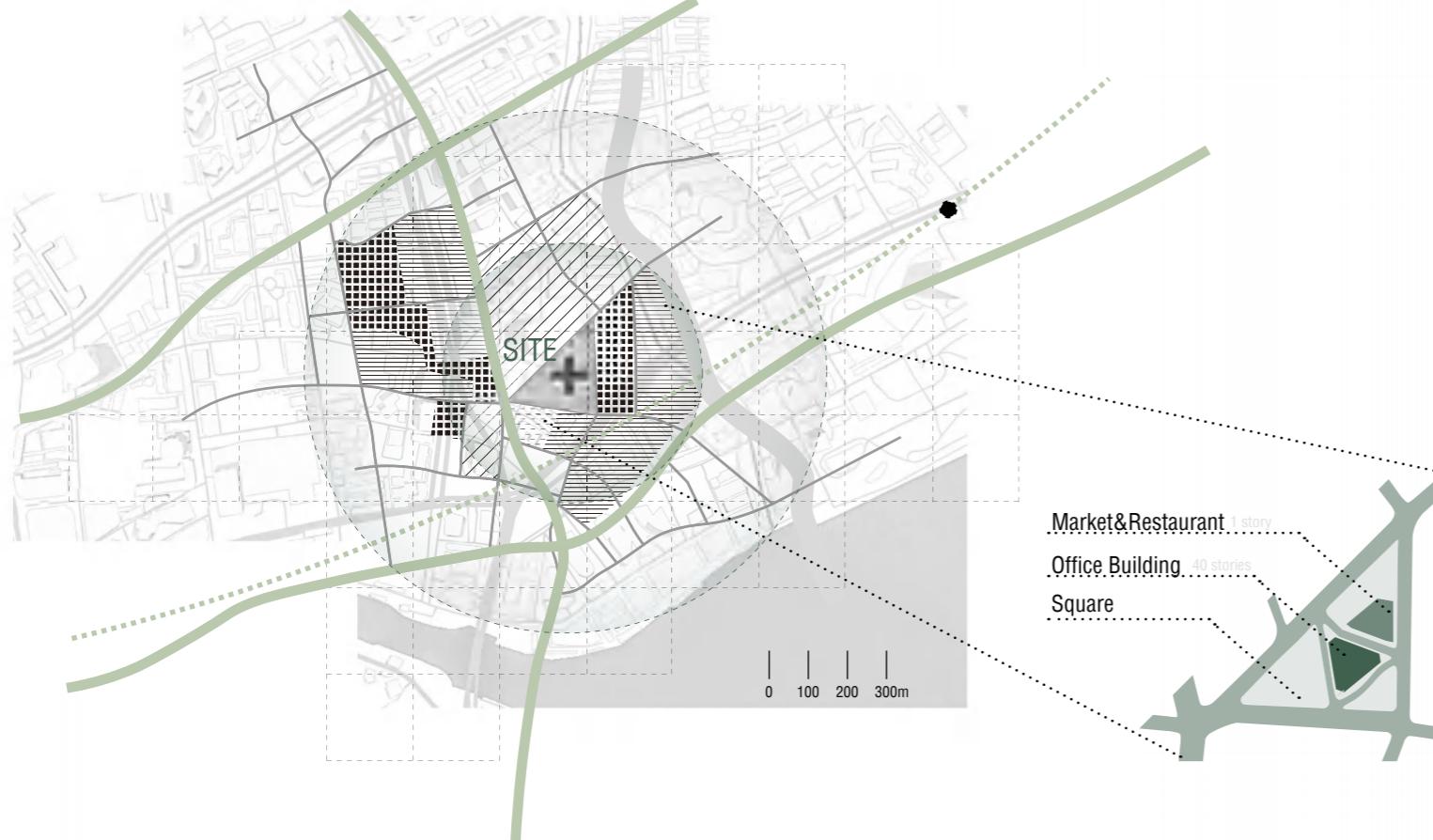


SITE

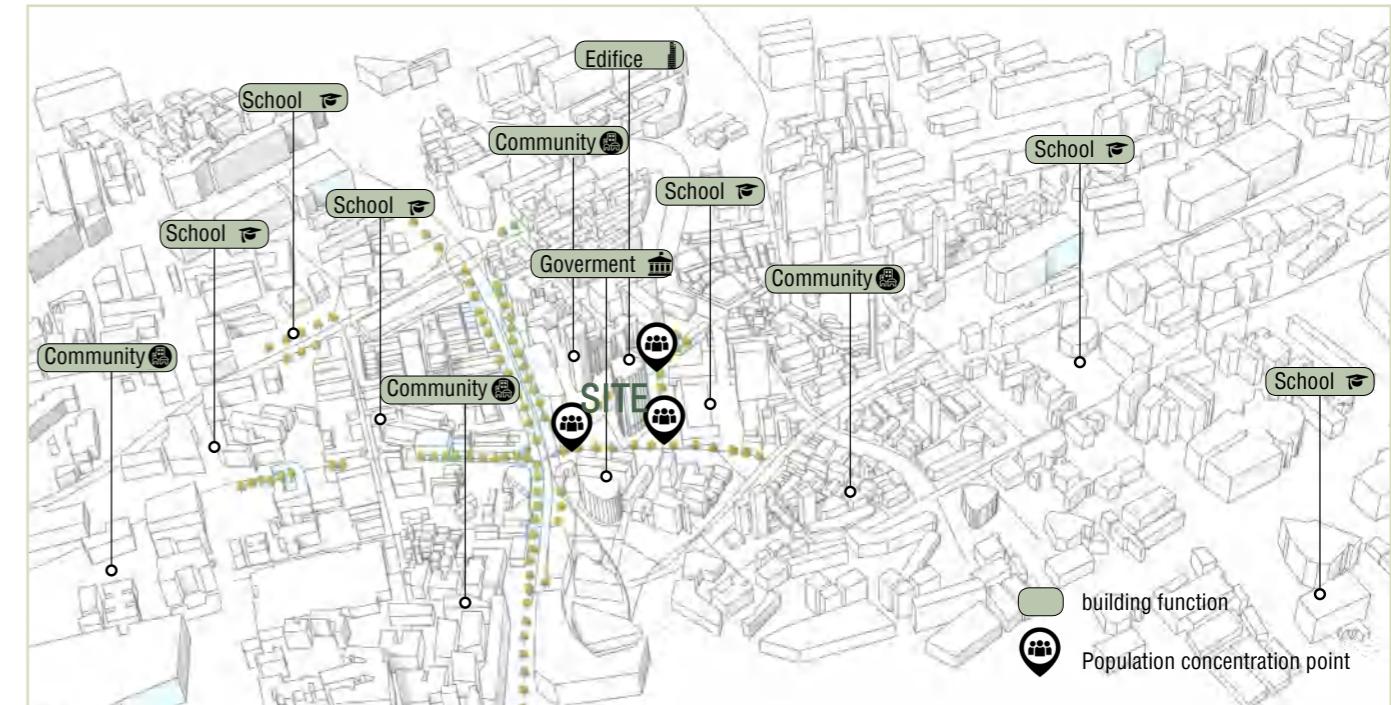
- Urban expansion in 1980
- Urban expansion in 2000
- Urban expansion in 2020
- Transportation route



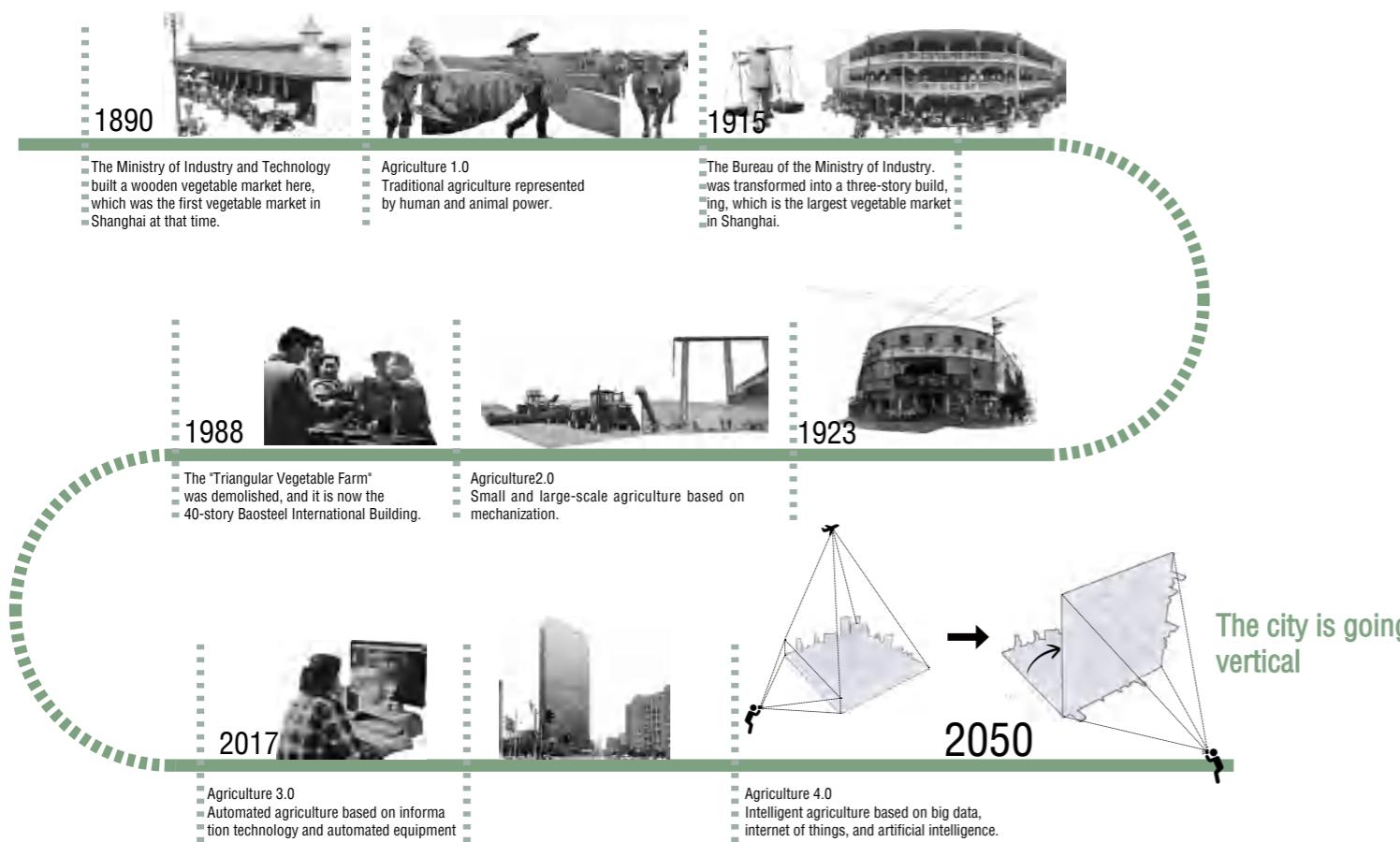
◆ Site analysis



◆ Site situation



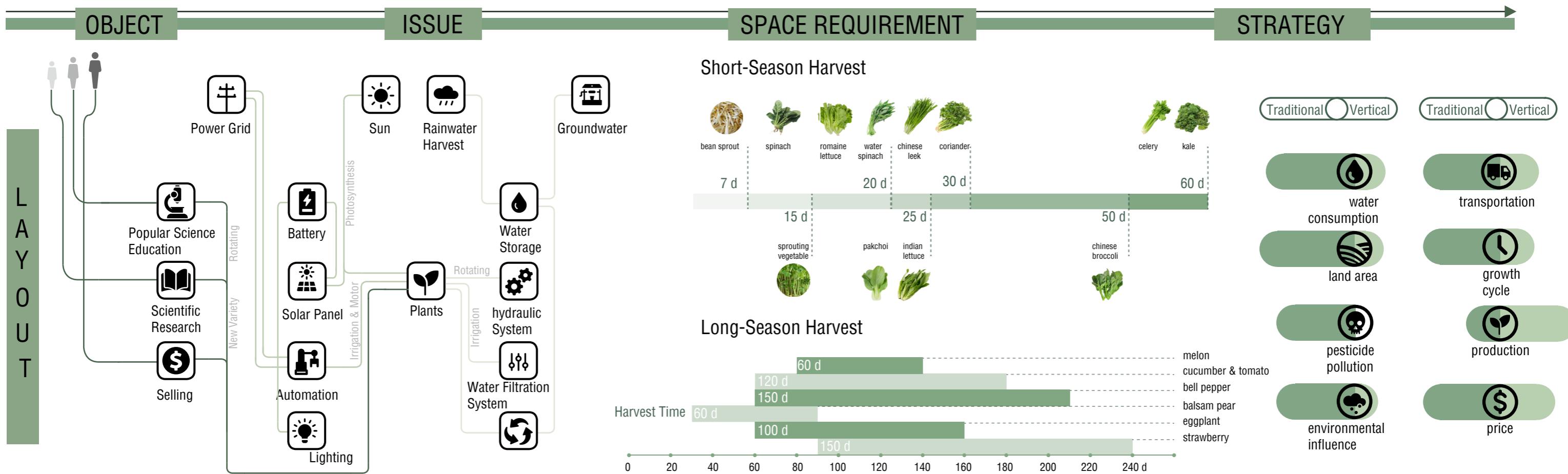
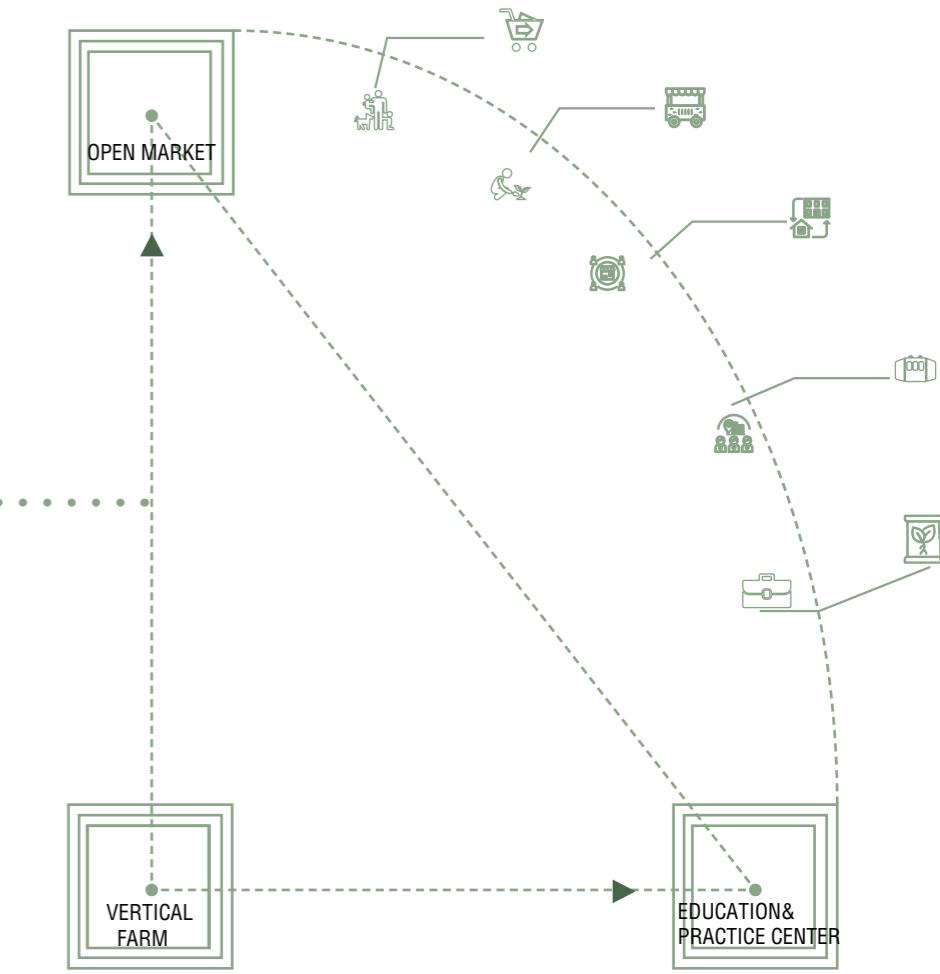
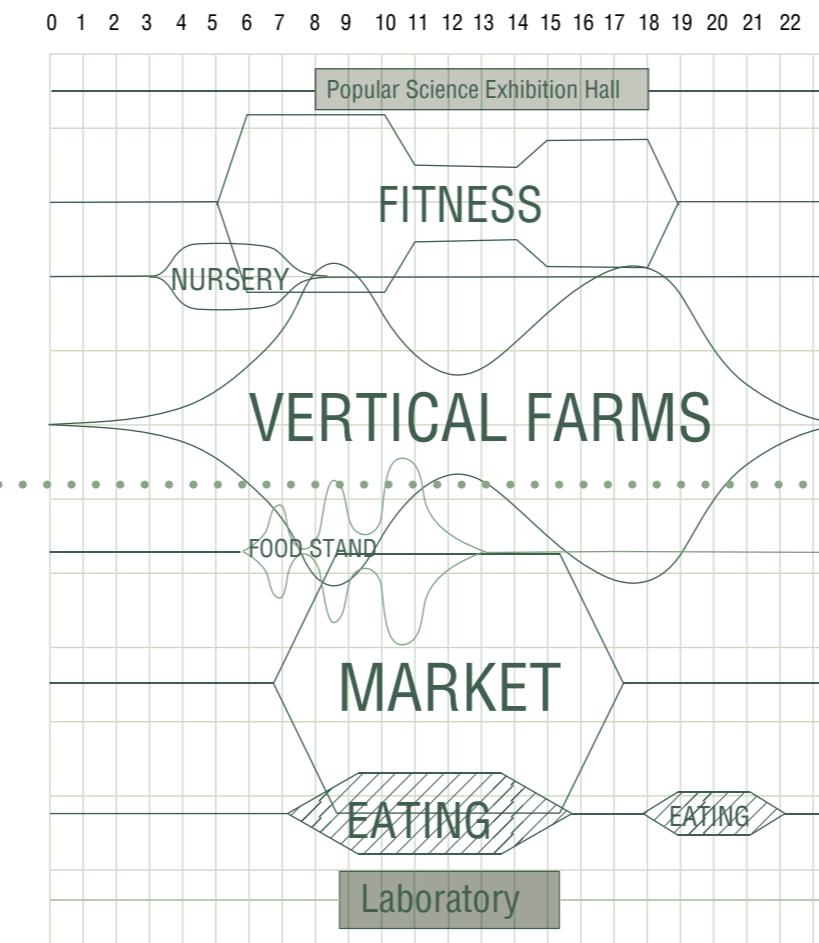
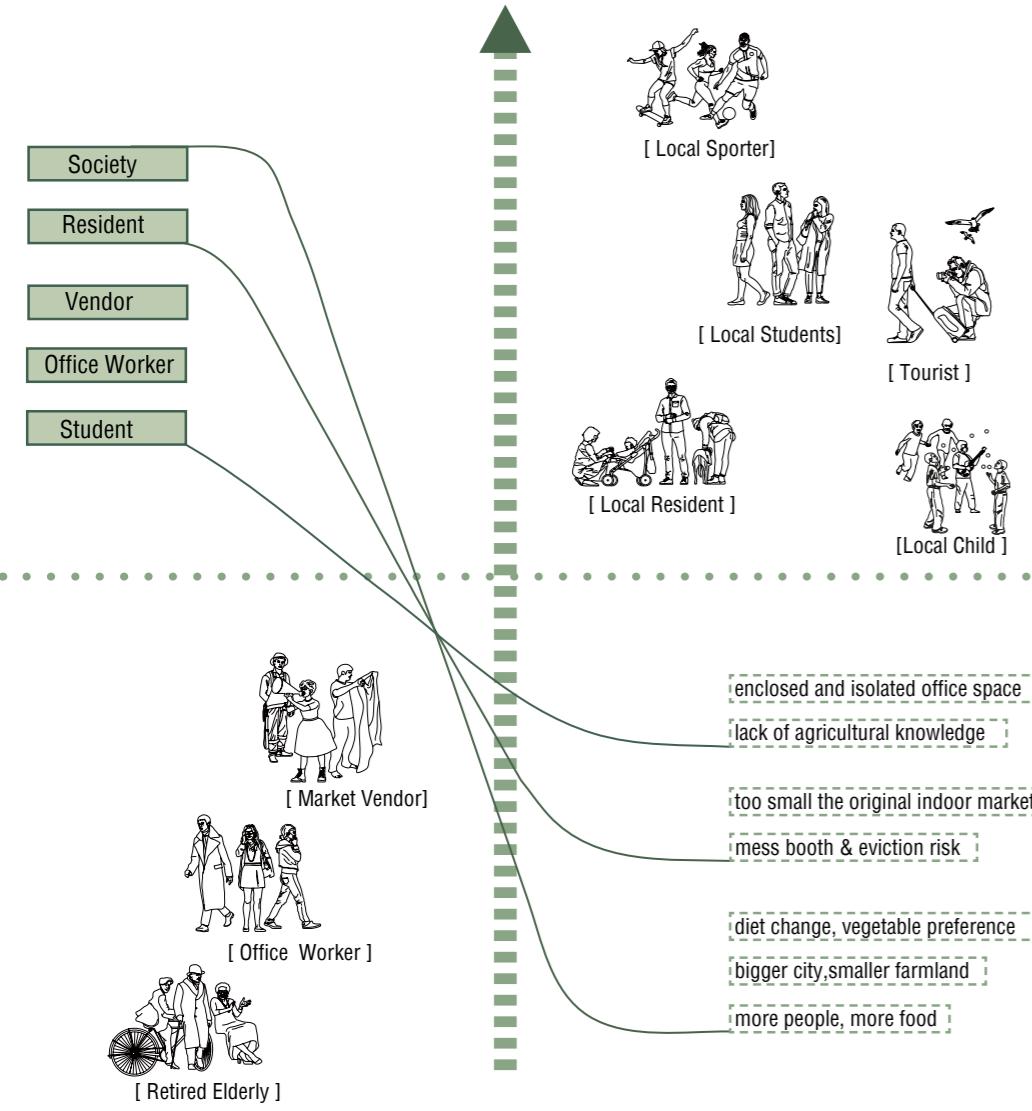
◆ Timeline



◆ Site functional orientation

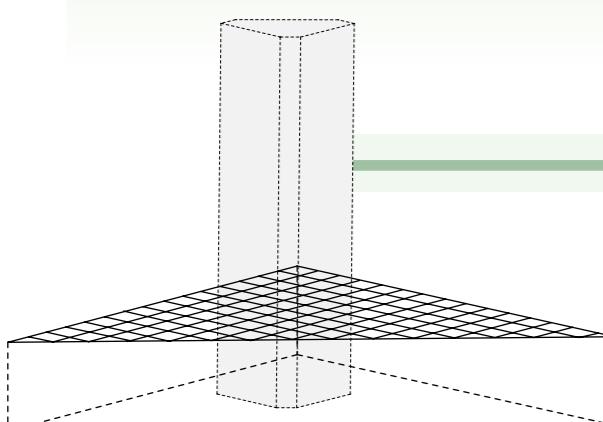


◆ STRATEGY & LAYOUT

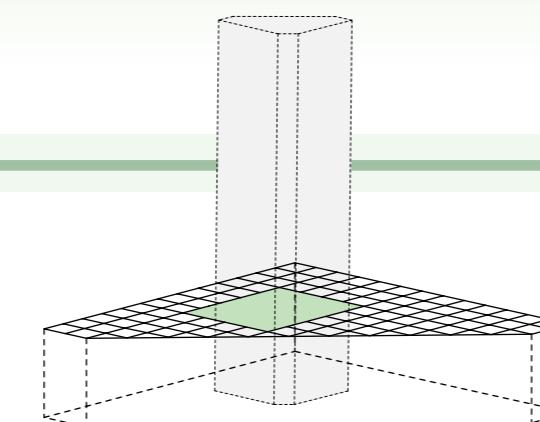


◆ Morphogenesis

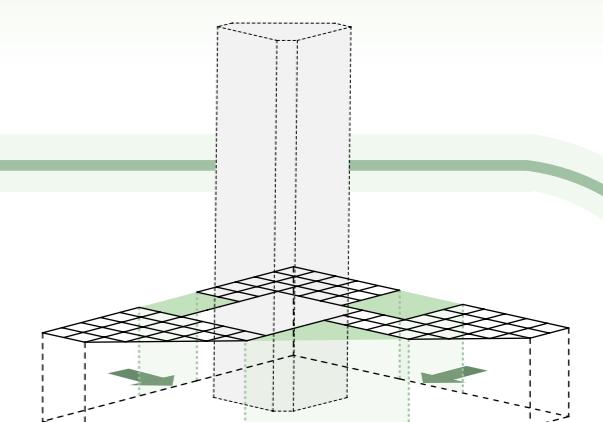
Grid



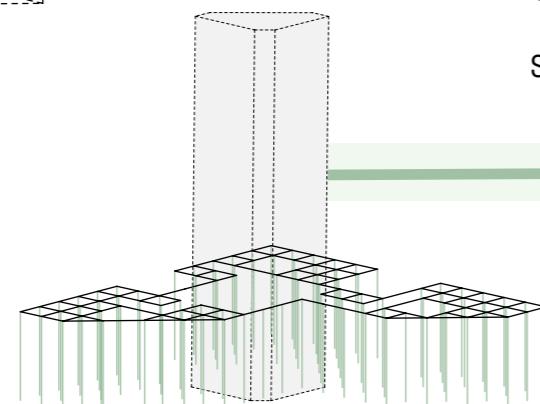
Step1 Place the 8x8m Grid



Step2 Remove the Acute Angle & Building



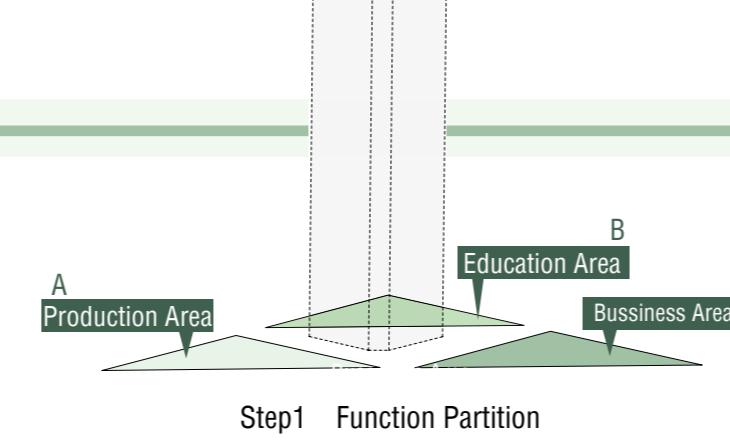
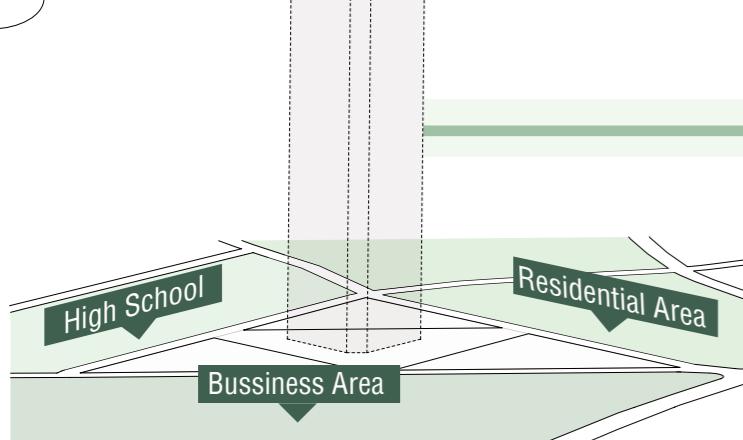
Step3 Vacate Entrances



Step5 Place Post

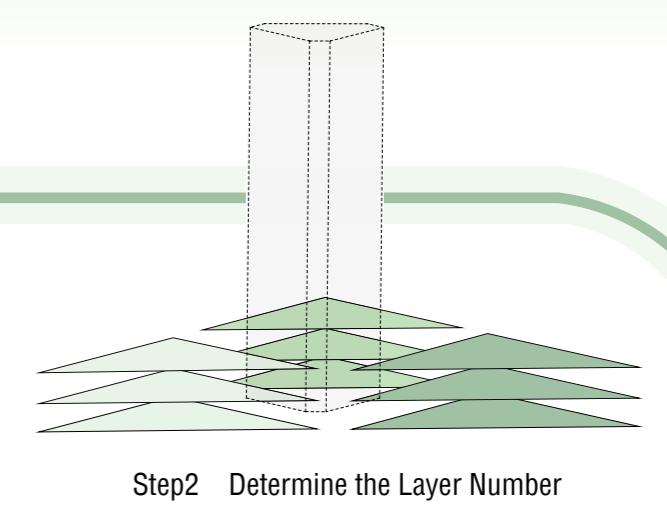
Popular Science Exhibition Hall
NURSERY
FITNESS
FOOD STAND
VERTICAL FARMS

Function Partition & Traffic

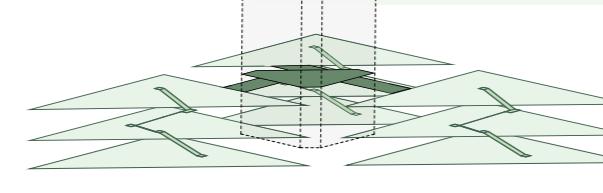


Step1 Function Partition

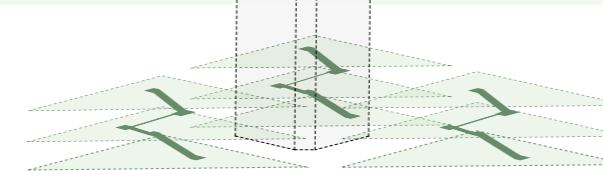
MARKET



Step2 Determine the Layer Number



Step4 Connect to the Building

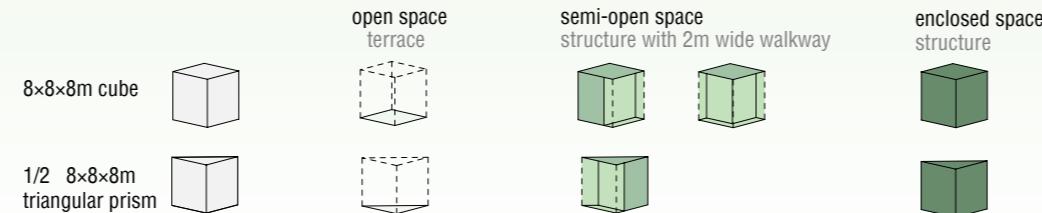


Step3 Set Up the Traffic

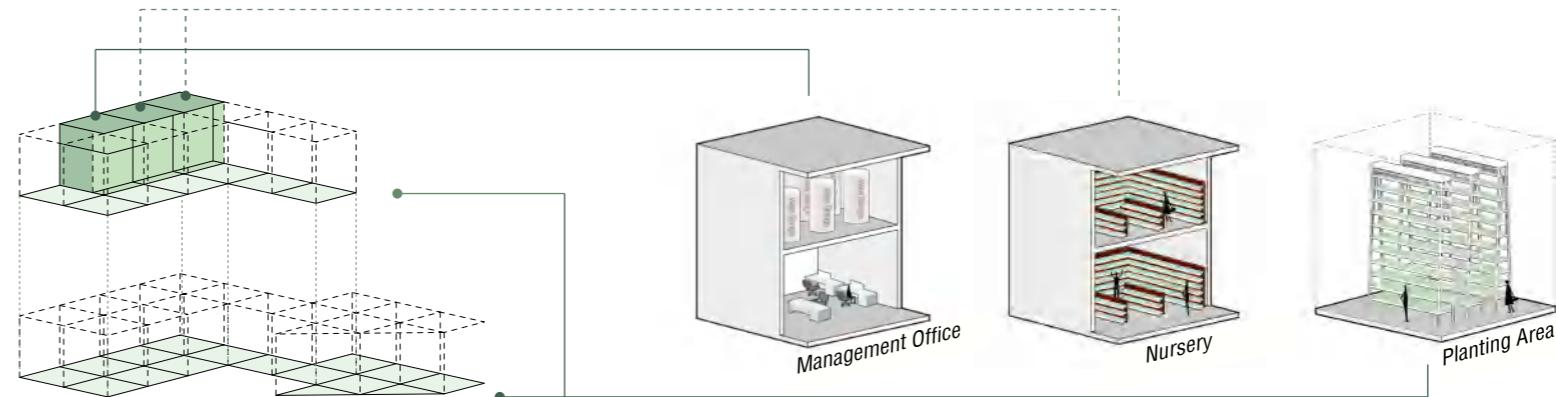
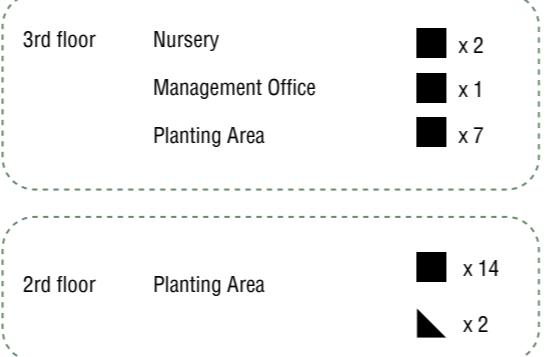
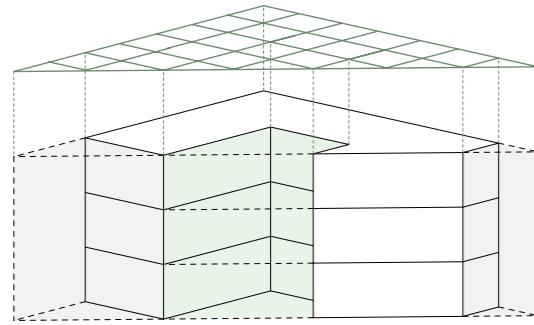
Step1 Determine the Scope



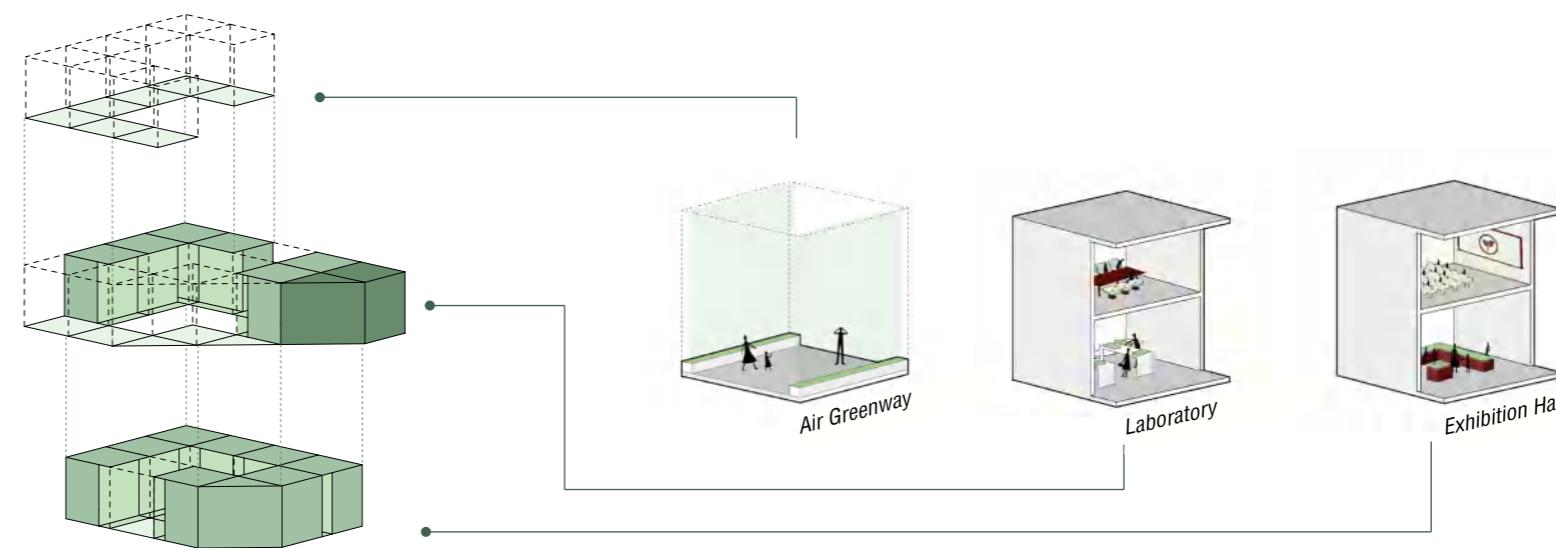
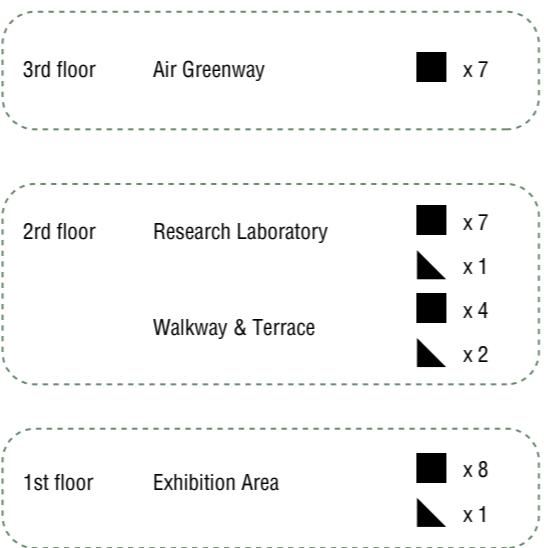
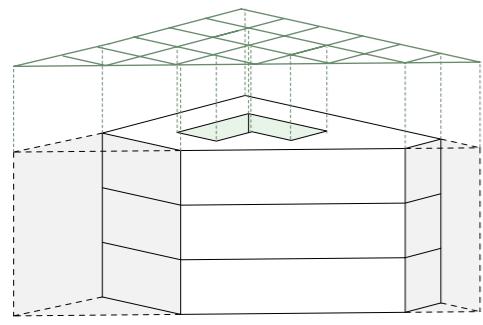
Step2 Place Module



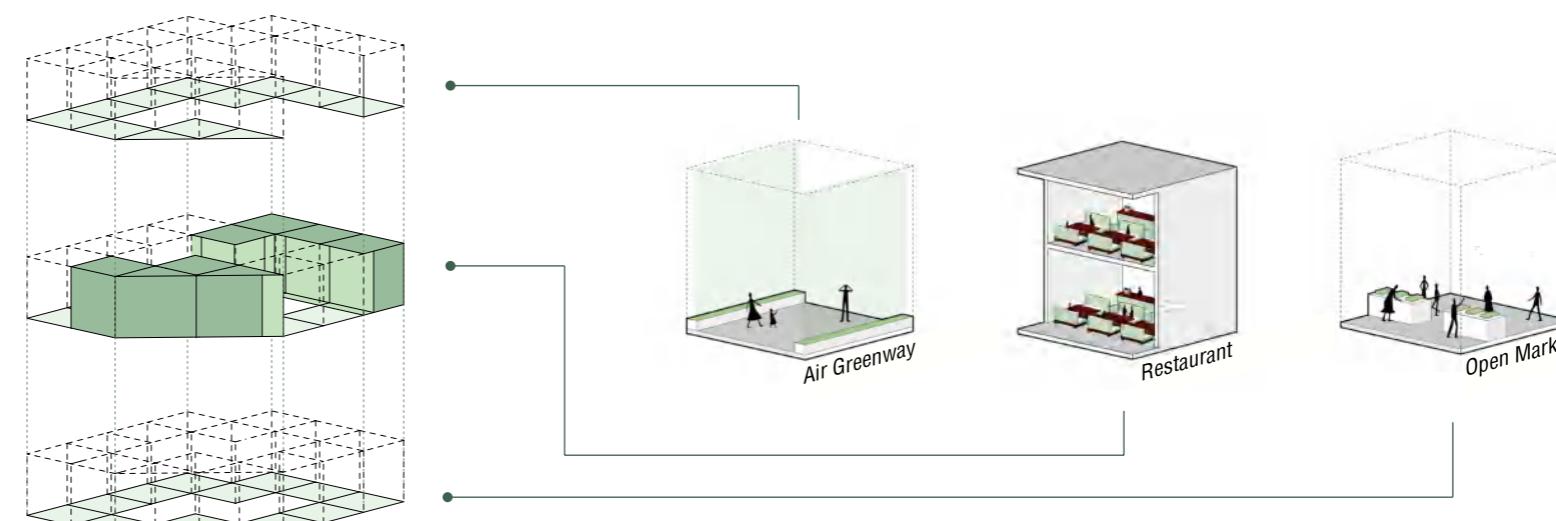
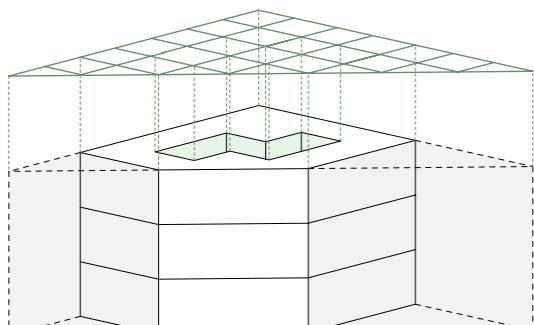
A



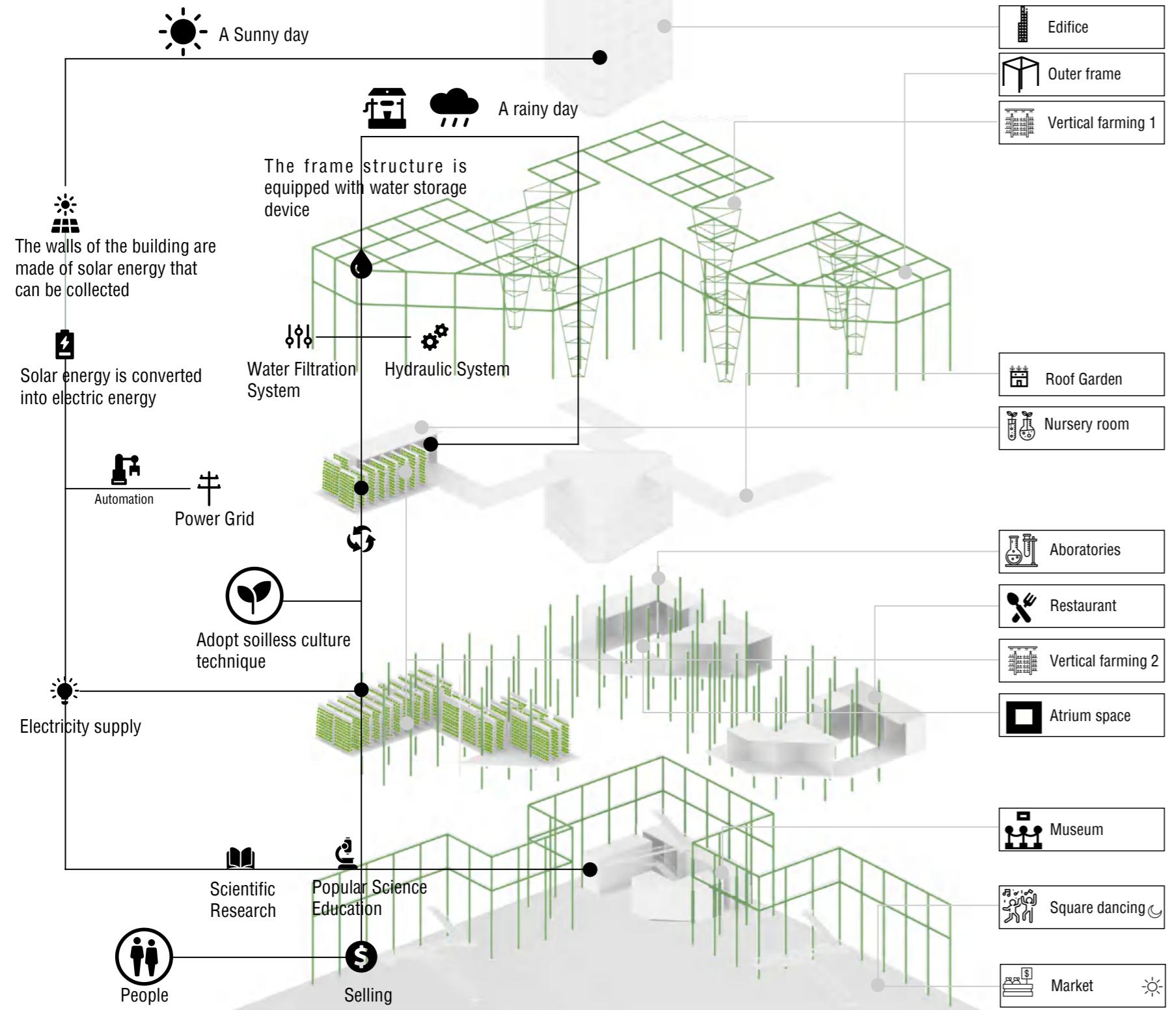
B



C



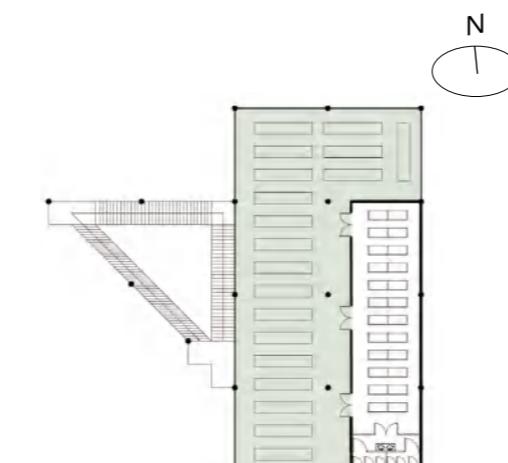
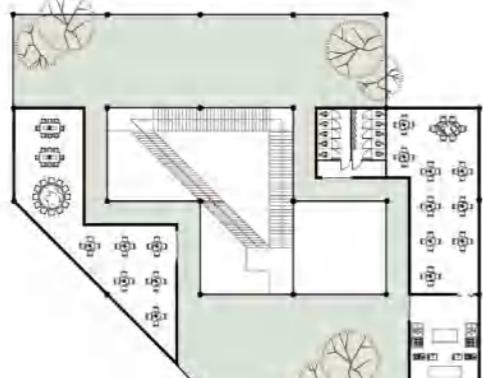
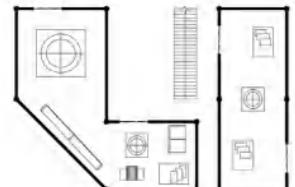
◆ The explosion figure



◆ Rendering



◆ Plan



Museum

Restaurant

Aboratories

Nursery room & Vertical farming